Abstracts on the Diagnosis of Brain Death

Prepared as a Resource for the Severe Brain Injury to Neurological Determination of Death—A Canadian Forum

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Introduction to Abstracts

The abstracts included in this document resulted from a search conducted in November and December 2002. The search was to support the development of a summary paper on the diagnosis of brain death, a paper used as a resource to the Severe Brain Injury to Death Forum held in April 2003 in Vancouver, British Columbia. The search and the development of the summary paper was underwritten by the Canadian Council for Donation and Transplantation.

The abstracts presented here are intended to be a resource to individuals who may wish to conduct further research in peer reviewed material on diagnosis of brain death. As the process of research is often iterative, this list may not be comprehensive compilation of all articles, or of the research material used to generate the paper prepared for the forum.

Abstracts are divided into seven sections:
- Diagnostics/Clinical
- Research
- Pediatrics
- Maternal
- International Sources and Guidelines
- Discussion

Abstracts may appear in more than one section. Article titles in square brackets reflect material that is written in a language other than English.

Search Parameters
Searches were conducted on the following databases:
- Medline
- Biological Abstracts
- Cambridge Scientific Abstracts

The major focus of the search were for articles published during the period of 1992 to December 2002. The following MeSH Terms were used in the search:

- Brain Death (Primary)
  - Brain Death - diagnosis
  - Brain Death - legislation and jurisprudence
  - Brain diseases - therapy
  - Brain Injuries - therapy
  - Cadaver
  - Family
  - Human
  - Life Support Care
  - Craniocerebral Trauma
  - Hospital Administration
- Hospital Information Systems
- Human
- Informed Consent
- In-service training
- Medical audit
- Medical staff, hospital
- Organ Procurement ("OP")
- OP - methods
- OP - organization and administration
- OP - statistics and numerical data
- Organizational Objective
- Policy Making
- Professional / Family Relations
- Program Development
- Quality Assurance - health care
- Referral and consultation - statistics and numerical data
- Tissue Donors - statistical and numerical data
- Tissue Donors
- Transplantation
Abstracts:

Part One: Diagnostics/Clinical
Part Two: Research
Part Three: Pediatrics
Part Four: International Sources and Guidelines
Part Five: Discussions
Part Six: Maternal
Part One:
Diagnostics / Clinical Abstracts
Angioscintigrafia con 99mTc HMPAO (Technetium 99m-Hexamethylpropyleneamine oxime) nella diagnosi di morte cerebrale.

The diagnosis of brain death has great importance for the social and medical purposes, such as organs transplantation, and is based on clinical examination and EEG records. We report two doubtful cases of brain death in whom the 99mTc HMPAO scintigraphy was used to confirm the complete absence of cerebral perfusion.
[Importance of lateral projections in the diagnosis of brain death]

OT: Original Title
Importancia de las proyecciones laterales en el diagnostico de muerte encefalica.

AU: Author
Abos D; Banzo J; Garcia F; Prats E; Escalera T; Razola P

AF: Affiliation
Servicio de Medicina Nuclear. Hospital Clinico Universitario Lozano Blesa. Zaragoza. Spain. dolabos@posta.unizar.es

SO: Source
Revista espanola de medicina nuclear, 2002 Feb, 21(1):36-7

IS: ISSN
0212-6982

LA: Language
Spanish

PY: Publication Year
2002

PT: Publication Type
Journal Article

CP: Country of Publication
Spain

DE: Descriptors
Accidents, Traffic; Adult; Brain Death: radionuclide imaging; Brain Injuries: radionuclide imaging; Case Report; Cerebrovascular Circulation; Hematoma, Subdural: etiology; Hematoma, Subdural: radiography; Human; Male; Radionuclide Imaging: methods; Radiopharmaceuticals: therapeutic use; Technetium Tc 99m Exametazime: diagnostic use; Tomography, X-Ray Computed

RN: Registry Number
0 (Radiopharmaceuticals); 100504-35-6 (Technetium Tc 99m Exametazime)

UD: Update
20020704

RO: Record Owner
National Library of Medicine

SF: Subfile
Index Medicus

AN: Accession Number
11821001
[Brain death: "a special resuscitation"]

OT: Original Title
Coma depasse: "une reanimation particuliere".

AU: Author
Abrard I; N'Djoli C

SO: Source

IS: ISSN
0397-7900

LA: Language
French

PY: Publication Year
1996

PT: Publication Type
Journal Article

CP: Country of Publication
FRANCE

DE: Descriptors
Brain Death: diagnosis; Human; Nurses: psychology; Nurses' Aides: psychology; Organ Procurement; Tissue Donors

LR: Last Revision Date
20001218

UD: Update
20020109

RO: Record Owner
National Library of Medicine

SF: Subfile
Nursing

AN: Accession Number
8868645
Confirmation of brain death using 99m Tc HM-PAO.

AU: Author
Adelstein W
AF: Author Affiliation
University of Missouri Hospital and Clinics, Division of Neurosurgery, Columbia 65212.
SO: Source
IS: ISSN
0888-0395
AB: Abstract
Because 99m Tc HM-PAO is simple to use, noninvasive and readily available, it appears to satisfy most criteria for the use of radionuclide cerebral imaging in the confirmation of brain death. Waiting periods, which are often included in brain death protocols, delay the diagnosis of brain death. 99m Tc HM-PAO has proven to be a useful test to confirm brain death.
LA: Language
English
PY: Publication Year
1994
PT: Publication Type
Journal Article; Review; Review, Tutorial
CP: Country of Publication
UNITED STATES
DE: Descriptors
Adult; Brain Death: radionuclide imaging; Case Report; Female; Human; Male; Organotechnetium Compounds: diagnostic use; Oximes: diagnostic use; Patient Care Planning; Technetium Tc 99m Exametazime
RN: CAS Registry Number
0 (Organotechnetium Compounds); 0 (Oximes); 100504-35-6 (Technetium Tc 99m Exametazime)
FE: Features
10 references
LR: Last Revision Date
20001218
UD: Update
20020109
RO: Record Owner
National Library of Medicine
SF: Subfile
Index Medicus; Nursing
AN: Accession Number
80777773

AU: Author
Aichner F; Felber S; Birbamer G; Luz G; Judmaier W; Schmutzhard E
AF: Author Affiliation
Department of Magnetic Resonance, University Hospital, Innsbruck, Austria.
SO: Source
IS: ISSN
0364-5134
AB: Abstract
Phosphorus (31P) magnetic resonance spectroscopy and magnetic resonance imaging were used to study the intracellular metabolism, circulation, and morphology in the brains of 3 patients with clinical brain death syndrome due to traumatic brain damage, subarachnoid hemorrhage, and acute occlusive hydrocephalus caused by a colloid cyst. Magnetic resonance spectra were characterized by a complete absence of ATP and were dominated by an intense inorganic phosphate signal. Magnetic resonance imaging revealed a uniform pattern of diffuse brain swelling and tentorial and foraminal herniation. Intracranial blood flow was absent on the magnetic resonance angiography projections. These preliminary findings suggest an important impact of magnetic resonance in the determination of human brain death.
LA: Language
English
PY: Publication Year
1992
PT: Publication Type
Journal Article
CP: Country of Publication
UNITED STATES
DE: Descriptors
Adenosine Triphosphate: analysis; Adult; Angiography; Brain Death: pathology; Brain Death: physiopathology; Brain Edema: diagnosis; Cerebrovascular Circulation; Female; Human; Magnetic Resonance Imaging; Magnetic Resonance Spectroscopy; Male; Phosphorus: diagnostic use
RN: CAS Registry Number
56-65-5 (Adenosine Triphosphate); 7723-14-0 (Phosphorus)
LR: Last Revision Date
20001218
UD: Update
20020109
RO: Record Owner
National Library of Medicine
SF: Subfile
230
Index Medicus
AN: Accession Number
1456735
231
Developmental strides in biomedical technology and the growth and availability of intensive care units have paralleled the development of organ transplantation programs. The establishment of these programs required the development of a new definition, criteria, and test of death to facilitate the procurement of suitable organs. The historical definition of death, in instances of organ transplantation, is no longer compatible as cardiopulmonary support can be readily applied to individuals without spontaneous circulation and respiration. This AANA Journal course will examine the definitions of death and the evolution of the term "brain death." The essential clinical criteria and confirmatory diagnostic testing for the determination of adult "whole-brain death" will be reviewed.
**TI:** Bulk diffusion apnea test in the diagnosis of brain death.
**AU:** Al-Jumah-Mohammed; McLean-Donald-R; Al-Rajeh-Saad; Crow-Nancy
**AD:** [a] Dep. Med., King Faisal Specialist Hosp. and Research Centre, P.O. Box 3354, Riyadh 11211, Saudi Arabia
**PY:** 1992
**AB:** Objectives: To assess the efficacy of bulk diffusion in maintaining oxygenation during apnea testing for brain death. Design: Case series. Setting: ICU in a primary care hospital. Patients: Twenty-four consecutive patients with suspected brain death. Most patients suffered cerebral trauma from vehicular accidents. Intervention: Patients were preoxygenated with an FIO-2 of 1.0 and were maintained during apnea testing with bulk flow of an FIO-2 of 1.0 at 40 to 60 L/min in adults and 15 L/min in children. The pre-apnea PaCO-2 was between 35 to 45 torr (4.7 to 6.0 kPa) in all patients. Main Outcome Measures: Twenty-three patients completed the test. Five patients had a PaO-2 lt 100 torr (lt 13 kPa) during the 10-min ventilator withdrawal time period. Main Results: No patient breathed spontaneously during the apnea test. Twenty-two patients achieved a PaCO-2 gt 60 torr (gt 8 kPa). One patient had a postapnea PaCO-2 of 59 torr (7.8 kPa). The test was stopped in one patient who became hypotensive. Conclusions: The bulk diffusion technique has several advantages, including ease of performance over other methods of supplying oxygen during apnea testing, but this method does not prevent hypoxemia in patients with lung disease.
**AI:** Y
**MC:** Biochemistry-and-Molecular-Biophysics; Blood-and-Lymphatics (Transport-and-Circulation); Metabolism-; Neurology- (Human-Medicine, Medical-Sciences); Pathology-; Public-Health (Allied-Medical-Sciences); Pulmonary-Medicine (Human-Medicine, Medical-Sciences); Respiratory-System (Respiration-)
**ST:** Hominidae-: Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia-OR: human- (Hominidae-)
**TN:** animals-; chordates-; humans-; mammals-; primates-; vertebrates-
**CB:** OXYGENGE:
**RN:** 7782-44-7: OXYGEN
**MI:** ANOXIA-; BLOOD-GAS-ANALYSIS; COMA-; DIAGNOSTIC-METHODEFFICACY; HYPERCAPNIA-; INTENSIVE-CARE-UNIT; MECHANICAL-VENTILATION; NEUROLOGICALEMERGENCY; OXYGEN-MAINTENANCE-TECHNIQUE; RESPIRATORY-AIR-FLOW
**AN:** 199395041528
Record 8 of 155 in Biological Abstracts 1993/01-1993/06
**TI:** Magnetic resonance: A noninvasive approach to metabolism, circulation, and 28 morphology in human brain death.
**AU:** Aichner-F; Felber-S; Birbamer-G; Luz-G; Judmaier-W; Schmutzhard-E
**PY:** 1992
**AB:** Phosphorus (31P) magnetic resonance spectroscopy and magnetic resonance imaging were used to study the intracellular metabolism, circulation, and
morphology in the brains of 3 patients with clinical brain death syndrome due to traumatic brain damage, subarachnoid hemorrhage, and acute occlusive hydrocephalus caused by a colloid cyst. Magnetic resonance spectra were characterized by a complete absence of ATP and were dominated by an intense inorganic phosphate signal. Magnetic resonance imaging revealed a uniform pattern of diffuse brain swelling and tentorial and foraminal herniation. Intracranial blood flow was absent on the magnetic resonance angiography projections. These preliminary findings suggest an important impact of magnetic resonance in the determination of human brain death.

AI: Y
MC: Equipment-, Apparatus-, Devices-and-Instruments; Morphology-; Nervous System (Neural-Coordination); Neurology- (Human-Medicine, Medical Sciences); Pathology-; Pharmacology-; Radiology- (Medical-Sciences)
ST: Hominidae-: Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia-
OR: Hominidae- (Hominidae-)
TN: animals-; chordates-; humans-; mammals-; primates-; vertebrates-
CB: ATP-; PHOSPHORUS-31
MI: ACUTE-OCCLUSIVE-HYDROCEPHALUS; ATP-; COLLOID-CYST; FORAMINAL-HERNIATION; MAGNETIC-RESONANCE-IMAGING; PHOSPHORUS-31-MAGNETICRESONANCE-SPECTROSCOPY; SUBARACHNOID-HEMORRHAGE; TENTORIAL-HERNIATION; TRAUMATICBRAIN-DAMAGE
AN: 199395030112
We hypothesized that increased levels of blood cytokines occur in brain-dead patients, and that these cytokines are responsible for some of the endocrine and/or acute-phase reactant abnormalities found in these patients. We measured blood levels of cytokines, hormones, and acute-phase reactants in 18 brain-dead potential organ donors at the moment of establishing the legal diagnosis of brain death and compared them with levels found in a control group. Although interleukin-1-beta (IL-1-beta) and tumor necrosis factor-alpha (TNF-alpha) levels were within the normal range, interleukin-6 (IL-6) levels were clearly above the normal range in all patients (median, 1,444 pg/mL; range, 75 to 11,780). In the brain-dead group, total thyroxine (T-4), free T-4 (fT-4), triiodothyronine (T-3), thyrotrin (TSH), dehydroepiandrosterone sulfate (DHEA-S), testosterone, albumin, Zn, and osteocalcin levels were decreased, T-3 resin uptake index (T-3 RUI), corticotropin (ACTH), cortisol, 11-deoxycortisol (11-DOC), 17α-hydroxyprogesterone (17-OHP), aldosterone, luteinizing hormone, and follicle-stimulating hormone levels were normal, and reverse T-3 (rT-3), renin, and C-reactive protein (CRP) levels were increased. Multiple regression analysis demonstrated significant interrelations between IL-6 and T-4, T-3, testosterone, and CRP. We also studied the evolution of some of these parameters in four patients with severe head injury who finally developed brain death. IL-6 levels on admission to the intensive care unit (ICU) were above the normal limits, as in other patients with cranial trauma, but when the patients developed brain death, there was a pronounced increase in IL-6 levels. We conclude that brain death is accompanied by high levels of IL-6. IL-6 may be partially responsible for the hormonal and acute-phase reactant abnormalities found in these patients.
[The bispectral electroencephalographic index (BIS) and brain death]

OT: Original Title
Indice biespectral del electroencefalograma (BIS) y muerte cerebral.

AU: Author
Anez Simon C; Recasens Urbez J; Lorente Cogollos C; Bodi Saera M; Rull Bartomeu M

SO: Source
Revista española de anestesiología y reanimación, 2000 Nov, 47(9):422-3

IS: ISSN
0034-9356

LA: Language
Spanish

PY: Publication Year
2000

PT: Publication Type
Letter

CP: Country of Publication
Spain

DE: Descriptors
Adult; Brain Death: diagnosis; Brain Injuries: physiopathology; Brain Injuries: radiography; Brain Injuries: radionuclide imaging; Case Report; Electroencephalography; Fatal Outcome; Female; Human; Monitoring, Physiologic; Neurologic Examination; Tomography, Emission-Computed, Single-Photon; Tomography, X-Ray Computed

UD: Update
20020109

RO: Record Owner
National Library of Medicine

AN: Accession Number
11305143
TI: Transcranial Doppler and brain death.
AU: Azevedo-E {a}; Teixeira-J; Neves-J-C; Vaz-R
AD: {a} Servico Neurologia, Hospital S. Toro, 4200, Porto, Portugal
PY: 2000
DT: Article-
IS: 0041-1345
LA: English
LS: English
MC: Neurology- (Human-Medicine, Medical-Sciences); Radiology- (Medical-Sciences)
ST: Hominidae-: Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia-
OR: human- (Hominidae-): patient-
TN: Animals-; Chordates-; Humans-; Mammals-; Primates-; Vertebrates-
DS: brain-death: diagnosis-, nervous-system-disease; cerebral-circulatory-arrest:
conformation-, nervous-system-disease, vascular-disease
MQ: transcranial-Doppler-sonography: diagnostic-method, sensitivity-, specificity-
MI: intensive-care-unit
ALT: Brain-Death-(MeSH)
AN: 200100371111
UD: 20011206
Brain death assessment using instant spectral analysis of heart rate variability.

AU: Author
Baillard C; Vivien B; Mansier P; Mangin L; Jasson S; Riou B; Swynghedauw B
AF: Affiliation
U127-INSERM, Lariboisiere Hospital, Paris, France.
SO: Source
Critical care medicine, 2002 Feb, 30(2):306-10
IS: ISSN
0090-3493
AB: Abstract
OBJECTIVE: Confirmation of brain death requires an urgent diagnosis to allow rapid vital organ removal for transplantation. Evaluation of forebrain functions is commonly performed through electroencephalogram. Nevertheless, there are, for the moment, no methods that allow for an instantaneous evaluation of brainstem functions. During acute brain injury, heart rate variability is an independent neurologic prognosis indicator resulting from a close relationship between brain stem and cardiac autonomic nervous system. This study aims to evaluate a new heart rate variability spectral analysis method, on a beat-to-beat basis, continuously over the time, during brain death. DESIGN: Prospective, nonrandomized, observational study. SETTING: Intensive care unit. SUBJECTS: Ten patients (age range 25-64 yrs, mean age 41 yrs) with acute brain injury leading to brain death. INTERVENTION: No intervention beyond standard of care MEASUREMENTS AND MAIN RESULTS: Heart rate, arterial blood pressure, heart rate variability in time and frequency domains method, which included calculation of the instant center frequency of spectrum. Brain death was associated with tachycardia (R-R interval 703 +/- 69 vs. 551 +/- 34 msec, p <.05), dramatic reduction of the global spectral power (44.919 +/- 31.511 vs. 3.204 +/- 1.469 msec(2), p <.05), and an abrupt shift of instant center frequency to a higher frequency range (0.17 +/- 0.01 vs. 0.26 +/- 0.03 Hz, p <.05).
CONCLUSIONS: Such a method allows an instant, noninvasive determination of brainstem death based on a time and frequency domain analysis of heart rate variability.
LA: Language
English
PY: Publication Year
2002
PT: Publication Type
Journal Article
CP: Country of Publication
United States
DE: Descriptors
Adult; Analysis of Variance; Apnea: physiopathology; Autonomic 122
Nervous System: physiopathology; Brain Death: diagnosis; Brain Death: physiopathology; Brain Injuries; Brain Stem: physiopathology; Electrocardiography; Female; Fourier Analysis; Heart Rate; Human; Male; Middle Age; Prospective Studies; Risk; Time Factors; Tissue Donors
UD: Update
20020328
Neuroimaging in brain death.
AU: Author
Ball WS Jr
SO: Source
IS: ISSN
0195-6108
NT: Notes
[AN=9576648]
LA: Language
English
PY: Publication Year
1998
PT: Publication Type
Comment; Editorial
CP: Country of Publication
UNITED STATES
DE: Descriptors
Diagnostic Imaging: methods; Electroencephalography; Human;
Tomography, X-Ray Computed
LR: Last Revision Date
20011126
UD: Update
20020109
RO: Record Owner
National Library of Medicine
SF: Subfile
Index Medicus
AN: Accession Number
9576677
TI: Pulsatile electrical impedance response from cerebrally dead adult patients is not a reliable tool for detecting cerebral perfusion changes.

AU: Basano-Lorenzo {a}; Ottonello-Pasquale; Nobili-Flavio; Vitali-Paolo; Pallavicini-Franco-Bobbio; Ricca-Battistina; Prastaro-Tiziana; Robert-Alice; Rodriguez-Guido

AD: {a} Department of Physics, University of Genoa, Genoa: basano@fisica.unige.it, Italy


PY: 2001

AB: The original objective of this work was to verify the possibility of using electrical pulsatile cerebral impedance measurements as a diagnostic aid for assessing the brain-death condition in adults; a subordinate target was to validate a simple method for detecting perfusional changes in the brain. To this end, impedance signals were recorded, for a comparative study, from both live subjects and brain-dead patients, using a simple four-electrode arrangement. Rather unexpectedly, pulsatile transcephalic impedance waveforms exhibiting a temporal dependence similar to those of live subjects were detected in artificially ventilated, cerebrally dead, adult subjects; distributions of the time delays between impedance peaks and ECG peaks were also recorded for the two groups (dead and live subjects). These data provided no evidence, at the 1% significance level, against the hypothesis that the two sample groups are drawn from identical populations. The detection of impedance variations from brain-dead patients can be explained by the residual persistence of blood flow through the scalp, by mechanical variations synchronous with the heart beat and by the presence of the oscillating flow and the systolic spikes that precede the final blood flow arrest. The fact that impedance variations can be traced back to a multiplicity of causes, unrelated to the normal unidirectional flow, renders the transcephalic impedance method inappropriate for detecting cerebral perfusion changes in adults. This conclusion is also strengthened by some theoretical results recently derived from a multilayer model of the head.

MC: Neurology- (Human-Medicine, Medical-Sciences)

ST: Hominidae-: Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia-

OR: human- (Hominidae-): patient-

TN: Animals-; Chordates-; Humans-; Mammals-; Primates-; Vertebrates-

PS: cerebellum-: nervous-system

DS: brain-death: nervous-system-disease

MI: cerebral-perfusion; pulsatile-electrical-impedance-response; pulsatile-transcephalic-impedance-waveforms

ALT: Brain-Death-(MeSH)

AN: 200100233570

UD: 20010717
Apnea testing for the determination of brain death: a modified protocol. Technical note.

AU: Author
Benzel EC; Mashburn JP; Conrad S; Modling D

AF: Author Affiliation
Division of Neurosurgery, University of New Mexico, Albuquerque.

SO: Source

IS: ISSN
0022-3085

AB: Abstract
The absence of spontaneous respirations at a PaCO2 of 60 mm Hg or above has traditionally been accepted as the respiratory criteria for the determination of brain death. The testing of patients for the presence or absence of apnea has been complicated because the rate of PaCO2 elevation may vary substantially from patient to patient, and a nonlinear relationship exists between the rate of PaCO2 increase and the duration of apnea. In an attempt to refine the apnea test and to further elucidate the physiology of hypercapnia in humans, 11 patients who met all but the respiratory criteria for brain death were evaluated using a modification of a previously utilized apnea testing protocol. All patients were brought to a PaCO2 of 40 mm Hg or above prior to the apnea test. Baseline PaCO2 ranged from 40 to 45 mm Hg in six patients (Group I) and from 46 to 51 mm Hg in five patients (Group II). The mean rate of PaCO2 increase was 5.1 +/- 1.4 mm Hg/min in Group I and 6.7 +/- 3.1 mm Hg/min in Group II. No problems with cardiovascular instability or hypoxia were encountered during testing in this series. This refinement of the apnea test allows for a streamlined and safe approach to brain death detection.

LA: Language
English

PY: Publication Year
1992

PT: Publication Type
Journal Article

CP: Country of Publication
UNITED STATES

DE: Descriptors
Adolescence; Adult; Aged; Apnea: diagnosis; Brain Death: diagnosis; Carbon Dioxide: analysis; Female; Human; Male; Middle Age; Respiration

RN: CAS Registry Number
124-38-9 (Carbon Dioxide)

LR: Last Revision Date
20001218

UD: Update
20020109

239

RO: Record Owner
National Library of Medicine

SF: Subfile
Abridged Index Medicus; Index Medicus

AN: Accession Number
1588410
[HM-PAO cerebral blood flow scintigraphy in the manifestation stage of brain death]
OT: Original Title
HM-PAO-Hirnblutflussszintigraphie in der Manifestationsphase des Hirntodes.
AU: Author
Berlit P; Wetzel E
AF: Author Affiliation
Neurologische Klinik, Universität Heidelberg.
SO: Source
Der Nervenarzt, 1992 Feb, 63(2):101-4
IS: ISSN
0028-2804
AB: Abstract
We monitored 27 patients with HM-PAO-perfusion scintigraphy during the progress of cerebral death. The results of scintigraphy correlate well with cerebral angiography. Advantages are the possibility of bedside-examination, the non-invasiveness of the method and the possibility of in-vivo control. The non-visualized-brain in dynamic scintigraphy is a valuable additional method in the determination and documentation of cerebral death.
LA: Language
German
PY: Publication Year
1992
PT: Publication Type
Journal Article
CP: Country of Publication
GERMANY
DE: Descriptors
Adolescence; Adult; Aged; Blood Flow Velocity: physiology; Brain: blood supply; Brain Death: radionuclide imaging; Child; Child, Preschool; English Abstract; Female; Human; Infant; Male; Middle Age; Organotechnetium Compounds: diagnostic use; Oximes: diagnostic use; Regional Blood Flow: physiology; Resuscitation; Technetium Tc 99m Exametazime
RN: CAS Registry Number
0 (Organotechnetium Compounds); 0 (Oximes); 100504-35-6 (Technetium Tc 99m Exametazime)
LR: Last Revision Date
20001218
UD: Update
20020109
RO: Record Owner
National Library of Medicine
SF: Subfile
Index Medicus
248
AN: Accession Number
1565165
249
TI: Criteria for the diagnosis of brain stem death.
AU: Black-Douglas; Turnberg-Leslie; London-David; Bates-D; Melia-N; Pallis-C; Prior-PF; Rolles-K; Stoddart-J-C; Kennedy-C-R; Pickard-J-D
PY: 1995
DT: Article-
IS: 0035-8819
LA: English
MC: Human-Ecology (Anthropology-); Neurology- (Human-Medicine, Medical-Sciences); Pathology-; Public-Health (Allied-Medical-Sciences); Systematics-and-Taxonomy
ST: Hominidae-: Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia-
OR: human- (Hominidae-)
TN: animals-; chordates-; humans-; mammals-; primates-; vertebrates-
GE: UK- (Europe-, Palearctic-region)
MI: BRAIN-DEATH
AN: 199598551647
The authors present the results of spinal cord function evaluation in organ donors by examination of reflexes. The knee reflex and ankle jerk, as well as abdominal reflex and foot withdrawal reaction were tested in 31 donors. At least one of the above was seen in 25 individuals. It is suggested on the basis of data obtained not to hamper the transplant procedure in cases of tested reflex persistency when brain death is revealed on relevant examination.
99mTc HM-PAO brain perfusion SPECT in brain death.

AU: Author
Bonetti MG; Ciritella P; Valle G; Perrone E

AF: Author Affiliation
Department of Diagnostic Imaging, IRCCS Casa Sollievo della Sofferenza Hospital, Italy.

SO: Source

IS: ISSN
0028-3940

AB: Abstract
Diagnosis of brain death must be certain to allow discontinuation of artificial ventilation and organ transplantation. Brain death is present when all functions of the brain stem have irreversibly ceased. Clinical and electrophysiological criteria may be misinterpreted due to drug intoxication, hypothermia or technical artefacts. Thus, if clinical assessment is suboptimal, reliable early confirmatory tests may be required for demonstrating absence of intracranial blood flow. We have easily carried out and interpreted 99mTc HM-PAO SPECT in a consecutive series of 40 comatose patients with brain damage, without discontinuing therapy. Brain death was diagnosed in 7 patients, by recognising absence of brain perfusion, as shown by no intracranial radionuclide uptake. In patients in whom perfusion was seen on brain scans, HM-PAO SPECT improved assessment of the extent of injury, which in general was larger than suggested by CT.

LA: Language
English
PY: Publication Year
1995
PT: Publication Type
Journal Article
CP: Country of Publication
GERMANY
DE: Descriptors
Adolescence; Adult; Aged; Aged, 80 and over; Brain: blood supply; Brain Damage, Chronic: radionuclide imaging; Brain Death: radionuclide imaging; Child; Coma: radionuclide imaging; Female; Human; Life Support Care; Male; Middle Age; Organotechnetium Compounds: diagnostic use; Oximes: diagnostic use; Prognosis; Regional Blood Flow: physiology; Technetium Tc 99m Exametazime; Tomography, Emission-Computed, Single-Photon
RN: CAS Registry Number
0 (Organotechnetium Compounds); 0 (Oximes); 100504-35-6 (Technetium Tc 99m Exametazime)
LR: Last Revision Date
20001218
UD: Update
168
20020109
RO: Record Owner
National Library of Medicine
SF: Subfile
Index Medicus
AN: Accession Number
7477835
Diagnosi clinica dello stato di morte cerebrale.

Boselli L; Conci F
Reparto di Neurorimazione, Ospedale Niguarda Ca' Granda, Milano.


Brain Death: diagnosis; Brain Death: physiopathology; Human
The diagnosis of brain death.

AU: Author
Broyde MJ

SO: Source
discussion 617-8

IS: ISSN
0028-4793

NT: Notes
Comment on: N Engl J Med. 2001 Apr 19;344(16):1244-6 [AN=11309642]

LA: Language
English

PY: Publication Year
2001

PT: Publication Type
Comment; Letter

CP: Country of Publication
United States

DE: Descriptors
Human; Human Rights; Morals; Religion and Medicine; United States

LR: Last Revision Date
20011109

UD: Update
20020109

RO: Record Owner
National Library of Medicine

SF: Subfile
Abridged Index Medicus; Index Medicus

AN: Accession Number
11529224
Lazarus' sign in brain death.

AU: Author
Bueri JA; Saposnik G; Maurino J; Saizar R; Garretto NS
AF: Author Affiliation
Department of Neurology, Hospital JM Ramos Mejia, Buenos Aires, Argentina.
SO: Source
IS: ISSN
0885-3185
LA: Language
English
PY: Publication Year
2000
PT: Publication Type
Journal Article
CP: Country of Publication
UNITED STATES
DE: Descriptors
Adult; Brain Death: diagnosis; Brain Death: physiopathology; Case Report; Cerebellar Diseases: complications; Cerebral Hemorrhage: complications; Electroencephalography; Human; Male; Pons: physiopathology; Reflex, Abnormal: physiology
LR: Last Revision Date
20001218
UD: Update
20020109
RO: Record Owner
National Library of Medicine
SF: Subfile
Index Medicus
AN: Accession Number
10830429
Since 1991 transcranial doppler sonography has been accepted in Germany as a technical confirmatory test for the assessment of a cerebral circulatory arrest in patients fulfilling the clinical criteria of brain death. This study correlated transcranial doppler findings to established scintigraphic methods such as planar scintigraphy, 99mTc-HMPAO SPECT and EEG patterns. 21 patients (15 males/6 females, mean age 15-69 yrs.) fulfilled all clinical criteria of brain death. They suffered from head injuries and spontaneous bleedings. All clinical and technical investigations were performed within 60-90 minutes. In 14/21 patients clinical findings and all confirmatory tests were consistent with brain death. Planar scintigraphy and SPECT gave completely corresponding results in all 21 patients. 7 patients showed not corresponding results. In two head-injured patients with skull defects TCD yielded an oscillating flow in the MCA but SPECT/planar scintigraphy gave a residual perfusion in the related brain areas. A corresponding residual EEG pattern was seen in one case. A patient with osteoclastic skull defect showed a collateral flow from the external carotid artery and another case a secondary reperfusion in depth of a regular expected MCA signal 12 hours after definitely verification of systolic spikes in the Circle of Willis. No cerebral perfusion was detectable in the scintigraphique techniques. In the three remainder with rest activity in EEG, TCD and radionuclide methods showed no intracranial perfusion. In the presence of open skull fractures, external liquor drainages and osteoclastic craniotomies oscillating flow in TCD does not constantly represent a cerebral circulatory arrest. Awaiting of systolic spikes is absolutely necessary, if no radionuclide method is available. Determination of brain death by TCD should be carried out by an experienced investigator since unexpected collateral flow signals can be misinterpreted.
DE: Descriptors
Adolescence; Adult; Aged; Brain: radionuclide imaging; Brain Death: diagnosis; Brain Death: radionuclide imaging; Brain Death: ultrasonography; Comparative Study; Electroencephalography; English Abstract; Female; Human; Male; Middle Age; Radiopharmaceuticals: diagnostic use; Technetium Tc 99m Exametazime: diagnostic use; Tomography, Emission-Computed, Single-Photon; Ultrasonography, Doppler, Transcranial
RN: CAS Registry Number
0 (Radiopharmaceuticals); 100504-35-6 (Technetium Tc 99m Exametazime)
LR: Last Revision Date
20001218
UD: Update
20020109
RO: Record Owner
National Library of Medicine
SF: Subfile
Index Medicus
AN: Accession Number
10859795
The brain stem in brain death: a critical review.
AU: Author
Byrne PA; Nilges RG
AF: Author Affiliation
St. Charles Hospital, Oregon, OH.
SO: Source
Issues in law & medicine, 1993 Summer, 9(1):3-21
IS: ISSN
8756-8160
NT: Notes
77 fn.; KIE BoB Subject Heading: determination of death/brain
death; KIE BoB Subject Heading: organ and tissue donation [Kennedy
Institute of Ethics (Georgetown University)]
RP: Report Number
KIE 41763
LA: Language
English
PY: Publication Year
1993
PT: Publication Type
Journal Article; Review; Review Literature
CP: Country of Publication
UNITED STATES
DE: Descriptors
Apnea: diagnosis; Apnea: etiology; Brain Death: diagnosis; Brain
Death: legislation & jurisprudence; Brain Death: physiopathology;
Brain Stem: anatomy & histology; Brain Stem: physiopathology;
Electroencephalography; Human; Neurologic Examination; Organ
Procurement; Reflex; United States; Value of Life
ID: Identifiers
Kennedy Institute of Ethics (Georgetown University): Brain
Pathology; Death and Euthanasia; Determination Of Death;
Evaluation; Health Care and Public Health; Institutional Policies;
Organ Donation; Standards; Uncertainty; Uniform Determination of
Death Act; United States
LR: Last Revision Date
20011128
UD: Update
20020109
RO: Record Owner
National Library of Medicine
SF: Subfile
BIOETHICSLINE; Index Medicus; Nursing
AN: Accession Number
8354624
Head turning in brain death.

AU: Author
Christie JM; O'Lenic TD; Cane RD

AF: Author Affiliation
University of South Florida College of Medicine, Department of Anesthesiology, Tampa 33612-4788, USA.

SO: Source
Journal of clinical anesthesia, 1996 Mar, 8(2):141-3

IS: ISSN
0952-8180

AB: Abstract
Criteria for determination of brain death in adults have been defined. Spinal cord reflexes may persist after brain death. We present the case of a brain dead patient who had a complex spinal automatism resulting in head shaking and arm extension. The report reviews guidelines for the diagnosis of brain death and discusses complex spinal cord reflexes in brain dead patients.

LA: Language
English

PY: Publication Year
1996

PT: Publication Type
Journal Article

CP: Country of Publication
UNITED STATES

DE: Descriptors
Adult; Arm; Automatism: physiopathology; Brain Death: diagnosis; Case Report; Head; Human; Male; Movement: physiology; Reflex: physiology; Spinal Cord: physiology

LR: Last Revision Date
20001218

UD: Update
20020109

RO: Record Owner
National Library of Medicine

SF: Subfile
Index Medicus

AN: Accession Number
8695097

160
The concept of death has undergone many changes in the centuries depending on ages and social contexts. However death has always been identified by heart and respiratory irreversible arrest. In the last 30 years this concept has been suddenly and deeply modified by cardiocirculatory and respiratory support techniques.

The real boundary between life and death is cerebral activity. When this latter causes the subject can be considered dead. In the large majority of cases the clinical and this strumental neurological findings are sufficient for the diagnosis of brain death. However in many other cases this diagnosis may be difficult because of problems in the ascertainment of the complete and irreversible lack of cerebral activities. In these cases many an strumental techniques (evoked potentials, Doppler and nuclear medicine studies) can help in the diagnosis.


AU: Ciritella-P {a}; Valle-G; Perrone-E; Bonetti-M-G; Ciuffreda-N {a}; Valeri-F {a}
AD: {a} Ospedale Generale Regionale, "Casa Sollievo della Sofferenza", Istituto Ricovero e Cura a Carattere Scientifico, Italy
PY: 1993
DT: Article-
IS: 0374-4965
A sure diagnosis of death is essential not only in force of its bioethical, economical and medico-jurisprudential consequences, but also in view of organ explant. This paper illustrates the usefulness of the single photon emission computed tomography (SPECT) in the diagnosis of brain death. SPECT of cerebral flow is a safe, reliable and repeatable technique with many advantages over conventional diagnostic procedures and allows or excludes the final diagnosis of cerebral death. The latest is of growing interest because a recent Italian law (n. 198 of July 13th 1990) allows organ transplantation at cell medical centers with surgery division and intensive care unit. We report our experience in 4 cases in which SPECT was the only mean allowing a sure diagnostic and prognostic judgement.
The diagnosis of brain death.
AU: Author
Cranston RE
SO: Source
discussion 617-8
IS: ISSN
0028-4793
NT: Notes
Comment on: N Engl J Med. 2001 Apr 19;344(16):1215-21
[AN=11309637]
LA: Language
English
PY: Publication Year
2001
PT: Publication Type
Comment; Letter
CP: Country of Publication
United States
DE: Descriptors
Attitude to Death; Brain Death: diagnosis; Brain Death:
legislation & jurisprudence; Human; United States
LR: Last Revision Date
20011109
UD: Update
20020109
RO: Record Owner
National Library of Medicine
SF: Subfile
Abridged Index Medicus; Index Medicus
AN: Accession Number
11529221
Brain death.
AU: Author
Culebras A
SO: Source
Neurology, 2002 Aug 27, 59(4):26A
IS: ISSN
0028-3878
LA: Language
English
PY: Publication Year
2002
PT: Publication Type
News
CP: Country of Publication
United States
DE: Descriptors
Brain Death: diagnosis; Brain Death: legislation & jurisprudence;
Cuba; Human; Neurology: trends; Organ Procurement: standards;
Portraits
UD: Update
20020921
RO: Record Owner
National Library of Medicine
SF: Subfile
Abridged Index Medicus; Index Medicus
AN: Accession Number
12196636
The authors present considerations about death and brain death concepts, as well the legal aspects for its diagnosis in Brazil. They also present the UNICAMP Protocol for the Diagnosis of Brain Death, revised and according with the current law, with standard techniques for the diagnostic exam. They emphasize the importance of a mature ethical position for this frequent and challenging situation.
Doppler Ultrasonography Studies in Brain Death Diagnosis

AU: Authors
Despland, PA

AF: Author Affiliation
Dep. Neurol., CHUV-1011, Lausanne, Switzerland

CS: Conference Sponsor
World Federation for Ultrasound in Medicine and Biology

CF: Conference
Third Meeting of the World Federation for Ultrasound in Medicine and Biology, Brighton, UK, 26-30 Jul 82. (World Meeting Number 823 5005)

NT: Notes
Availability: Abstracts in: Ultrasound in Medicine and Biology, 1982, Pergamon Press Ltd., Headington Hill Hall, Oxford OX3 0BW, England, ISSN 0301-5629 Abstract No. 120

SF: Subfile Name
CPI, Conference Papers Index

CL: Classification Code
U 4500 EXPERIMENTAL MEDICINE; U 4000 ELECTRICAL ENGINEERING

AN: Accession Number
0255933

A1: Alert Info
20001231
TI: Can brain death testing be perfect?
AU: Doyle-D-John {a}
AD: {a} Department of Anesthesia, Toronto General Hospital, University of Toronto, Toronto, Ontario; E-Mail: djdoyle@home.com, Canada
URL: lww.anesthesiology.org; http://www.anesthesiology.org
PY: 2000
DT: Letter-
IS: 0003-3022
LA: English
MC: Nervous-System (Neural-Coordination)
ST: Hominidae:- Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia-
OR: human- (Hominidae-): patient-
TN: Animals-; Chordates-; Humans-; Mammals-; Primates-; Vertebrates-
PS: brain-: nervous-system; neuron-: nervous-system
MI: brain-death
AN: 200200076173
UD: 20020227
Radioisotope techniques for the diagnosis of brain death

OT: Original Title
Le tecniche radioisotopiche per la diagnosi di morte cerebrale.

AU: Author
Dri AV

AF: Author Affiliation
Servizio Medicina Nucleare, ULSS 8, Ospedale di Vicenza.

SO: Source
Minerva anesthesiologica, 1992 Oct, 58(10):919

IS: ISSN
0375-9393

LA: Language
Italian

PY: Publication Year
1992

PT: Publication Type
Journal Article

CP: Country of Publication
ITALY

DE: Descriptors
Brain Death: radionuclide imaging; Human

LR: Last Revision Date
20001218

UD: Update
20020109

RO: Record Owner
National Library of Medicine

SF: Subfile
Index Medicus

AN: Accession Number
1461491

233
TI: Apnea testing for the diagnosis of brain death.
AU: Chirico-A; Herrera-D; Soldano-L; Cordini-M-L; Nine-L-Font; Jacobo-H; Mirabelli-H
PY: 1998
DT: Article-
IS: 0032-745X
LA: Spanish; Non-English
LS: Spanish; English
AB: In this trial, a protocol brain stem death clinical diagnostic study is applied and the apnea test, as Pallis normatives was included in a group of 16 patients. In every case the diagnosis of encephalic death had being previously confirmed by the conventional method (clinical, electroencephalogram, and PEM). The clinical behavior, the acid-bass state and the respiratory changes were analyzed during the test. In 100% of cases the diagnostic of encephalic death was confirmed by the apnea test. The monitoring of the acid-base state showed an increasing hypercapnia with a progressive respiratory acidosis. The O2 provision let us maintain the O2 saturation always over the necessary minimum, tending to increase after the half of the test. We confirm that the brainstem death clinical diagnostic is a valid, economic, very trustable method, that needs just a few minutes, minimal instrumental, and less trained personal. So we agree with the British and Commonwealth Legislation that the diagnostic of encephalic death is enough to declare the brain stem death And enable us to make this diagnostic with simple clinical methods and avoid sophisticated instrumental technics.
AI: Y
MC: Neurology- (Human-Medicine, Medical-Sciences)
ST: Hominidae-: Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia-
OR: human- (Hominidae-): patient-
TN: Animals-; Chordates-; Humans-; Mammals-; Primates-; Vertebrates-
DS: brain-death: nervous-system-disease; respiratory-acidosis: metabolic-disease, respiratory-system-disease
RN: 7782-44-7: OXYGEN
MQ: apnea-test: diagnostic-method; diagnosis-: diagnostic-method
MI: hypercapnia-; oxygen-saturation
AN: 199800513578
UD: 19981015
TI: Implications of ischemic penumbra for the diagnosis of brain death.
AU: Coimbra-C-G {a}
AD: {a} Laboratorio de Neurologia Experimental, Universidade Federal de Sao Paulo, Rua Botucatu, 862, Ed. Leal Prado, 04023-900, Sao Paulo, SP, Brazil
PY: 1999
DT: Article-
IS: 0100-879X
LA: English
LS: English
AB: The data reviewed here suggest the possibility that a global reduction of blood supply to the whole brain or solely to the infratentorial structures down to the range of ischemic penumbra for several hours or a few days may lead to misdiagnosis of irreversible brain or brain stem damage in a subset of deeply comatose patients with cephalic areflexia. The following proposals are advanced: 1) the lack of any set of clinically detectable brain functions does not provide a safe diagnosis of brain or brain stem death; 2) apnea testing may induce irreversible brain damage and should be abandoned; 3) moderate hypothermia, antipyresis, prevention of arterial hypotension, and occasionally intra-arterial thrombolysis may contribute to good recovery of a possibly large subset of cases of brain injury currently regarded as irreversible; 4) confirmatory tests for brain death should not replace or delay the administration of potentially effective therapeutic measures; 5) in order to validate confirmatory tests, further research is needed to relate their results to specific levels of blood supply to the brain. The current criteria for the diagnosis of brain death should be revised.
AI: Y
MC: Neurology- (Human-Medicine, Medical-Sciences)
ST: Hominidae-: Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia-
OR: human- (Hominidae-): patient-
TN: Animals-; Chordates-; Humans-; Mammals-; Primates-; Vertebrates-
DS: brain-death: diagnosis-, nervous-system-disease
MI: ischemic-penumbra: brain-death-diagnostic-implications
ALT: Brain-Death-(MeSH)
AN: 200000077542
UD: 20000322
[Value of the transcranial Doppler examination in the diagnosis of brain death]
OT: Original Title
Valor del examen Doppler transcraneal en el diagnostico de la muerte cerebral.
AU: Author
Davalos A; Rodriguez-Rago A; Mate G; Molins A; Genis D; Gonzalez JL; Bonet A
AF: Author Affiliation
Unidad de Neurologia, Hospital Doctor Josep Trueta, Girona.
SO: Source
Medicina clinica, 1993 Feb 20, 100(7):249-52
IS: ISSN
0025-7753
AB: Abstract
BACKGROUND: Transcranial Doppler examination (TCD) is a non invasive method capable of detecting the interruption of cerebral flow in patients with criteria of brain death. Its recognition as an alternative to isoelectric EEG for the diagnosis of brain death requires previous validation. METHODS: Twenty-six patients in profound coma were examined by TCD. Of 23 patients with technically adequate study 13 manifested clinical criteria and EEG of brain death. Of these patients 9 had received barbiturate treatment and 4 had not. RESULTS: Changes in the flow waves of the TCD were observed in the form of diastolic reflux or systolic points of slight amplitud without diastolic flow in at least 2 arteries in 12 of 13 patients with criteria of brain death (sensitivity = 92%) and in none of the 10 patients without criteria of brain death (specificity = 100%). The use of barbiturates did not modify the normal anterograde flow detected by TCD in the absence of criteria of brain death. CONCLUSIONS: Transcranial Doppler is a good method for confirming the clinical diagnosis of brain death, fundamentally in patients undergoing treatment with drugs depressing the central nervous system.
LA: Language
Spanish
PY: Publication Year
1993
PT: Publication Type
Journal Article
CP: Country of Publication
SPAIN
DE: Descriptors
Adolescence; Adult; Brain Death: diagnosis; Brain Death: ultrasonography; Echoencephalography: methods; Electroencephalography; English Abstract; Female; Human; Male; Middle Age
LR: Last Revision Date
216
20001218
UD: Update
20020109
RO: Record Owner
National Library of Medicine
SF: Subfile
Index Medicus
AN: Accession Number
8433585
Diagnosis of brain death: superiority of perfusion studies with 99Tcm-HMPAO over conventional radionuclide cerebral angiography.

AU: Author
de la Riva A; Gonzalez FM; Llamas-Elvira JM; Latre JM; Jimenez-Heffernan A; Vidal E; Martinez M; Torres M; Guerrero R; Alvarez F

AF: Author Affiliation
Department of Nuclear Medicine, Reina Sofia Hospital, Cordoba, Spain.

SO: Source

IS: ISSN
0007-1285

AB: Abstract
The use of technetium-99m hexamethyl-propyleneamine oxime (99Tcm-HMPAO) in the diagnosis of brain death has been evaluated in 41 studies of 37 patients with severe brain injury, who were under the effect of drugs or when other diagnostic methods were equivocal. HMPAO studies were compared with conventional radionuclide angiography performed simultaneously by intravenous administration of HMPAO as a bolus. The ages of patients ranged from 4 months to 75 years. Dynamic flow images and 5-min static uptake images were acquired following bolus injection of 555 Mbq of 99Tcm-HMPAO. All patients showing no brain uptake were confirmed as brain-dead by standard clinical criteria, with no contradictory cases in the static study. In addition, all patients who were not brain-dead showed HMPAO uptake at least in the brainstem. Dynamic flow images were equivocal in five patients, four of whom had no uptake on static images and clinically confirmed brain death. In addition, two other cases showed "mismatched" dynamic and static images: in one case no perfusion was observed on flow images but uptake restricted to the posterior fossa was seen on static images; the other case showed perfusion on the dynamic study and static imaging revealed hemispheric uptake with no posterior fossa uptake. Static perfusion 99Tcm-HMPAO studies offer advantages over conventional brain scintigraphy, better results being due to adequate assessment of posterior fossa activity and avoiding equivocal studies.

LA: Language
English

PY: Publication Year
1992

PT: Publication Type
Journal Article

CP: Country of Publication
ENGLAND

DE: Descriptors
Adolescence; Adult; Brain: radionuclide imaging; Brain Death: radionuclide imaging; Brain Stem: radionuclide imaging; Cerebellum: radionuclide imaging; Cerebral Angiography; Child, Preschool; Comparative Study; Female; Human; Infant; Male; Middle Age; Organotechnetium Compounds: diagnostic use; Oximes: diagnostic use; Technetium Tc 99m Exametazime

RN: CAS Registry Number
0 (Organotechnetium Compounds); 0 (Oximes); 100504-35-6 (Technetium Tc 99m Exametazime)
Diagnostic aspects of brain death.
AU: Author
Della Corte F; Sandroni C; Manni C
AF: Author Affiliation
Department of Anesthesiology and Intensive Care, Catholic University School of Medicine, Rome, Italy.
SO: Source
Minerva anestesiologica, 1994 Oct, 60(10):579-82
IS: ISSN
0375-9393
LA: Language
English
PY: Publication Year
1994
PT: Publication Type
Journal Article
CP: Country of Publication
ITALY
DE: Descriptors
Brain Death: diagnosis; Human
LR: Last Revision Date
20001218
UD: Update
20020109
RO: Record Owner
National Library of Medicine
SF: Subfile
Index Medicus
AN: Accession Number
7830924
Sign of Lazarus after brain death

Signe de Lazare après mort encephalique.

Dequin PF; Hazouard E; Huguet M; Delplace C; Tayoro J; Ginies G


S: ISSN 0755-4982

L: Language French

P: Publication Year 1998

T: Publication Type Letter

C: Country of Publication FRANCE

D: Descriptors Adult; Arm; Brain Death: legislation & jurisprudence; Brain Death: physiopathology; Case Report; Cerebral Hemorrhage: mortality; Cerebral Hemorrhage: physiopathology; Electroencephalography; Fatal Outcome; Female; Human; Leg; Movement

R: Last Revision Date 20001218

U: Update 20020109

N: Record Owner National Library of Medicine

S: Subfile Index Medicus

A: Accession Number 9767810
The necessity of defining brain death (BD) arose from technological development in medical science. The definition of this concept had practical consequences and opened the way to organ donation from BD patients. Nowadays, the imbalance between the number of organs available for transplantation and the size of the demand is becoming critical. In most laboratories, a BD diagnosis is made according to precise criteria and in a well-defined process. BD diagnosis should be improved, not only to assure the safety and to preserve the human dignity of the patient, but also in order to increase the rate of organ donation. By analysing some epidemiological parameters in BD diagnosis and organ donation, it appears that BD diagnoses can be made more often and more rapidly if one has a reliable, accurate, and safe confirmatory test, especially under misleading conditions (hypothermia, drugs, metabolic disturbances). In our experience, the use of multimodality evoked potentials (MEPs)! to confirm aBD diagnosis has many advantages: MEPs can be rapidly performed at the patient's bedside, assess the brain stem as well as the cerebral cortex, and are innocuous for the patient. Moreover, their insensitivity to the aforementioned misleading factors is sufficient to distinguish BD from clinical and EEG states that mimic BD. They give an immediate diagnosis, and no delay is required in BD confirmation if there is sufficient cause to account for BD. MEPs are a safe, accurate, and reliable tool for confirming a BD diagnosis, and their use can improve the organ donation rate while preserving the safety of the patient.
Clinical confirmation of brain death.
AU: Author
Dobb GJ; Weekes JW
AF: Author Affiliation
Intensive Care Unit, Royal Perth Hospital, Western Australia.
SO: Source
Anaesthesia and intensive care, 1995 Feb, 23(1):37-43
IS: ISSN
0310-057X
LA: Language
English
PY: Publication Year
1995
PT: Publication Type
Journal Article; Review; Review, Tutorial
CP: Country of Publication
AUSTRALIA
DE: Descriptors
Adult; Apnea: diagnosis; Brain Death: diagnosis; Coma: etiology;
Human; Reflex
FE: Features
32 references
LR: Last Revision Date
20001218
UD: Update
20020109
RO: Record Owner
National Library of Medicine
SF: Subfile
Index Medicus; Nursing
AN: Accession Number
7778746
Is intracranial hypertension useful in the diagnosis of brain death?

AU: Author
Dominguez-Roldan JM; Murillo-Cabezas F; Munoz-Sanchez A; Barrera-Chacon JM; Gonzalez-Menendez E

AF: Author Affiliation
Hospital Universitario Virgen del Rocio, Sevilla, Spain.

SO: Source

IS: ISSN
0041-1345

LA: Language
English

PY: Publication Year
1992

PT: Publication Type
Journal Article

CP: Country of Publication
UNITED STATES

DE: Descriptors
Brain Death: diagnosis; Craniocerebral Trauma: mortality;
Craniocerebral Trauma: physiopathology; Critical Care; Human;
Intracranial Pressure; Organ Procurement

LR: Last Revision Date
20001218

UD: Update
20020109

RO: Record Owner
National Library of Medicine

SF: Subfile
Index Medicus

AN: Accession Number
1539290

247
Visual-evoked potentials in the diagnosis of brain death in cases of infratentorial lesions

AU: Authors
Druschky, K-F; Hilz, M-J; Neundoerfer, B; Brinkmann, H-G; Pfurtscheller, G; Litscher, G
CS: Conference Sponsor
American Academy of Neurology
CF: Conference
American Academy of Neurology 40th Annual Meeting, Cincinnati, OH (USA), 17-23 Apr 1988. (World Meeting Number 882 0226)
NT: Notes
SF: Subfile Name
CPI, Conference Papers Index
CL: Classification Code
U 4500 EXPERIMENTAL MEDICINE
AN: Accession Number
1795908
A1: Alert Info
20001231
TI: Brain death and transcranial Doppler: Experience in 130 cases of brain dead patients.
AU: Ducrocq-Xavier {a}; Braun-Marc; Debouverie-Marc; Junges-Christel; Hummer-Mireille; Vespignani-Herve
AD: {a} Serv. Neurologie, Hopital Saint Julien, 1 Rue Foller, C.O. 34, 54035 Nancy Cedex, France
PY: 1998
DT: Article-
IS: 0022-510X
LA: English
AB: Background and purpose: Diagnosis of brain death requires confirmation of the clinical diagnosis by appropriate tests, generally electroencephalography (EEG) and angiography. The diagnostic limitations or logistical problems inherent to these tests indicate the need to develop other more appropriate methods. The results obtained with transcranial Doppler (TCD) led us to conduct this prospective study of TCD recordings in brain dead patients. Methods: 130 patients, aged 2-88 years were diagnosed as brain dead between July 1987 and June 1993. Clinical criteria were confirmed in all cases by EEG (n = 88) and or angiography (n = 64). Intracranial anterior circulation was insonated via temporal windows or, when impossible, via a transorbital approach. The posterior circulation was studied only in more recent patients. Examinations were made as soon as possible after brain death diagnosis and repeated for about 30 min. Vital parameters and treatments were taken into account. Results: There was only one false negative result, in a patient with an extended skull defect, who retained TCD and angiographic intracranial circulation despite confirmed irreversible brain death. All other patients displayed typical ultrasonic patterns of cerebral circulation arrest: an oscillating signal (n = 190, 73%), a systolic spike (n = 62, 24%) or a unilateral absence of signal (n = 5). Despite a total correlation for positive diagnosis, TCD and angiography may differ as to the level of circulation arrest. TCD is useful for patients under sedative drugs. No false positive result was encountered but we were unable to insonate any intracranial artery in 5 patients. Conclusion: Data from previous studies and the results of this study indicate that TCD is a very sensitive and safe method for diagnosing cerebral circulatory arrest. TCD may be used as a confirmatory test alongside EEG and angiography. TCD is more widely applicable than EEG and may be earlier and safer than angiography.
AI: Y
MC: Methods-and-Techniques; Neurology- (Human-Medicine, Medical-Sciences)
ST: Hominidae-: Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia-
OR: human- (Hominidae-): patient-
TN: Animals-; Chordates-; Humans-; Mammals-; Primates-; Vertebrates-
MQ: angiography-: analytical-method; electroencephalography- [EEG-]: analytical-method; transcranial-Doppler: analytical-method
MI: brain-death; cerebral-circulatory-arrest
AN: 199800513767
UD: 19981021
Purpose: The purpose of this study was to determine the utility of spiral CT in the diagnosis of brain death. METHODS: Spiral CT was evaluated prospectively in 14 brain-dead patients and in 11 healthy subjects. A two-phase protocol was used. Twenty seconds after intravenous injection of a nonionic iodinated contrast medium, the CT table was drawn through the gantry at a rate of 10 mm/s while scanning was in progress. The second scanning phase was started automatically a mean of 54 seconds later, using the same parameters. Opacification or absence of opacification of carotid, vertebral, and basilar arteries and intracerebral veins was ascertained for each image in both phases. The diagnosis of brain death was confirmed by electroencephalography (n = 7), angiography (n = 5), or both (n = 2). Statistical analysis with the Fisher exact test enabled us to compare the brain-dead patients with the healthy control subjects. RESULTS: In brain death, the pericallosal and terminal arteries of the cortex did not opacify during the two phases of spiral CT, whereas the superficial temporal arteries were always visible. The internal cerebral veins, the great cerebral vein, and the straight sinus did not opacify, whereas the superior ophthalmic veins were visible on both sides 13 times. For each vessel type, specificity was 100% for nonvascular opacification criteria on the right and left sides. CONCLUSION: Two-phase spiral CT can demonstrate the absence of intracerebral blood flow in brain death.
Standards of practice for testing apnea when determining brain death

AU: Authors
Earnest, MP; McIntyre, HB; Beresford, R

CS: Conference Sponsor
American Academy of Neurology

CF: Conference
American Academy of Neurology 37th Annual Meeting, Dallas, TX (USA), 28 Apr-4 May 1985. (World Meeting Number 852 0126)

NT: Notes
Availability: Meeting abstracts will be published in Neurology -- the American Academy of Neurology journal, Poster Paper

SF: Subfile Name
CPI, Conference Papers Index

CL: Classification Code
U 2000 BIOLOGY GENERAL

AN: Accession Number
0990365

A1: Alert Info
20001231
Diagnose des Hirntodes.

Deutsche medizinische Wochenschrift, 1992 Feb 21, 117(8):319; discussion 320

Brain Death: diagnosis; Human
TI: BRAIN DEATH DETERMINATION WITH BRAIN STEM EVOKED POTENTIALS AND RADIONUCLIDE ISOTOPE STUDIES.
AU: ERBENGİ-A; ERBENGİ-G; CATALTEPE-O; TOPCU-M; ERBAS-B; ARAS-T
AD: HACETTEPE UNIV MED SCH, DEP NEUROSURGERY, ANKARA, TURKEY
PY: 1991
DT: Article-
IS: 0001-6268
LA: ENGLISH
AB: Thirty-three patients fulfilling the clinical criteria for brain death were tested by Brainstem Auditory Evoked Potentials (BAEP) and Radionuclide Cerebral Angiography and Brain Perfusion Studies. There was a significant correlation between the BAEP and radionuclide study outcomes. All patients with absence of BAEP showed no cerebral perfusion. These findings, added to the clinical findings, resulted in a final diagnosis of brain death in all patients. It is concluded that BAEP and Radionuclide Cerebral Perfusion studies are useful adjuncts for proving that brain death has really occurred.
AI: Y
ST: Hominidae-; Primates-; Mammalia-; Vertebrata-; Chordata-; Animalia-
TN: Animals-; Chordates-; Humans-; Mammals-; Primates-; Vertebrates-
MI: HUMAN CLINICAL DEATH CEREBRAL PERFUSION EARLY RECOGNITION DIAGNOSTIC METHOD
MJCC: CC20506 (Nervous-System-Pathology)
CC11106 (Anatomy-and-Histology-General
-and-Comparative-Radiologic-Anatomy)
CC12504 (Pathology-General-and
-Miscellaneous-Diagnostic)
CC12510 (Pathology-General-and-Miscellaneous
-Necrosis)
CC20504 (Nervous-System-Physiology-and-Biochemistry)
MNCC: CC15002 (Blood-Blood-Forming-Organs-and-Body-Fluids-Blood-and-Lymph-
Studies)
BC: BC86215 Hominidae
AN: 199293079611
UD: 1992
Clinical and legal progress in the diagnosis of brain death during the transplantation decade in Spain

OT: Original Title
Avances clinicos y legales en el diagnostico de muerte encefalica durante la decada de los trasplantes en Espana.

AU: Author
Escudero D; Otero J

AF: Affiliation
Servicio de Medicina Intensiva, Hospital Central de Asturias, Oviedo. descudero@hcas.insalud.es

SO: Source
Nefrologia: publicacion oficial de la Sociedad Espanola Nefrologia, 2001, 21 Suppl 4:30-40

IS: ISSN
0211-6995

LA: Language
Spanish

PY: Publication Year
2001

PT: Publication Type
Journal Article; Review; Review, Tutorial

CP: Country of Publication
Spain

DE: Descriptors
Brain Death: diagnosis; Brain Death: legislation & jurisprudence;
Human; Organ Procurement: legislation & jurisprudence; Organ Transplantation; Spain

FE: Features
68 references

UD: Update
20020611

RO: Record Owner
National Library of Medicine

SF: Subfile
Index Medicus

AN: Accession Number
11642179
Scintigraphic Diagnosis of Brain Death in Hypothermic Barbiturate Coma

AU: Authors
Espinola, D; Beyda, D; Camargo, EE; Rhine, J; Wagner, HN

AF: Author Affiliation
Johns Hopkins Med. Inst., Baltimore, MD

CS: Conference Sponsor
Society of Nuclear Medicine (SNM)

CF: Conference
29th Annual Meeting of the Society of Nuclear Medicine, Miami Beach, FL, 15-18 Jun 82. (World Meeting Number 822 0254)

NT: Notes
Availability: Abstracts in: "The Journal of Nuclear Medicine", May 1982, Society of Nuclear Medicine, 475 Park Avenue South, New York, NY 10016, Abstracts also available in booklet form

SF: Subfile Name
CPI, Conference Papers Index

CL: Classification Code
U 4500 EXPERIMENTAL MEDICINE

AN: Accession Number
0244011

A1: Alert Info
TI: Waking the dead.
AU: Evans-David-W {a}; Loibner-Johann
AD: {a} 27 Gough Way, Cambridge, CB3 9LN; E-Mail: DWEvansMD@tinyworld.co.uk, UK
PY: 2002
DT: Letter-
IS: 0099-5355
LA: English
MC: Neurology- (Human-Medicine, Medical-Sciences); Physiology-
ST: Hominidae-: Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia-
OR: human- (Hominidae-): patient-
TN: Animals-; Chordates-; Humans-; Mammals-; Primates-; Vertebrates-
MQ: electroencephalography-: detection-method
MI: brain-death; brain-death-related-protracted-electrocerebral-silence
AN: 200200200526
UD: 20020627
[Evoked potentials in the diagnosis of brain death]
OT: Original Title
I potenziali evocati nella diagnosi di morte cerebrale.
AU: Author
Facco E; Munari M; Baratto F; Dona B; Ori C; Giron GP
AF: Author Affiliation
Istituto di Anestesiologia e Rianimazione, Universita degli Studi
di Padova.
SO: Source
Minerva anestesiologica, 1993 Oct, 59(10 Suppl 3):71-4
IS: ISSN
0375-9393
LA: Language
Italian
PY: Publication Year
1993
PT: Publication Type
Journal Article
CP: Country of Publication
ITALY
DE: Descriptors
Brain Death: diagnosis; Brain Death: physiopathology;
Electroencephalography; Evoked Potentials: physiology; Human
LR: Last Revision Date
20001218
UD: Update
20020109
RO: Record Owner
National Library of Medicine
SF: Subfile
Index Medicus
AN: Accession Number
8290113
Multimodality evoked potentials in coma and brain death.
AU: Author
Facco E; Giron GP
AF: Author Affiliation
Department of Anesthesiology and Intensive Care, University of Padua, Italy.
SO: Source
Minerva anestesiologica, 1994 Oct, 60(10):593-9
IS: ISSN
0375-9393
LA: Language
English
PY: Publication Year
1994
PT: Publication Type
Journal Article; Review; Review, Tutorial
CP: Country of Publication
ITALY
DE: Descriptors
Brain Death: physiopathology; Brain Injuries: physiopathology;
Coma: physiopathology; Evoked Potentials; Human
FE: Features
68 references
LR: Last Revision Date
20001218
UD: Update
20020109
RO: Record Owner
National Library of Medicine
SF: Subfile
Index Medicus
AN: Accession Number
7830927
Transcranial Doppler and brain death diagnosis.

AU: Author
Feri M; Ralli L; Felici M; Vanni D; Capria V
AF: Author Affiliation
Department of Internal Medicine, Ospedale Civile of Arezzo, Italy.
SO: Source
Critical care medicine, 1994 Jul, 22(7):1120-6
IS: ISSN
0090-3493
AB: Abstract
OBJECTIVES: a) To examine the clinical utility of transcranial Doppler and continuous-wave Doppler in monitoring nonsurgical patients with severe intracranial disease until intracranial circulatory arrest and brain death; and b) to investigate if hemodynamic phenomena that occur under such conditions are correlated to specific transcranial Doppler and continuous-wave Doppler waveforms. DESIGN: Prospective, observational study. SETTING: Medical intensive care unit (ICU) in a city hospital. PATIENTS: Thirty-seven consecutive patients with Glasgow Coma Scores of < 7. MEASUREMENTS AND MAIN RESULTS: Transcranial Doppler examination was conducted transtemporally on the left- and right-middle cerebral artery four times daily. In all patients, transcranial Doppler waveforms exhibited high resistance profiles with low, zero, and then reversed diastolic flow velocity. Only three waveform patterns, consisting of diastolic reverse flow without diastolic forward flow, brief systolic forward flow, and undetectable flow in the middle cerebral artery were registered in the 22 brain-dead patients, but in none of the other comatose patients. CONCLUSION: Transcranial Doppler offers a noninvasive method to document deterioration of cerebral perfusion pressure and in the future could be included in protocols for brain death diagnosis.

LA: Language
English
PY: Publication Year
1994
PT: Publication Type
Journal Article
CP: Country of Publication
UNITED STATES
DE: Descriptors
Adolescence; Adult; Aged; Aged, 80 and over; Brain Death: physiopathology; Brain Death: ultrasonography; Child; Child, Preschool; Evaluation Studies; Glasgow Coma Scale; Human; Intracranial Pressure; Italy: epidemiology; Middle Age; Prospective Studies; Severity of Illness Index; Ultrasonography, Doppler, Transcranial: statistics & numerical data
LR: Last Revision Date
20001218
UD: Update
20020109
RO: Record Owner
National Library of Medicine
SF: Subfile
Abridged Index Medicus; Index Medicus
AN: Accession Number
TI: Transcranial Doppler and brain death diagnosis.
AU: Feri-Marco {a}; Ralli-Luciano; Felici-Mario; Vanni-Dino; Capria-Vincenzo
AD: {a} Via Sicilia 27, 52100 Arezzo, Italy
PY: 1994
DT: Article-
IS: 0090-3493
LA: English
AB: Objectives: a) To examine the clinical utility of transcranial Doppler and continuous-wave Doppler in monitoring nonsurgical patients with severe intracranial disease until intracranial circulatory arrest and brain death; and b) to investigate if hemodynamic phenomena that occur under such conditions are correlated to specific transcranial Doppler and continuous-wave Doppler waveforms. Design: Prospective, observational study. Setting. Medical intensive care unit (ICU) in a city hospital. Patients: Thirty-seven consecutive patients with Glasgow Coma Scores of lt 7. Measurements and Main Results: Transcranial Doppler examination was conducted transtemporally on the left- and right-middle cerebral artery four times daily. In all patients, transcranial Doppler waveforms exhibited high resistance profiles with low, zero, and then reversed diastolic flow velocity. Only three waveform patterns, consisting of diastolic reverse flow without diastolic forward flow, brief systolic forward flow, and undetectable flow in the middle cerebral artery were registered in the 22 brain-dead patients, but in none of the other comatose patients. Conclusion: Transcranial Doppler offers a noninvasive method to document deterioration of cerebral perfusion pressure and in the future could be included in protocols for brain death diagnosis.
AI: Y
MC: Methods-and-Techniques; Nervous-System (Neural-Coordination); Neurology-(Human-Medicine, Medical-Sciences); Pathology-
ST: Hominidae--: Primates--, Mammalia--, Vertebrata--, Chordata--, Animalia--
OR: human-- (Hominidae-)
TN: animals--; chordates--; humans--; mammals--; primates--; vertebrates--
MI: DIAGNOSTIC-METHOD
AN: 199497407478

Diagnostics/Clinical Abstracts  Page 63
Role of radionuclide imaging in brain death determination at a major trauma center

AU: Authors
Fisher, MF; Rudd, TG

CS: Conference Sponsor
Radiological Society of North America (RSNA); American Association of Physicians in Medicine

CF: Conference
Radiological Society of North America, 70th Annual Scientific Assembly, Washington, DC (USA), 25-30 Nov 84. (World Meeting Number 844 0246)

NT: Notes
Abstract No. 153

SF: Subfile Name
CPI, Conference Papers Index

CL: Classification Code
U 4500 EXPERIMENTAL MEDICINE; U 3500 CLINICAL MEDICINE

AN: Accession Number
0807409

A1: Alert Info
20001231
Persistence of cerebral blood flow after brain death.

Flowers-W-Mel-Jr {a}; Patel-Bharti-R

Department of Radiology, University of Mississippi Medical Center, 2500 N State
St, Jackson, MS, 39216, USA


Literature-Review

0038-4348

English

Persistent cerebral blood flow occasionally confounds confirmatory tests for brain death
and results in the anguish of delayed diagnosis, unnecessary use of expensive resources, and
loss of transplant opportunities. We reviewed the literature to examine the reasons,
frequency, and meaning of this problem. We found that this phenomenon occurs: (1) before
increasing intracranial pressure completely shuts down flow; (2) in infants with pliable
skulls; and with (3) decompressing fractures, (4) ventricular shunts, (5) ineffective deep brain
flow, (6) reperfusion, (7) brain herniation, (8) jugular reflux, (9) emissary veins, and (10)
pressure injection artifacts. Isolated venous sinus visualization is common (occurring in up to
57%) but represents trivial blood flow and confirms brain death. Arterial flow is much less
common (2.6% incidence in our series). Normal flow occurs but is rare. Arterial flow does
not exclude brain death, but the diagnosis should be confirmed by repeat
ed studies or other means.

Cardiovascular-Medicine (Human-Medicine, Medical-Sciences); Neurology- (Human-
Medicine, Medical-Sciences)

Hominidae-: Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia-
human- (Hominidae-): patient-
Animals-; Chordates-; Humans-; Mammals-; Primates-; Vertebrates-
brain-: nervous-system, reperfusion-; emissary-vein: circulatory-system; skull-: pliable-
skeletal-system
brain-herniation: nervous-system-disease; decompressing-fracture: injury-; jugularreflux:
vascular-disease
ventricular-shunt: surgical-device
brain-death: delayed-diagnosis; cerebral-blood-flow: deep-, persistence-; intracranialpressure;
pressure-injection-artifact
AN: 200000180338
UD: 20000613
Heart rate variability as an assessment of brain death.


Centre de Estudos da Funcao Autonomica, Hospital de Sao Joao, 4200, Porto, Portugal


Article-

0041-1345

English

Neurology- (Human-Medicine, Medical-Sciences)
Hominidae-: Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia-

human- (Hominidae-): patient-

Animals-; Chordates-; Humans-; Mammals-; Primates-; Vertebrates-


heart-rate-variability: diagnostic-tool, sensitivity-, specificity-

Brain-Death-(MeSH)

200100369763

20011206
We report two cases in which neurological examination met the Second Tentative Criteria for Brain Death of Chiba University Medical School, except for spontaneous contractions of the rectus abdominis muscle during apnea testing. In Case 1, a 54-year-old man with brainstem infarction, judgement of brain death was suspended initially, but was ultimately declared after the contractions were deemed to be spinal in origin. MRI findings after declaration and autopsy were compatible with brain death. In Case 2, a 27-year-old man with fulminant hepatitis and subsequent severe brain edema, judgement was postponed due to detection of the contractions at the second testing, and was ceased with family intent. Several cases of abnormal gross and fine movements in brain-dead patients have been reported. These paradoxical phenomena may confuse an inexperienced examiner and delay the declaration of brain death. Whether brain death should be considered real death of the person or not, neurologists should be aware of the occasional presence of neurological problems in the diagnosis of brain death, such as spinally-mediated movements. Since the major opposition to brain death is the distrust of medical doctors, we propose a pilot system of a "brain death judging doctor".
**TI:** Transcranial Doppler characteristics in persistent vegetative status, locked-in syndrome and brain death.

**AU:** Gao-Shan; Huang-Yining; Hong-Xi; Zhu-Yicheng; Wang-Bo; Li-Shunwei

**AD:** {a} Department of Neurology, Peking Union Medical College Hospital, CAMS and PUMC, Beijing, 100730, China


**PY:** 1999

**DT:** Article-

**IS:** 1001-9294

**LA:** English

**LS:** English

**AB:** Aim: Comparison of the transcranial Doppler (TCD) characteristics of cerebral circulation in persistent vegetative status (PVS), locked-in syndrome and brain death patients. Methods: Using TCD ultrasound to detect the flow velocity and waveform patterns of middle cerebral artery (MCA) and basilar artery (BA) in patients with PVS, locked-in syndrome and brain death. Results: The mean velocities of middle cerebral artery (Vmca) and basilar artery (Vba) were 30.0 cm/s and 24.3 cm/s in PVS patients respectively, which decreased 45.0% and 14.4% in comparing with normal value. For patients with locked-in syndrome, Vmca and Vba were 49.7 cm/s and 9.8 cm/s, which decreased 5.0% and 61.7% than the normal value respectively. These results showed that the decrease of anterior circulation was predominant in PVS, and the decrease of posterior circulation was predominant in locked-in syndrome. A unique diastolic reverse flow, short peak systolic wave or undetectable flow signal in middle cerebral artery were predominant in brain death patients, which was completely different from that of either PVS or locked-in syndrome. Conclusion: TCD was a valuable tool in distinguishing PVS, locked-in syndrome and brain death patients according to the differences in velocities and patterns of anterior and posterior cerebral arteries.

**AI:** Y

**MC:** Nervous-System (Neural-Coordination); Cardiovascular-System (Transport-and-Circulation)

**ST:** Hominidae-: Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia-

**OR:** human- (Hominidae-): patient-

**TN:** Animals-; Chordates-; Humans-; Mammals-; Primates-; Vertebrates-

**PS:** basilar-artery: circulatory-system; middle-cerebral-artery: circulatory-system, nervous-system

**DS:** brain-death: nervous-system-disease; locked-in-syndrome: nervous-system-disease; persistent-vegetative-status: nervous-system-disease

**MQ:** transcranial-Doppler-ultrasonography: analytical-method

**MI:** blood-flow-velocity

**ALT:** Brain-Death-(MeSH)

**AN:** 200000200436

**UD:** 20000629
[Brain death and death]
OT: Original Title
La muerte cerebral y la muerte.
AU: Author
Gherardi CR
SO: Source
Medicina, 1997, 57(1):114-8
IS: ISSN
0025-7680
LA: Language
Spanish
PY: Publication Year
1997
PT: Publication Type
Editorial
CP: Country of Publication
ARGENTINA
DE: Descriptors
Brain Death: diagnosis; Diagnosis, Differential; Human
LR: Last Revision Date
20001218
UD: Update
20020109
RO: Record Owner
National Library of Medicine
SF: Subfile
Index Medicus
AN: Accession Number
9435381
TI: Complications during apnea testing in the determination of brain death: Predisposing factors.
AU: Goudreau-John-L; Wijdicks-Eelco-F-M {a}; Emery-Steve-F
AD: {a} Mayo Clinic, W8B, 200 First Street SW, Rochester, MN, 55905, USA
PY: 2000
DT: Article-
IS: 0028-3878
LA: English
LS: English
AB: Apnea testing in brain death determination may result in cardiovascular complications. Hypotension occurred in 24% and cardiac arrhythmias occurred in <1% of the 145 apneic oxygenation procedures. Complications were noted in only 15% of apnea tests performed without any predisposing factors. Significantly more complications (39%) were observed in apnea tests with inadequate precautions, particularly in apnea tests without adequate preoxygenation (50%).
AI: Y
MC: Neurology- (Human-Medicine, Medical-Sciences)
ST: Hominidae-: Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia-
OR: human- (Hominidae-): patient-
TN: Animals-; Chordates-; Humans-; Mammals-; Primates-; Vertebrates-
DS: brain-death: apnea-testing, cardiovascular-complications, nervous-system-disease; cardiac-arrhythmia: heart-disease, predisposing-factors; hypotension-: predisposing-factors, vascular-disease
ALT: Brain-Death-(MeSH); Arrhythmia-(MeSH); Hypotension-(MeSH)
AN: 200000354658
UD: 20001128
Evoked potentials: a safe brain-death confirmatory tool?
AU: Author
Guerit JM
AF: Author Affiliation
University of Louvain Medical School, Cliniques Universitaires
Saint Luc, Unite d'Explorations Electrophysiologiques du Systeme
Nerveux, Brussels, Belgium.
SO: Source
IS: ISSN
1165-0478
AB: Abstract
The diagnosis of brain death (BD) relies primarily on
prerequisites (clear knowledge of the cause of coma, all remedial
procedures proven unsuccessful) and clinical arguments (areactive
coma, loss of brainstem reflexes, apnea). Confirmatory tests
should be applied whenever any misleading factor (CNS depressant
drugs, hypothermia, metabolic disturbances) can interfere with the
clinical diagnosis. This paper reviews the different available
confirmatory methods (EEG, four-vessel angiography, radioisotopic
techniques, intracranial Doppler, evoked potentials). Both the
author's own experience and the data from the literature indicate
that evoked potentials are actually a safe and rapid BD
confirmatory tool that can be performed at the patient's bedside.
It is suggested that they be used in association with the clinical
examination for all BD-suspected patients, except for children
younger than 6 months of age in whom the guidelines of the Task
Force for Brain Death in children (1987) are still recommended.
LA: Language
English
PY: Publication Year
1992
PT: Publication Type
Journal Article; Review; Review, Tutorial
CP: Country of Publication
FRANCE
DE: Descriptors
Adult; Brain Death: diagnosis; Brain Death: physiopathology;
Child; Electroencephalography; Evoked Potentials: physiology;
Evoked Potentials, Auditory, Brain Stem: physiology; Evoked
Potentials, Visual: physiology; Human; Infant
FE: Features
95 references
LR: Last Revision Date
20001218
UD: Update
20020109
RO: Record Owner
National Library of Medicine
SF: Subfile
Index Medicus
AN: Accession Number
1341451
TI: Medical technology assessment: EEG and evoked potentials in the intensive care unit.
AU: Guerit-J-M {a}
AD: {a} Clinical Neurophysiology Unit, University Catholique de Louvain, B-1200, Brussels, Belgium
PY: 1999
DT: Literature-Review
IS: 0987-7053
LA: English
LS: English; French
MC: Methods-and-Techniques; Nervous-System (Neural-Coordination)
ST: Hominidae-: Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia-
OR: human- (Hominidae-)
TN: Animals-; Chordates-; Humans-; Mammals-; Primates-; Vertebrates-
PS: brain-stem: nervous-system; cerebral-cortex: nervous-system; spinal-cord: nervoussystem
DS: brain-anoxia: nervous-system-disease; brain-death: nervous-system-disease; coma-:
nervous-system-disease; head-trauma: injury-; sensory-pathology: nervous-system-disease
MQ: electroencephalography-: assessment-method, diagnostic-method; evoked-potentialneuromonitoring:
assessment-method, diagnostic-method
MI: body-temperature; intensive-care-medicine; long-latency-evoked-potentials; middlelatency-
evoked-potentials; short-latency-evoked-potentials
ALT: Brain-Death-(MeSH); Coma-(MeSH); Head-Injuries-(MeSH)
AN: 200000053620
UD: 20000215
Role of nuclear medicine in the diagnosis of brain death

Papel de la medicina nuclear en el diagnóstico de muerte cerebral.

OT: Original Title

AU: Author
Guerrero Ortiz M; Manrique Legaz A

AF: Author Affiliation
Servicio de Medicina Nuclear. Hospital 12 de Octubre. Madrid.

SO: Source

IS: ISSN
0212-6982

NT: Notes

LA: Language
Spanish

PY: Publication Year
2001

PT: Publication Type
Journal Article

CP: Country of Publication
Spain

DE: Descriptors
Brain Death: diagnosis; Brain Death: physiopathology; Brain Death: radionuclide imaging; Brain Death: ultrasonography; Cerebral Angiography; Consensus Development Conferences; Electroencephalography; Evoked Potentials; Human; Nuclear Medicine: methods; Organ Procurement: legislation & jurisprudence; Radiopharmaceuticals: diagnostic use; Spain; Technetium Tc 99m Exametazime: diagnostic use; Ultrasonography, Doppler, Transcranial

RN: CAS Registry Number
0 (Radiopharmaceuticals); 100504-35-6 (Technetium Tc 99m Exametazime)

UD: Update
20020109

RO: Record Owner
National Library of Medicine

SF: Subfile
Index Medicus

AN: Accession Number
11333823
Application of transcranial doppler ultrasonography for the diagnosis of brain death.

AU: Author
Hadani M; Bruk B; Ram Z; Knoller N; Spiegelmann R; Segal E

AF: Author Affiliation
Department of Neurosurgery, Sheba Medical Center, Tel Hashomer, Sackler School of Medicine, Tel Aviv University, Israel.

SO: Source
Intensive care medicine, 1999 Aug, 25(8):822-8

IS: ISSN
0342-4642

AB: Abstract
OBJECTIVE: To determine the clinical validity of transcranial Doppler ultrasonographic (TCD) signs of total cerebral circulatory arrest for confirmation of brain death and to define the test protocol. DESIGN: Study of a diagnostic test. SETTING: General and neurosurgery intensive care units. PATIENTS: 137 patients in a coma (Glasgow Coma Score 3-5), caused by various pathological conditions, observed from January 1992 to July 1998. 84 patients met the clinical criteria of brain death; 43 patients out of 137 received sedative drug therapy and 31 of these developed brain death.

RESULTS: Total cerebral circulatory arrest was demonstrated by TCD in 81 patients. All of them proved to be brain dead according to subsequent clinical examination. In 29 of 31 patients who had received sedative drug therapy TCD examination showed total cerebral circulatory arrest 12-48 h before the formal confirmation of the diagnosis. In 1 out of 84 clinically brain dead patients a false negative result was obtained. In 2 of 84 cases, no clear signals from intracranial vessels were obtainable. Fifty-three patients who did not meet the clinical criteria for brain death showed no TCD signs of total cerebral circulatory arrest. The specificity of the TCD test for confirmation of brain death was 100% and the sensitivity 96.5%. CONCLUSIONS: In agreement with previously published data, we conclude that TCD ultrasonography is a highly specific and sensitive confirmatory test and should be included as an additional test in the protocol for the assessment of brain death.

LA: Language
English

PY: Publication Year
1999

PT: Publication Type
Journal Article

DE: Descriptors
Adolescence; Adult; Aged; Aged, 80 and over; Brain: blood supply; Brain Death: ultrasonography; Child; Child, Preschool; Coma: ultrasonography; Craniocerebral Trauma: ultrasonography; False Negative Reactions; Female; Glasgow Coma Scale; Human; Infant; Male; Middle Age; Sensitivity and Specificity; Ultrasonography, Doppler, Transcranial: standards

LR: Last Revision Date
20001218

UD: Update
Usefulness of cerebral venous monitoring through jugular bulb catheterization for the diagnosis of brain death.

AU: Author
Hantson P; Mahieu P

SO: Source
Intensive care medicine, 1992, 18(1):59

IS: ISSN
0342-4642

NT: Notes

LA: Language
English

PY: Publication Year
1992

PT: Publication Type
Comment; Letter

CP: Country of Publication
UNITED STATES

DE: Descriptors
Blood Gas Analysis; Brain Death: diagnosis; Case Report;
Craniocerebral Trauma: complications; Human; Male; Monitoring,
Physiologic: methods

LR: Last Revision Date
20011126

UD: Update
20020109

RO: Record Owner
National Library of Medicine

SF: Subfile
Index Medicus

AN: Accession Number
1578053
[The diagnosis of brain death]
OT: Original Title
Diagnose des Hirntodes.
AU: Author
Haupt WF; Wienand P
SO: Source
Deutsche medizinische Wochenschrift, 1992 Feb 21, 117(8):319;
discussion 320
IS: ISSN
0012-0472
NT: Notes
[AN=1914924]
LA: Language
German
PY: Publication Year
1992
PT: Publication Type
Comment; Letter
CP: Country of Publication
GERMANY
DE: Descriptors
Human
LR: Last Revision Date
20011126
UD: Update
20020109
RO: Record Owner
National Library of Medicine
SF: Subfile
Index Medicus
AN: Accession Number
1537272
246
[Diagnosis of brain death in the admission department of the Neurologic Clinic of Erlangen University from 1984 to 1994]

OBJECTIVE: The reliable diagnosis of brain death is a precondition of organ removal for subsequent transplantation. As demographic data, information on the underlying cause and written consent to organ removal from brain-dead patients are largely unknown; protocols relating to the determination of brain death were analysed to obtain these data. PATIENTS AND METHODS: The study was based on an examination of the protocols of 547 consecutive and unselected patients who between 1984 and 1994 had been examined for possible brain death by experienced members of the Neurological Department of Erlangen University, in consequence of the establishment of a consultation service for this purpose to hospitals in the region of North Bavaria. The criteria of brain death were those established by the Federal German Doctors' Chamber, all the data in the written protocol being analysed retrospectively. RESULTS: Brain death was confirmed in 521 patients (319 males, 202 females; mean age 40.1 [1.5 - 84] years). 473 patients (86.5%) had been examined at the Erlangen University Clinic or the Municipal Hospital in Nuremberg, the remainder in regional hospitals. The most common causes were trauma to the head /brain (43.5%), subarachnoid haemorrhage (18.6%), generalised hypoxaemia (9.5%), cerebral infarction (7.3%) or other conditions (4.5%). 33 patients (6%) had committed suicide. Organs were removed in 244 of 413 patients (59.1%) for whom there data on possible organ removal: seven patients had carried donor cards, relatives' consent was obtained in 237. No consent was given in 90 cases (21.8%), while 79 (19.2%) were excluded for medical reasons. CONCLUSION: If brain death is suspected, an experienced neurological consultant should be called in as soon as possible to assess the patients survival chances and evaluate possible organ removal for subsequent transplantation.
Brain death: a diagnostic dilemma.

AU: Author
Hoch DB

SO: Source
Journal of nuclear medicine : official publication, Society of Nuclear Medicine, 1992 Dec, 33(12):2211-3

IS: ISSN
0161-5505

NT: Notes

LA: Language
English

PY: Publication Year
1992

PT: Publication Type
Comment; Editorial

CP: Country of Publication
UNITED STATES

DE: Descriptors
Diagnosis, Differential; Human

LR: Last Revision Date
20011126

UD: Update
20020109

RO: Record Owner
National Library of Medicine

SF: Subfile
Index Medicus

AN: Accession Number
1460518

AU: Author
Huet H; Leroy G; Toulas P; Coskun O; Theron J

AF: Author Affiliation
Department of Neuroradiology and Interventional Radiology, Caen CHU, France.

SO: Source
Neuroradiology, 1996 May, 38 Suppl 1:S42-6

IS: ISSN
0028-3940

AB: Abstract
Rates of organ procurement from brain dead subjects have fallen substantially in recent years. In France, the legal definition of brain death is based on electroencephalographic criteria in patients with clinical evidence of irreversible coma. However, sedative drugs used in intensive care units usually render the electroencephalogram uninterpretable, and in our medicolegal framework, it is necessary that intracerebral circulatory arrest be demonstrated. We discuss the value of the various available techniques and report our experience with digitised intra-arterial cerebral parenchymography. This simple, fast technique does not alter physiological conditions and provides high-quality images, ensuring prompt diagnosis, which is a prerequisite for optimal organ harvesting.

LA: Language
English

PY: Publication Year
1996

PT: Publication Type
Journal Article

CP: Country of Publication
GERMANY

DE: Descriptors
Brain Death: radiography; Brain Injuries: radiography; Child; Coma: radiography; Female; France; Human; Image Processing, Computer-Assisted; Male; Organ Procurement: legislation & jurisprudence; Organ Procurement: standards; Sensitivity and Specificity

LR: Last Revision Date
20001218

UD: Update
20020109

RO: Record Owner
National Library of Medicine

SF: Subfile
Index Medicus

AN: Accession Number
156

8811678
Neurologic disease and the determination of brain death: the importance of a diagnosis.

AU: Author
Hughes R; McGuire G

AF: Author Affiliation
Department of Critical Care Medicine, Toronto Hospital, ON, Canada.

SO: Source
Critical care medicine, 1997 Nov, 25(11):1923-4

IS: ISSN
0090-3493

NT: Notes

LA: Language
English

PY: Publication Year
1997

PT: Publication Type
Journal Article

CP: Country of Publication
UNITED STATES

DE: Descriptors
Brain Death: diagnosis; Case Report; Diagnosis, Differential; Human; Male; Polyradiculoneuropathy: diagnosis

LR: Last Revision Date
20011126

UD: Update
20020109

RO: Record Owner
National Library of Medicine

SF: Subfile
Abridged Index Medicus; Index Medicus

AN: Accession Number
9366780
[Symptomatology and diagnostic criteria of brain death]
AU: Author
Hirayama K
AF: Author Affiliation
Department of Neurology, School of Medicine, Chiba University, Japan.
SO: Source
No to shinkei. Brain and nerve, 1994 Jan, 46(1):5-12
IS: ISSN
0006-8969
LA: Language
Japanese
PY: Publication Year
1994
PT: Publication Type
Journal Article; Review; Review, Tutorial
CP: Country of Publication
JAPAN
DE: Descriptors
Apnea: diagnosis; Brain Death: diagnosis; Brain Death: physiopathology; Brain Stem: physiopathology; Electroencephalography; Human; Reflex; Reflex, Pupillary; Spinal Cord: physiopathology
FE: Features
20 references
LR: Last Revision Date
20001218
UD: Update
20020109
RO: Record Owner
National Library of Medicine
SF: Subfile
Index Medicus
AN: Accession Number
8136200
TI: Timely Diagnosis of Brain Death in an Emergency Trauma Center.
AU: Idea-R-Jay {a}; Lewis-David-H
PY: 1994
DT: Article-
IS: 0361-803X
LA: English
MC: Cardiovascular-Medicine (Human-Medicine, Medical-Sciences); Morphology-;
Neurology- (Human-Medicine, Medical-Sciences); Pathology-; Pediatrics- (Human-Medicine, Medical-Sciences); Pharmacology-; Physiology-; Public Health (Allied-Medical-Sciences)
ST: Hominidae-: Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia-
OR: Hominidae- (Hominidae-)
TN: animals-; chordates-; humans-; mammals-; primates-; vertebrates-
CB: TECHNETIUM-99M
RN: 14133-76-7: TECHNETIUM-99M
MI: CASE-STUDY; CEREBELLAR-PERFUSION; CEREBRAL-PERFUSION; CHILD-;
COMA-;
DIAGNOSTIC-DRUG; TECHNETIUM-99M-HEXAMETHYLPROPYLENEAMINEOXIME
AN: 199497548464
Brain death: MR and MR angiography.

TI: Brain death: MR and MR angiography.
AU: Ishii-Kiyoshi; Onuma-Takehide; Kinoshita-Toshibumi; Shiina-Genzo; Kameyama-Motonobu; Shimosegawa-Yasuko
AD: Dep. Radiol., Sendai City Hosp., Shimizukoji 3-1, Wakabayashi-ku, Sendai 980, Japan
SO: AJNR-. 1996; 17 (4) 731-735.
PY: 1996
IS: 0195-6108
LA: English
AB: Four patients in whom brain death was identified on the basis of neurologic and electroencephalographic findings were examined with MR imaging and MR angiography. MR images showed diffuse swelling of the cerebral gyri and cerebellar cortex, with prolongation of both the T1 and T2 signal (representing hypoxic ischemic brain injury), downward displacement of the diencephalon and the brain stem (central and tonsillar herniation), and loss of flow void in the intracranial portions of both internal carotid arteries. MR angiograms did not show the intracranial vessels above the level of the supraclinoid portion of the internal carotid arteries. MR angiography and MR imaging are noninvasive and reliable methods for use in determining brain death.
AI: Y
MC: Forensics-; Morphology-; Neurology- (Human-Medicine, Medical-Sciences); Pathology-; Radiology- (Medical-Sciences)
ST: Hominidae-: Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia-
OR: human- (Hominidae-)
TN: animals-; chordates-; humans-; mammals-; primates-; vertebrates-
MI: DIAGNOSIS-; FORENSIC-MEDICINE; MAGNETIC-RESONANCE; MAGNETICRESONANCE-ANGIOGRAPHY
AN: 199698828115
Changes of pupil size in brain death patients.

The representative criteria of brain death in Japan is Takeuchi Criteria (Koseisho Criteria), which is the definition of irreversible loss of brain function (functional brain death). The 3rd item of that criteria is "fixed pupil" and pupil size more than 4 mm. The 4th item is loss of the brain nerve reflexes including the light reflex. Three cases of brain death by whole brain destruction (organic brain death) who showed slow changes of pupil size were reported. Except fixed pupil, one case fulfilled Takeuchi Criteria. Other two cases fulfilled all items of Takeuchi Criteria, showing the same pupil size accidentally at the first and the second judgements. But, they changed their pupil size slowly and continuously after the examinations, showing tendencies toward mydriasis and/or miosis, repeatedly. They never decreased their pupil size less than 4 mm. The changes of pupil size were so slow that we could recognize them only after several hours or several days, and they were quite different from the light reflex. They did not receive any influences from turnover of day and night, darkness of the room, dopamine, etc. For the changes of pupil size were observed in the cases of organic brain death, it was elucidated that they were not due to the brain nerve activity. Then, it was considered that the changes of pupil size in the cases of functional brain death should be the same phenomena, because brain nerve function was lost. Since slow changes of pupil size have no relation to the activity of brain nerve itself in brain death patients, it was considered that the term "fixed pupil" in Takeuchi Criteria should be deleted. The term "fixed pupil" in the diagnosis of brain death in U.K. expresses loss of the light reflex, but, in Takeuchi Criteria, the term "fixed pupil" expresses persistent "fixed pupil size" in brain death, and has no relation with loss of the light reflex. The supplement of Takeuchi Criteria describes that "fixed pupil" means loss of the light reflex as in the diagnosis of brain death in U.K. and changes of pupil size are not important phenomena. But, "fixed pupil" described in the criteria is not compatible with "changes of pupil size", and "fixed pupil" and loss of the light reflex form independent items in Takeuchi Criteria. The mechanism of the changes of pupil was considered as follows. In the state of brain death, loosing brain nerve activity, sympathetic nerve and parasympathetic nerve which innervate m. sphincter pupillae and m. dilatator pupillae, would survive for certain periods, and then pupil size could be changed by balance of sympathetic and parasympathetic nerve activity. In conclusion, it was considered that it was not appropriate to diagnose brain death by peripheral nerve phenomena, such as sympathetic and parasympathetic nerve activities.
Risk of hypotension during apnea testing.

Objective: To determine the safety of apnea testing. Design: Prospective, consecutive study. Setting: Inner-city trauma center. Patients: A total of 70 apnea tests were performed on 61 comatose patients as part of the determination of brain death. Results: Only 43 examinations (61%) were well tolerated. During 27 examinations (39%) patients either developed marked hypotension (≥15% drop in mean arterial pressure) (n = 23) or required prophylactic vasopressor manipulation (n = 4). Of the 27 examinations in which hypotension developed, 14 were aborted, two were tolerated despite marked hypotension, four were tolerated after administration of prophylactic epinephrine (n = 1) or dopamine hydrochloride (n = 3), and seven were successfully completed after increases in the rate of dopamine infusion during the test. Conclusions: Hypotension can pose a significant risk to patients undergoing apnea testing. Constant monitoring of vital signs throughout the test is essential to its safe completion.

AI: Y

MC: Cardiovascular-Medicine (Human-Medicine, Medical-Sciences); Nervous-System (Neural-Coordination); Neurology- (Human-Medicine, Medical-Sciences); Pathology-; Respiratory-System (Respiration-)

ST: Hominidae-: Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia-

OR: human- (Hominidae-)

TN: animals-; chordates-; humans-; mammals-; primates-; vertebrates-

MI: BRAIN-DEATH

AN: 199497361913
I: Complications during apnea testing in the determination of brain death: Predisposing factors.

AU: Jeret-Joseph-S {a}
AD: {a} Rockville Centre, New York, NY, USA
PY: 2001
DT: Letter-
IS: 0028-3878
LA: English
LS: English
MC: Neurology- (Human-Medicine, Medical-Sciences)
ST: Hominidae-: Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia-
OR: human- (Hominidae-): patient-
TN: Animals-; Chordates-; Humans-; Mammals-; Primates-; Vertebrates-
PS: brain-: apnea-testing-complications, death-determination, nervous-system, predisposingfactors
AN: 200100198904
UD: 20010618
MR diagnosis of brain death.
AU: Author
Jones KM; Barnes PD
AF: Author Affiliation
Department of Radiology, Children's Hospital, Boston, MA 02115.
SO: Source
IS: ISSN
0195-6108
LA: Language
English
PY: Publication Year
1992
PT: Publication Type
Journal Article
CP: Country of Publication
UNITED STATES
DE: Descriptors
Adolescence; Brain Death: diagnosis; Case Report; Female; Human;
Magnetic Resonance Imaging
LR: Last Revision Date
20001218
UD: Update
20020109
RO: Record Owner
National Library of Medicine
SF: Subfile
Index Medicus
AN: Accession Number
1595495
251
TI: Extremely prolonged vecuronium clearance in a brain death case.
AU: Kainuma-Motoshi; Miyake-Toshiyuki; Kanno-Tetsuo
AD: Department of Anesthesiology, Fujita Health University, 1-98
Dengakugakubo, Kutsukake-cho, Toyoake, Aichi, 470-1192; E-Mail:
mkainuma@fujita-hu.ac.jp, Japan
URLJ: lww.anesthesiology.org; http://www.anesthesiology.org
PY: 2001
DT: Article-
IS: 0003-3022
LA: English
MC: Anesthesiology- (Medical-Sciences); Neurology- (Human-Medicine, Medical
-Sciences)
ST: Hominidae-: Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia-
OR: human- (Hominidae-): aged-, female-, patient-
TN: Animals-; Chordates-; Humans-; Mammals-; Primates-; Vertebrates-
CB: 3-desacetylvecuronium; propofol-: autonomic-drug, general-anesthetic-drug,
intravenous-administration; vecuronium-: extremely-prolonged-clearance,
general-anesthetic-drug, intravenous-administration
DS: brain-death: diagnosis-, nervous-system-disease
RN: 2078-54-8: PROPOFOL; 50700-72-6: VECURONIUM
MQ: Glasgow-Coma-Scale: assessment-method; computerized-tomography: diagnostic
-method, imaging-method; tracheal-intubation: anesthesia-method;
ultrasonography-: diagnostic-method, imaging-method
MI: Case-Study
ALT: Brain-Death-(MeSH)
AN: 200200170132
UD: 20020610
Absence of response to hypothalamic stimulation test in brain death.

AU: Author
Kinoshita Y; Go K; Yoshioka T; Sugimoto T

AF: Author Affiliation
Department of Traumatology, Osaka University Medical School.

SO: Source
Neurologia medico-chirurgica, 1992 Mar, 32(3):153-6

IS: ISSN
0470-8105

AB: Abstract
Immunoreactive corticotropin-releasing hormone (CRH) and growth hormone-releasing hormone (GHRH) are present in the plasma of the brain dead patients. These hypothalamic hormones may reflect some residual brain function after brain death. To examine the hypothalamic function, insulin-induced hypoglycemia and arginine infusion were performed in brain dead patients. Plasma CRH and GHRH were present initially, but levels did not increase significantly for 120 minutes after insulin injection. GH, adrenocorticotropic hormone, and cortisol levels did not increase either. Arginine load did not induce GH. These results suggest that hypothalamic hormones in the plasma after whole brain death do not reflect hypothalamic functions. The hormones may originate from extrahypothalamic sources such as the pancreas or adrenal gland.

LA: Language
English

PY: Publication Year
1992

PT: Publication Type
Journal Article

CP: Country of Publication
JAPAN

DE: Descriptors
Adolescence; Adult; Argipressin; pharmacology; Brain Death: diagnosis; Corticotropin: blood; Corticotropin-Releasing Hormone: diagnostic use; Female; Human; Hydrocortisone: blood; Insulin: pharmacology; Male; Middle Age; Somatotropin-Releasing Hormone: blood; Support, Non-U.S. Gov't

RN: CAS Registry Number
11061-68-0 (Insulin); 113-79-1 (Argipressin); 50-23-7 (Hydrocortisone); 9002-60-2 (Corticotropin); 9015-71-8 (Corticotropin-Releasing Hormone); 9034-39-3 (Somatotropin-Releasing Hormone)

LR: Last Revision Date
20001218

UD: Update
20020109

RO: Record Owner
National Library of Medicine

SF: Subfile
Index Medicus

AN: Accession Number
1377798
Application of one-dimensional echoencephalography to diagnosis of brain death.

AU: Author
Kumchev Y; Kiskinov Z

AF: Author Affiliation
Department of Neurosurgery, University of Medicine, Plovdiv, Bulgaria.

SO: Source
Folia medica, 1994, 36(4):27-9

IS: ISSN
0204-8043

AB: Abstract
Three groups of patients were studied by echoencephalography using a one-dimensional encephalograph Eho 12. The first group consisted of 100 patients with a mild craniocerebral trauma. Good pulsations of the elements of the echoencephalogram were found during the study. The second group involved 14 people who had died as a result of craniocerebral trauma. The investigation performed post mortem revealed fixed echoencephalogram without any pulsations of its elements. The third group included 11 patients with severe craniocerebral trauma in a state of deep coma. These patients were on mechanical ventilation, their brainstem reflexes were absent, but the cardiac activity remained preserved. The echoencephalographic study in these patients showed a fixed screen curve, without pulsations of its elements. We conclude that absence of pulsations of the elements of echoencephalogram produced by one-dimensional echoencephalograph indicates brain death of the investigated patients. This investigation should be included as a component of the established diagnostic tests.

LA: Language
English

PY: Publication Year
1994

PT: Publication Type
Journal Article

CP: Country of Publication
BULGARIA

DE: Descriptors
Brain Death: diagnosis; Brain Death: ultrasonography; Echoencephalography: methods; Human

LR: Last Revision Date
20001218

UD: Update
20020109

RO: Record Owner
National Library of Medicine

SF: Subfile
Index Medicus
Tc-99m hexamethylpropylene amine oxime scintigraphy in the diagnosis of brain death and its implications for the harvesting of organs used for transplantation.

AU: Author
Kurtek RW; Lai KK; Tauxe WN; Eidelman BH; Fung JJ
AF: Author Affiliation
Department of Radiology, University of Pittsburgh School of Medicine, University of Pittsburgh Medical Center, Pennsylvania 15213, USA.
SO: Source
Clinical nuclear medicine, 2000 Jan, 25(1):7-10
IS: ISSN
0363-9762
AB: Abstract
PURPOSE: Diagnosing brain death is important in managing the comatose patient for whom the continuation of life support is being questioned and when organ harvesting is being considered. The virtual immediate localization of Tc-99m HMPAO to cerebral and cerebellar tissue provides an index of blood perfusion, and its absence denotes brain death. Other methods for assessing brain death include cerebral angiography, MRI, CT imaging after inhalation of stable xenon, electroencephalography, and clinical examination. The contrast material used for angiography may damage harvested organs, and the other studies have significant errors. MRI, CT imaging, and angiography are unsuitable for bedside use.

METHODS: Twenty-three patients, who presented with head trauma, prolonged anoxia or intrinsic brain disease (e.g., glioblastoma multiforme) and who were brain-dead by clinical examination criteria, were referred to the nuclear medicine division for verification of brain death. For adults, approximately 25 mCi Tc-99m hexamethylpropylene amineoxime (HMPAO) was administered intravenously. All patients but one were imaged using a mobile scintillation camera at the bedside. RESULTS: We demonstrated (1) both cerebral and cerebellar perfusion, (2) neither cerebral nor cerebellar perfusion, (3) cerebral without cerebellar perfusion, and (4) cerebellar without cerebral perfusion. Patients without cerebral perfusion were diagnosed as brain-dead. The significance of a viable cerebellum in the absence of cerebral viability was not fully appreciated, although organs were harvested from such patients. We determined how well the clinical examination criteria held up in the diagnosis of brain death against the new gold standard of Tc-99m HMPAO scintigraphy: Clinical examination criteria correctly predicted brain death only 83% of the time compared with HMPAO scintigraphy.

CONCLUSIONS: Brain death assessment by Tc-99m HM-PAO scintigraphy has proved to be a reliable, safe, and cost-effective bedside method and may have practical application in the assessment of brain death in potential cadaveric donors.
UNITED STATES
DE: Descriptors
Adolescence; Adult; Brain Death: radionuclide imaging; Child;
Child, Preschool; Human; Infant; Middle Age; Patient Care
Planning; Radiopharmaceuticals: diagnostic use; Technetium Tc 99m
Exametazime: diagnostic use; Tissue Donors
RN: CAS Registry Number
0 (Radiopharmaceuticals); 100504-35-6 (Technetium Tc 99m
Exametazime)
LR: Last Revision Date
20001218
UD: Update
20020109
RO: Record Owner
National Library of Medicine
SF: Subfile
Index Medicus
AN: Accession Number
10634522
TI: Diagnosing brain death using the transcranial Doppler with a transorbital approach.
AU: Lampl-Yair {a}; Gilad-Ronit; Eschel-Yehiel; Boaz-Mona; Rapoport-Abraham; Sadeh-Menachem
AD: {a} Department of Neurology, E. Wolfson Medical Center, Holon, 58100, Israel
URLJ: http://www.archneurol.com
PY: 2002
DT: Article-
IS: 0003-9942
LA: English
AB: Background: Transcranial Doppler is a sensitive instrument for the diagnosis of brain death. The guidelines for the determination of brain death include the demonstration of specific blood flow patterns in the anterior and posterior circulation systems. A limitation of this method is the frequent false finding of no flow, especially when using the transtemporal approach in older women. Objective: To evaluate the efficacy of the transorbital approach in the diagnosis of brain death using transcranial Doppler. Methods: A prospective controlled, diagnostic test study was performed. Transorbital, transtemporal, and transforaminal approaches were used. Fifty-seven patients (29 men and 28 women; mean±SD age, 68.2±12.1 years) with clinically determined brain death were examined. Results: In 45 patients, oscillatory flow or systolic spikes were found in all approaches. In 4 patients, no flow was detected. In 6 patients, oscillatory flow or systolic spikes were found in 2 approaches, including the transorbital one. In 2 patients, a positive finding was demonstrated only using the transorbital approach. Using the transorbital approach, the percentage of positive findings with definitive diagnoses of brain death rose from 79% to 88%. Conclusion: The transorbital approach is a useful addition for the diagnosis of brain death, using the transcranial Doppler technique.
AI: Y
MC: Cardiovascular-Medicine (Human-Medicine, Medical-Sciences); Neurology- (Human-Medicine, Medical-Sciences)
ST: Hominidae-: Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia-
OR: human- (Hominidae-): patient-
TN: Animals-; Chordates-; Humans-; Mammals-; Primates-; Vertebrates-
DS: brain-death: diagnosis-, nervous-system-disease
MQ: transcranial-Doppler: diagnostic-method, imaging-method, transorbital-approach
MI: blood-flow-patterns; prospective-controlled-study
ALT: Brain-Death-(MeSH)
AN: 200200057747
UD: 20020225

AU: Author
Larar GN; Nagel JS

AF: Author Affiliation
Department of Radiology, Brigham and Women's Hospital, Boston, Massachusetts.

SO: Source
Journal of nuclear medicine : official publication, Society of Nuclear Medicine, 1992 Dec, 33(12):2209-11

IS: ISSN
0161-5505

NT: Notes

AB: Abstract
The lipophilic cerebral perfusion agent 99mTc-hexamethylpropylene amine oxime (HMPAO) is increasingly used to demonstrate the absence of blood flow for the declaration of brain death. We report a case that illustrates how the timing of such studies is important when organ harvesting is the underlying emergent indication. If performed too early, a study showing the presence of cerebral perfusion may not expedite the declaration of brain death, but instead may complicate patient assessment and unnecessarily delay the process.

LA: Language
English

PY: Publication Year
1992

PT: Publication Type
Journal Article

CP: Country of Publication
UNITED STATES

DE: Descriptors
Case Report; Diagnosis, Differential; False Negative Reactions; Female; Human; Middle Age; Organotechnetium Compounds: diagnostic use; Oximes: diagnostic use; Technetium Tc 99m Exametazime; Time Factors; Tissue Donors

RN: CAS Registry Number
0 (Organotechnetium Compounds); 0 (Oximes); 100504-35-6 (Technetium Tc 99m Exametazime)

LR: Last Revision Date
20011126

UD: Update
20020109

RO: Record Owner
National Library of Medicine

SF: Subfile
Index Medicus
222

AN: Accession Number
1460517
The diagnosis of brain death.

AU: Author
Larson MD; Gray AT
SO: Source
IS: ISSN
0028-4793
NT: Notes
Comment on: N Engl J Med. 2001 Apr 19;344(16):1215-21
[AN=11309637]
LA: Language
English
PY: Publication Year
2001
PT: Publication Type
Comment; Letter
CP: Country of Publication
United States
DE: Descriptors
Human; Pupil: physiology; Reflex, Pupillary: drug effects
LR: Last Revision Date
20011109
UD: Update
20020109
RO: Record Owner
National Library of Medicine
SF: Subfile
Abridged Index Medicus; Index Medicus
AN: Accession Number
11529220
Determination of brain death with use of color duplex scanning in the intensive care unit setting.

AU: Author
Lemmon GW; Franz RW; Roy N; McCarthy MC; Peoples JB
AF: Author Affiliation
Department of Surgery, Wright State University School of Medicine, Dayton, Ohio, USA.
SO: Source
IS: ISSN
0004-0010
AB: Abstract
OBJECTIVE: To determine if color flow duplex scanning (CFDS) can be used for rapid confirmation of presumed brain death. DESIGN: Pilot cohort study comparison of CFDS with radionuclide cerebral scanning (RCS) as the criterion standard. SETTING: Community-based level I trauma center intensive care unit. PATIENTS: Twenty-four patients who satisfied criteria for presumed brain death. MAIN OUTCOME MEASURE: Confirmation of presumed brain death. RESULTS: CFDS correctly identified 16 of 24 patients as brain dead, confirmed by RCS. Eight patients with brain flow on RCS were also correctly identified by CFDS. Only two of 24 patients survived their severe injuries. CONCLUSIONS: CFDS provides a uniform, cost-effective diagnostic tool for rapid confirmation of clinical brain death with 100% accuracy. Its use should complement RCS, given its rapid interpretation, portability, and economical assessment of presumed brain death.

LA: Language
English
PY: Publication Year
1995
PT: Publication Type
Journal Article
CP: Country of Publication
UNITED STATES
DE: Descriptors
Adolescence; Adult; Aged; Aged, 80 and over; Brain Death: radionuclide imaging; Brain Death: ultrasonography; Cohort Studies; Comparative Study; Female; Human; Intensive Care Units; Male; Middle Age; Pilot Projects; Retrospective Studies; Sensitivity and Specificity; Time Factors; Ultrasonography, Doppler, Color
LR: Last Revision Date
20001218
UD: Update
20020109
RO: Record Owner
171
National Library of Medicine
SF: Subfile
Abridged Index Medicus; Index Medicus
AN: Accession Number
7748090
Apnea test in the diagnosis of brain death.

AU: Author
Lessard M; Mallais R; Turmel A

SO: Source
The Canadian journal of neurological sciences. Le journal canadien
des sciences neurologiques, 2000 Nov, 27(4):353-4

IS: ISSN
0317-1671

NT: Notes
Comment on: Can J Neurol Sci. 1999 Feb;26(1):64-6 [AN=10068812]

LA: Language
English

PY: Publication Year
2000

PT: Publication Type
Comment; Letter

CP: Country of Publication
CANADA

DE: Descriptors
Barotrauma: etiology; Brain Death: diagnosis; Human; Insufflation:
adverse effects; Oxygen: administration & dosage; Pneumothorax:
etiology

RN: CAS Registry Number
7782-44-7 (Oxygen)

LR: Last Revision Date
20010706

UD: Update
20020109

RO: Record Owner
National Library of Medicine

SF: Subfile
Index Medicus

AN: Accession Number
11097529
The different concepts of brain death are subject to controversial debate. It is outlined that only the whole-brain concept, that is the irreversible loss of all functions of the entire brain, is consistent with the death of man. Cortical death or brain-stem death should not be considered in this respect. The operational procedure for determining brain death is outlined with special regard to those cases in which a definite diagnosis cannot be made clinically. It is shown that apnea testing must be accompanied by blood-gas analysis, as it may take 15 min for the PaCO2 to achieve the desired level of 8 kPa. The problem with CNS-depressing drugs and their metabolites interfering with the clinical diagnosis--e.g. sedatives, barbiturates, opioids--is described, and it is stressed that, in these cases, the cerebral panangiography (digital subtraction angiography with catheter tip in the aortic arch) is the gold standard for the final and definite proof of brain death.
Reliability of brain death diagnostics.

AU: Author
Link J; Gramm HJ

SO: Source
Intensive care medicine, 1996 Aug, 22(8):836-7

IS: ISSN
0342-4642

NT: Notes

LA: Language
English

PY: Publication Year
1996

PT: Publication Type
Comment; Letter

CP: Country of Publication
UNITED STATES

DE: Descriptors
Aged; Brain Death: diagnosis; Cerebral Angiography;
Electroencephalography; Human; Middle Age; Reproducibility of
Results

LR: Last Revision Date
20011126

UD: Update
20020109

RO: Record Owner
National Library of Medicine

SF: Subfile
Index Medicus

AN: Accession Number
8880261
**TI: Concepts and diagnosis of brain death.**  
AU: Link-Juergen {a}; Schaefer-Martin; Lang-Manfred  
PY: 1994  
DT: Article-  
IS: 0379-0738  
LA: English  
AB: The different concepts of brain death are subject to controversial debate. It is outlined that only the whole-brain concept, that is the irreversible loss of all functions of the entire brain, is consistent with the death of man. Cortical death or brain-stem death should not be considered in this respect. The operational procedure for determining brain death is outlined with special regard to those cases in which a definite diagnosis cannot be made clinically. It is shown that apnea testing must be accompanied by blood-gas analysis, as it may take 15 min for the P-aCO-2 to achieve the desired level of 8 kPa. The problem with CNS-depressing drugs and their metabolites interfering with the clinical diagnosis - e.g. sedatives, barbiturates, opioids - is described, and it is stressed that, in these cases, the cerebral panangiography (digital subtraction angiography with catheter tip in the aortic arch) is the gold standard for the final and definite proof of brain death.  
AI: Y  
MC: Biochemistry-and-Molecular-Biophysics; Blood-and-Lymphatics (Transport-and-Circulation); Forensics-; Government-and-Law; Morphology-; Neurology-(Human-Medicine, Medical-Sciences); Pathology-; Philosophy-and-Ethics  
ST: Hominidae-: Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia-  
OR: human- (Hominidae-)  
TN: animals-; chordates-; humans-; mammals-; primates-; vertebrates-  
MI: APNEA-; BLOOD-GAS-ANALYSIS; BRAIN-STEM-DEATH; CEREBRALPANANGIOGRAPHY; CORTICAL-DEATH; FORENSICS-; LEGAL-MEDICINE; MEDICAL-ETHICS  
AN: 199598138440

**Clinical impact of scintigraphic evaluation of brain death in adult patients**  
AU: Author  
Lotfi, K; Jenkins, DH; Eisenberg, DA; Reilly, P; Alavi, A  
CS: Conference Sponsor  
Radiological Society of North America, American Association of Physicists in Medicine  
CF: Conference  
84th Annual Meeting of the Scientific Assembly of the Radiological Society of North America, Chicago, IL (USA), 29 Nov - Dec 4 1998. (World Meeting Number 984 0087)  
NT: Notes  
Availability: Radiological Society of North America (RSNA), 2021 Spring Road, Suite 600, Oak Brook, IL 60523, USA; phone: (630) 571-2670; fax: (630) 571-7837; email: reginfo@rsna.org; URL: www.rsna.org, Abstracts available. Contact RSNA for price. Paper No. 474  
LA: Language  
English  
SF: Subfile  
CPI, Conference Papers Index  
CL: Classification
Persistent and complete intracranial circulatory arrest is sufficient by itself to confirm brain death.

Lopez-Navidad-Antonio {a}  
Department of Organ and Tissue Procurement, Hospital de la Santa Creu I Sant Pau, Avenida Sant Antoni Maria Claret 167, 08025, Barcelona; E-Mail: alopeznavidad@hspsantpau.es, Spain  
http://www.transplantjournal.com/  
2002  
Letter-  
0041-1337  
English  
Cardiovascular-Medicine (Human-Medicine, Medical-Sciences); Neurology- (Human-Medicine, Medical-Sciences)  
Hominidae-: Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia-  
human- (Hominidae-): adult-, cadaver-, organ-donor, patient-  
Animals-; Chordates-; Humans-; Mammals-; Primates-; Vertebrates-  
brain-: nervous-system; lung-: respiratory-system; pupil-: sensory-system  
CARBON DIOXIDE  
Brain-Death-(MeSH); Lung-Diseases-(MeSH); Sleep-Apnea-Syndromes-(MeSH)  
200200265788  
20020909
Early diagnosis of brain death in patients treated with central nervous system depressant drugs.

Lopez-Navidad-Antonio, Caballero-Francisco, Domingo-Pere, Marruecos-Luis, Estorch-Montserrat, Kulisevsky-Jaime, Mora-Josefina

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Background: Among the main causes for the relatively small number of organ donors, the delay in the diagnosis of brain death plays a major role. Administration of drugs causing central nervous system (CNS) depression prevents diagnosis of brain death by clinical and electroencephalographic criteria until serum clearance of the drug has occurred. Confirming brain death by demonstrating persistent intracranial circulatory arrest might decrease the length of the diagnostic process. We have carried out a prospective study to investigate whether 99mTc-hexamethyl propylenamino oxime (99mTc-HMPAO) brain scintigraphy and/or transcranial Doppler ultrasound can speed up the diagnosis of brain death in patients treated with CNS depressant drugs.

Methods: All 138 consecutive patients with severe brain lesion that progressed to brain death in our center between January 1994 and December 1996 were controlled. Of them, 36 patients aged 1 to 65 years old (mean=25.6+-18.3 years) who met clinical and EEG criteria for the diagnosis of brain death, except for the presence of significant serum levels of barbiturates (n=34), opiates (n=8), and benzodiazepines (n=3) were distributed in three groups according to the confirmatory test used: group 1: waiting for the metabolic clearance of CNS depressant drugs, or by demonstrating intracranial circulatory arrest with 99mTc-HMPAO (group 2) or transcranial Doppler (group 3). The delay in diagnosing brain death by the three methods was analyzed. Results: The mean interval between the presumptive and the definitive diagnosis of brain death was 34.4+-32.2 hr in group 1, 17.7+-18.3 hr in group 2, and 5.0+-4.6 hr in group 3 (P=0.004). The between-groups analysis showed that 99mTc-HMPAO and transcranial Doppler ultrasound decreased the delay in diagnosing brain death with respect to waiting for drug clearance by 49% (P=0.16) and 85% (P<0.001), respectively. Moreover, transcranial Doppler decreased this time by 72% with respect to 99mTc-HMPAO.

Conclusions: Transcranial Doppler ultrasound and 99mTc-HMPAO brain scintigraphy can significantly reduce the time taken to confirm brain death in patients with significant serum levels of CNS depressant drugs. In this setting, transcranial Doppler is superior to 99mTc-HMPAO in reducing the waiting time for a firm diagnosis of brain death.
Diffusion-weighted magnetic resonance imaging in brain death.

AU: Lovblad-Karl-Olof {a}; Bassetti-Claudio
AD: {a} Department of Neuroradiology, C212 NRAD IDR, Institute of Diagnostic Radiology, Inselspital, Freiburgstrasse, CH-3010, Bern, Switzerland
PY: 2000
DT: Article-
IS: 0039-2499
LA: English
LS: English
AB: Background: Traditionally the diagnosis of brain death is established on the basis of a combination of clinical signs and paraclinical methods. Diffusion-weighted MRI is a new method sensitive to cerebral ischemia. Its value in brain death has not been demonstrated until now. Case Description: A patient was referred to MRI with suspicion of a brain stem stroke. Echo-planar whole-brain, multislice, diffusion-weighted MRI was performed in addition to conventional sequences and MR angiography sequences. In addition to the extensive bilateral hyperintensities observed on T2-weighted images, diffusion-weighted MRI showed diffuse hyperintensities involving both hemispheres as well as a severe drop in the apparent diffusion coefficient in both affected hemispheres. There was also transtentorial herniation with compression of the brain stem as well as absence of flow voids on the T2-weighted images and absence of intracranial vessels on MR angiography. On the basis of the clinical and imaging findings, it was concluded that the patient was in a state of brain death. The patient died the same day. Conclusions: With the use of new fast techniques such as diffusion-weighted imaging, now MRI can not only display anatomic changes associated with severe brain suffering but can also demonstrate ultrastructural changes secondary to brain death and differentiate them from edematous changes seen on T2-weighted images.
AI: Y
MC: Cardiovascular-Medicine (Human-Medicine, Medical-Sciences); Neurology- (Human-Medicine, Medical-Sciences); Radiology- (Medical-Sciences)
ST: Hominidae-: Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia-
OR: human- (Hominidae-): aged-, female-, patient-
TN: Animals-; Chordates-; Humans-; Mammals-; Primates-; Vertebrates-
DS: brain-death: diagnosis-, nervous-system-disease
MI: mortality-; Case-Study
ALT: Brain-Death-(MeSH)
AN: 200000116084
UD: 20000417
Radionuclide evaluation of brain death.

AU: Author
Lutrin CL

SO: Source

IS: ISSN
0093-0415

LA: Language
English

PY: Publication Year
1992

PT: Publication Type
Journal Article

CP: Country of Publication
UNITED STATES

DE: Descriptors
Brain Death: radionuclide imaging; Human; Organotechnetium Compounds: diagnostic use; Oximes: diagnostic use; Pentetic Acid: diagnostic use; Technetium Tc 99m Exametazime

RN: CAS Registry Number
0 (Organotechnetium Compounds); 0 (Oximes); 100504-35-6 (Technetium Tc 99m Exametazime); 67-43-6 (Pentetic Acid)

LR: Last Revision Date
20001218

UD: Update
20020109

RO: Record Owner
National Library of Medicine

SF: Subfile
Abridged Index Medicus; Index Medicus

AN: Accession Number
1413747

236
Multimodality evoked potentials and electroretinography in a test battery for an early diagnosis of brain death.

AU: Author
Machado C

AF: Author Affiliation
Department of Clinical Neurophysiology, Institute of Neurology and Neurosurgery, Havana, Cuba.

SO: Source
Journal of neurosurgical sciences, 1993 Sep, 37(3):125-31

IS: ISSN
0390-5616

AB: Abstract
A test battery conformed by multimodality evoked potentials (MEP) and electroretinography (ERG) was applied to 30 brain-dead patients. Three patterns of brainstem auditory evoked potentials (BAEPs) were observed: (1) No identifiable waves (73.34%); (2) an isolated bilateral wave I (16.66%) and (3) an isolated unilateral wave I (10%) (Fig. 1,2,3). Waves II, III, IV, and V were not observed in any of the cases. Whenever wave I was recorded, it was always significantly delayed. For short latency evoked potentials (SSEPs) a characteristic pattern was found: absence of cortical N20 and later responses in scalp-cephalic records and preservation of the so-called subcortical components in the rest of the derivations. For visual evoked potentials (VEPs) and electroretinography (ERG) the same pattern was found in all cases: when a cephalic reference was used for both, VEPs and the ERG, waves a and b of the ERG were recognized in all cases. The visual evoked responses consisted of waves with less amplitude but very similar in latency and morphology to the ERG. When a non-cephalic channel was chosen for the ERG and VEPs, the ERG waves showed no changes either in morphology or in latency, while the VEP lead showed no response. It is discussed that the consideration of MEP and ERG in a battery test to evaluate brain-dead patients increase diagnostic reliability, which is fundamental for an early diagnosis of brain death.

LA: Language
English

PY: Publication Year
1993

PT: Publication Type
Journal Article

CP: Country of Publication
ITALY

DE: Descriptors
Adolescence; Adult; Aged; Aged, 80 and over; Brain Death: diagnosis; Brain Stem: physiopathology; Child; Electroencephalography; Electretinography; Evoked Potentials; Evoked Potentials, Auditory; Evoked Potentials, Somatosensory; 207 Evoked Potentials, Visual; Female; Human; Intensive Care Units; Male; Middle Age; Reference Values

LR: Last Revision Date
20001218

UD: Update
20020109

RO: Record Owner
An early approach to brain death diagnosis using multimodality evoked potentials and electroretinography.

AU: Author
Machado C

AF: Author Affiliation
Department of Clinical Neurophysiology, Institute of Neurology and Neurosurgery, Havana, Cuba.

SO: Source
Minerva anestesiologica, 1994 Oct, 60(10):573-7

IS: ISSN
0375-9393

LA: Language
English

PY: Publication Year
1994

PT: Publication Type
Journal Article

CP: Country of Publication
ITALY

DE: Descriptors
Brain Death: diagnosis; Electroretinography; Evoked Potentials; Human

LR: Last Revision Date
20001218

UD: Update
20020109

RO: Record Owner
National Library of Medicine

SF: Subfile
Index Medicus

AN: Accession Number
7830923
Magnetic resonance imaging of brain death.

Fifteen patients with clinical diagnosis of brain death were examined by magnetic resonance (MR) imaging. Aortography with intraarterial digital subtraction angiography (IADSA) was also performed in nine patients. MR imaging indications of the flow void phenomenon were evaluated in the cavernous portion of internal carotid artery (ICA) and the middle or anterior cerebral artery, and compared with the IADSA findings. The relative intensities of gray and white matters were also measured. MR imaging showed that flow voids were absent in the ICA in all eight patients in whom non-filling was confirmed by IADSA. In one patient, IADSA demonstrated intracranial flow despite the diagnosis of brain death and the flow void pattern was normal. Serial MR imaging showed disappearance or abnormality of flow voids after brain death in six patients and absence before brain death in one. Spotty flow voids became visible in the unilateral ICA of one case after brain death. Partial residual flow voids may be caused by to-and-fro blood movement which was demonstrated by transcranial Doppler sonography. The normal flow void pattern was seen in none of these patients, therefore absence of flow voids indicates cessation of intracranial blood flow. Proton density and T-2-weighted MR images showed dissociated intensity changes between white and gray matters, which were thought to be characteristic of brain death. In conclusion, MR imaging can achieve non-invasive diagnosis of the non-filling phenomenon in patients with brain death.
**The undulating toe flexion sign in brain death.**

**AU:** Author  
McNair NL; Meador KJ  

**AF:** Author Affiliation  
Department of Neurology, Medical College of Georgia, Augusta, Georgia 30912-3200.  

**SO:** Source  

**IS:** ISSN  
0885-3185  

**AB:** Abstract  
Brain-dead patients may exhibit gross spontaneous and reflex movements (e.g., Babinski sign, stereotypic flexion of one or more limbs, and Lazarus sign). We report three brain-dead patients who had unusual complex sequential movements of the toes. Undulating toe flexion was elicited by noxious stimuli to the lower extremities, and consisted of initial plantar flexion of the great toe, followed by sequential brief plantar flexion of the second, third, fourth, and fifth toes. The undulating toe flexion sign differs from previously described responses characterized by plantar flexion of the toes (e.g., Rosselimo's sign and the Mendel-Bechterew sign) in that it consists of complex patterned sequential movements of the digits rather than brief simultaneous flexion and/or fanning of the toes. Neurologists should be aware of this unusual finding, which should not preclude the diagnosis of brain death.  

**LA:** Language  
English  

**PY:** Publication Year  
1992  

**PT:** Publication Type  
Journal Article  

**CP:** Country of Publication  
UNITED STATES  

**DE:** Descriptors  
Adult; Aged; Brain Death: physiopathology; Case Report; Female; Human; Laterality: physiology; Male; Muscle Contraction: physiology; Neurologic Examination; Reflex, Abnormal: physiology; Spinal Cord: physiopathology; Toes: innervation  

**LR:** Last Revision Date  
20001218  

**UD:** Update  
20020109  

**RO:** Record Owner  
National Library of Medicine  

**SF:** Subfile  
Index Medicus  

234  

**AN:** Accession Number  
1484529  

235
Apnea test in diagnosis of brain death: comparison of two methods and analysis of complications.

AU: Author
Melano R; Adum ME; Scarlatti A; Bazzano R; Araujo JL

AF: Affiliation
Instituto Nacional Central Unico Coordinador de Ablacion e Implante, Buenos Aires, Argentina.

SO: Source

IS: ISSN
0041-1345

LA: Language
English

PY: Publication Year
2002

PT: Publication Type
Journal Article

CP: Country of Publication
United States

DE: Descriptors
Apnea: diagnosis; Brain Death: diagnosis; Carbon Dioxide: analysis; Comparative Study; Human; Oxygen Consumption; Retrospective Studies; Tissue Donors: supply & distribution

RN: Registry Number
124-38-9 (Carbon Dioxide)

UD: Update
20020905

RO: Record Owner
National Library of Medicine

SF: Subfile
Index Medicus

AN: Accession Number
11959165
Accuracy of radionuclide cerebral perfusion scan (RCPS) in "brain death"
AU: Authors
Mitchell, RA; Kirk, GA; Schulz, EE
AF: Author Affiliation
Loma Linda Univ., Loma Linda, CA
CS: Conference Sponsor
Society of Nuclear Medicine (SNM)
CF: Conference
Society of Nuclear Medicine, 30th Annual Meeting, St. Louis, MO (USA), 7-10 Jun 83. (World Meeting Number 832 0119)
NT: Notes
Availability: Jun. 1983, Abstracts booklet available: Society of Nuclear Medicine, 475 Park Avenue South, New York, N.Y. 10016, USA, Price: $5.00
SF: Subfile Name
CPI, Conference Papers Index
CL: Classification Code
U 4500 EXPERIMENTAL MEDICINE
AN: Accession Number
0540443
A1: Alert Info
20001231
Clinical application of I-123 IMP-SPECT to the study of brain
death and coma
AU: Authors
Momose, T; Kosaka, N; Ohtake, T; Nishikawa, J; Watanabe, T; Iio, M
AF: Author Affiliation
Univ. Tokyo, Tokyo, Japan
CS: Conference Sponsor
Society of Nuclear Medicine
CF: Conference
Society of Nuclear Medicine 35th Annual Meeting, San Francisco, CA
(USA), 14-17 Jun 1988. (World Meeting Number 882 0432)
NT: Notes
Availability: Society of Nuclear Medicine, 136 Madison Avenue,
Department 588P, New York, NY 10016-6760 (USA)
SF: Subfile Name
CPI, Conference Papers Index
CL: Classification Code
U 4500 EXPERIMENTAL MEDICINE
AN: Accession Number
1808036
A1: Alert Info
20001231
The imaging of brain death.

AU: Author
Monsein LH
AF: Author Affiliation
Department of Radiology, Johns Hopkins University, Baltimore 21287-2182, USA.
SO: Source
Anaesthesia and intensive care, 1995 Feb, 23(1):44-50
IS: ISSN
0310-057X
LA: Language
English
PY: Publication Year
1995
PT: Publication Type
Journal Article; Review; Review, Academic
CP: Country of Publication
AUSTRALIA
DE: Descriptors
Brain Death: diagnosis; Brain Death: radiography; Brain Death: radionuclide imaging; Brain Death: ultrasonography; Cerebral Angiography; Diagnostic Imaging; Electroencephalography; Human; Magnetic Resonance Imaging; Tomography, Emission-Computed; Tomography, X-Ray Computed
FE: Features
97 references
LR: Last Revision Date
20001218
UD: Update
20020109
RO: Record Owner
National Library of Medicine
SF: Subfile
Index Medicus; Nursing
AN: Accession Number
7778747
TI: Imaging the adult brain.
AU: Moseley-Ivan
PY: 1995
DT: Literature-Review
IS: 0022-3050
LA: English
MC: Behavior-; Endocrine-System (Chemical-Coordination-and-Homeostasis); Infection-; Morphology-; Muscular-System (Movement-and-Support); Neurology - (Human-Medicine, Medical-Sciences); Pathology-; Psychiatry- (Human-Medicine, Medical-Sciences); Radiology- (Medical-Sciences)
ST: Hominidae-; Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia-
OR: microorganisms- (Microorganisms-Unspecified); Hominidae- (Hominidae-)
TN: animals-; chordates-; humans-; mammals-; microorganisms-; primates-; vertebrates-
MI: BRAIN-DEATH; COMPUTED-TOMOGRAPHY; CRANIAL-NERVE-LESION; DEMENTIA-;
DIAGNOSIS-; DIGITAL-RADIOGRAPHY; EPILEPSY-; FACIAL-PALSY; FLOWIMAGING;
HEAD-INJURY; HEADACHE-; INTRACRANIAL-INFECTION; MAGNETIC-RESONANCE-IMAGING; MAGNETIC-RESONANCE-SPECTROSCOPY; MOTOR-NERVE-PALSY;
NEUROENDOCRINE-DISEASE; NMR-; OCULAR-NERVE-PALSY;
PAPILLOEDEMA-;
RADIONUCLIDES-; SONOGRAPHYAN:
199598126696
99mTc-HMPAO and mobile gamma-camera in the diagnosis of brain death.

AU: Author
Muttini P; Dagnino N

AF: Author Affiliation
Division of Nuclear Medicine, Sampierdarena Hospital, Genoa, Italy.

SO: Source

IS: ISSN
0368-3249

AB: Abstract
The determination of brain death relies on unequivocal clinical data and on supportive studies. The replacement of the electroencephalogram (EEG) as the gold standard is unanimously felt as appropriate. Scintigraphic imaging with technetium-99m hexamethylpropylenamineoxime (99mTc-HMPAO) seems to offer an adequate substitute given its metabolic features, ideally to be used with a mobile gamma-camera which simplifies the approach to this type of patient. We correlated EEG with the scintigraphic data, which were found to be concordant and therefore substitutive in the establishment of brain death.

LA: Language
English

PY: Publication Year
1994

PT: Publication Type
Journal Article

CP: Country of Publication
ITALY

DE: Descriptors
Adult; Aged; Aged, 80 and over; Brain: radionuclide imaging; Brain Death: diagnosis; Brain Death: radionuclide imaging; Electroencephalography; Female; Gamma Cameras; Human; Male; Middle Age; Organotechnetium Compounds: diagnostic use; Oximes: diagnostic use; Technetium Tc 99m Exametazime

RN: CAS Registry Number
0 (Organotechnetium Compounds); 0 (Oximes); 100504-35-6 (Technetium Tc 99m Exametazime)

LR: Last Revision Date
20001218

UD: Update
20020109

RO: Record Owner
National Library of Medicine

SF: Subfile
Index Medicus
TI: Donor detection and organ procurement in the Madrid region.
AU: Navarro-A {a}; Escalante-J-L; Andres-A; Madrid-Group-Of-Transplant-
-Coordinators-Of-The-Region-Of
AD: Coordinacion Trasplantes, C/Sinesio Delgado 8, Madrid, Spain
PY: 1993
DT: Article-
IS: 0041-1345
LA: English
MC: Behavior-; Epidemiology- (Population-Studies); Human-Ecology (Anthropology-
-); Pathology-; Physiology-; Public-Health (Allied-Medical-Sciences); Surgery-
(Medical-Sciences)
ST: Hominidae-: Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia-
OR: human- (Hominidae-)
TN: animals-; chordates-; humans-; mammals-; primates-; vertebrates-
GE: Spain- (Europe-, Palearctic-region)
MI: BRAIN-DEATH; LIMITED-ORGAN-SUPPLY; NOTE-; PUBLIC-EDUCATION;
THERAPEUTIC
-METHOD: TRANSPLANT-COORDINATOR-TEAMS; TRANSPLANTATIONAN:
199497131161
INTRODUCTION: The Real Ordinance 2070/1999 meant an important modification in the legislation, when including transcranial Doppler (TCD) in explorations to confirm the clinical diagnosis of brain death (BD). Habitually for their employment in the diagnosis of BD, we look for blood flow signal from the middle cerebral arteries (MCA) and the basilar artery (BA). OBJECTIVES: To check the effectiveness of the TCD like test of BD, looking for both middle cerebral arteries (MCA) and both intracranial vertebral arteries (VA), instead of the BA, and taking as Gold Standard cerebral scintigraphic techniques. PATIENTS AND METHODS:. We present 25 patients diagnosed clinically with BD; on these TCD was carried out to confirm BD. Later on we proceeded to carry out cerebral scintigraphic techniques in all these cases. As statistical tool the test of c2 is used with confidence interval of 95%. RESULTS: In 24 of the 25 cases, the TCD was effective in confirming the diagnosis of BD. In the remaining patient, a false positive result was obtained, since the TCD didn't reveal flow in the infratentorial compartment, as contrary to the cerebral scintigraphic techniques which showed the presence of residual flow at this level; this residual flow disappeared in 36 hours. This patient was hemodynamically unstable during TCD exploration. CONCLUSIONS: In our results the TCD obtains a reliability of 100% when confirming the absence of blood flow in the supratentorial compartment; nevertheless the false positive result obtained at the infratentorial level, warns us to be cautious in accepting the flow from the VA as a test of absence of flow at the infratentorial compartment, especially in those patients with hemodynamic instability.
Clinical applications of brain death protocols.

AU: Author
Norton DJ

SO: Source

IS: ISSN
0888-0395

AB: Abstract
The declaration of death by neurological criteria has become more commonly accepted and used within the medical community, especially within the past 10 years. There remains, however, a great deal of misunderstanding and lack of awareness among health care professionals as to the criteria used to determine brain death and the importance of adhering to brain death determination protocols. Youngner et al, in their 1989 survey, found more than one-third of surveyed physicians involved in the decision-making process for brain death were still unable to correctly identify and apply the whole brain criteria needed to determine brain death. To some degree, this unfamiliarity can perhaps be explained by the infrequency with which brain death occurs. Physicians and nurses are usually not involved in brain death pronouncements more than a few times each year. Because of this, hospitals need to develop and maintain brain death protocols which are in keeping with the most current scientific literature and accepted medical practice.

LA: Language
English

PY: Publication Year
1992

PT: Publication Type
Journal Article

CP: Country of Publication
UNITED STATES

DE: Descriptors
Apnea: diagnosis; Bias (Epidemiology); Blood Flow Velocity; Brain Death: diagnosis; Cerebrovascular Circulation; Clinical Protocols: standards; Electroencephalography: methods; Electroencephalography: standards; Evoked Potentials, Auditory, Brain Stem; Human; Neurologic Examination: methods; Neurologic Examination: standards; Reproducibility of Results

LR: Last Revision Date
20001218

UD: Update
20020109

RO: Record Owner
National Library of Medicine

SF: Subfile
Index Medicus; Nursing

AN: Accession Number
1289435
We investigated the relationship between scalp electroencephalogram (EEG) and nasopharyngeal EEG using Automatic EEG Analysis System in 10 patients with the age between 17 and 66 who were clinically presumed brain death because of flat line EEG and loss of auditory brainstem response (ABR). Among 10 patients, nasopharyngeal lead EEG showed low voltage and slow waves of 10-20 microV in 4 cases and flat line EEG in 6 cases. However, Automatic EEG Analysis system-assisted analysis of EEGs recorded on a magnetic tape revealed that equivalent electric potentials in the scalp EEG from these patients were smaller than those of healthy volunteers, but those in the nasopharyngeal EEG from all patients showed low voltage within the range of distribution in normal volunteers (delta: 6, theta 1: 6, theta 2: 2, alpha 1: 1, alpha 3: 10, beta 1: 6 in 10 cases). The present results show that in addition to the routine scalp EEG, it is clinically useful to employ simple and easy nasopharyngeal lead EEG method and to analyze data using Automatic EEG Analysis System for the judgement of brain death.
Analysis and classification of nasopharyngeal EEG in "brain death" patients (2)
AU: Authors
Okii, Y; Akane, A; Kawamoto, K; Watabiki, T; Yoshida, M;
Yoshimura, S; Tokiyasu, T
AF: Author Affiliation
CS: Conference Sponsor
No sponsors listed.
CF: Conference
80th Congress of the Medico-Legal Society of Japan, Kyoto (Japan),
1-3 Apr 1996. (World Meeting Number 962 5000)
NT: Notes
Availability: Department of Legal Medicine, Kyoto Prefectural
University of Medicine, Kawaramachi-hirokoji, Kamigyoku, Kyoto
602, Japan. Poster Paper No. P137
LA: Language
English
SF: Subfile Name
CPI, Conference Papers Index
CL: Classification Code
U 3500 Clinical Medicine
AN: Accession Number
3229023
A1: Alert Info
20001231
Transesophageal, echocardiographic assessment of left ventricular function during apnea testing for brain death

AU: Author
Orliaguet, GA; Catoire, P; Liu, N; Beydon, L; Bonnet, F

AF: Author Affiliation

SO: Source
Transplantation, vol. 58, no. 6, pp. 655-658, 1994

IS: ISSN
0041-1337

AB: Abstract
The effects of apnea testing-induced respiratory acidosis on left ventricular function (LVF) are still controversial. The aim of the study was to assess LVF during apnea testing using transesophageal echocardiography (TEE). Twenty consecutive patients suspected of brain death, hemodynamically stable, and considered as potential organ donors were prospectively studied. A 20-min apnea test was performed after obtaining a PaCO$_2$ $>$ 35 mmHg and 20 min of FIO$_2$ 1 ventilation. LVF was assessed using TEE with a CFM 750 (Diasonic) connected to a 5 MHz probe. Heart rate (HR), mean arterial pressure (MAP), left ventricle end-diastolic and systolic area (LVEDA, LVESA), and LVF assessed by fractional area changes (FAC), systolic wall motion (SWM) scores, and blood gases were recorded at baseline, and after 5, 10, 15, and 20 min of apnea testing. In 19 patients, no spontaneous respiratory movement occurred during the standard 20-min period. In one patient (No. 15), the apnea test had to be stopped after 10 min because of hypoxia. HR, LVEDA LVESA, and SWM were not significantly modified during the study. There was a progressive statistically significant decrease in MAP during apnea (from 77 plus or minus 10 to 63 plus or minus 11 mm/Hg), associated with a statistically significant increase in FAC at 20 min (from 48 plus or minus 13 to 56 plus or minus 8%). PaCO$_2$ progressively rose (from 40 plus or minus 3 to 95 plus or minus 11 mmHg), associated with a decrease in pH (from 7.42 plus or minus 0.06 to 7.09 plus or minus 0.08). At the same time, PaO$_2$ decreased slightly in all patients, but values remained well above hypoxic levels, except for one patient. Despite severe respiratory acidosis the increase in FAC suggests that apnea testing is well tolerated for brain death assessment. (DBO)

LA: Language
English
SL: Summary Language
English

PY: Publication Year
1994

PT: Publication Type
Journal Article

DE: Descriptors
organs; donors; brain; death; echocardiography; man; apnea
TI: MR 'hot nose sign' and 'intravascular enhancement sign' in brain death.
AU: Orrison-William-W-Jr {a}; Champlin-Anna-M; Kesterson-O-Lee; Hartshorne-Michael-F; King-Jerry-N
AD: {a} Dep. Radiol., Univ. New Mexico Sch. Mex., Albuquerque, NM 87131-5336, USA
PY: 1994
DT: Article-
IS: 0195-6108
LA: English
AB: Three cases of MR with gadopentetate dimeglumine in patients diagnosed with cerebral death are presented. Observation of an MR "hot nose sign" and an "intravascular enhancement sign" provided additional imaging support in the clinical diagnosis of brain death. The MR findings in brain death include: 1) transtentorial and foramen magnum herniation, 2) absent intracranial vascular flow void, 3) poor gray matter/white matter differentiation, 4) no intracranial contrast enhancement, 5) carotid artery enhancement (intravascular enhancement sign), and 6) prominent nasal and scalp enhancement (MR hot nose sign). Additional modalities for confirming brain death are discussed.
AI: Y
MC: Cardiovascular-Medicine (Human-Medicine, Medical-Sciences); Hematology-(Human-Medicine, Medical-Sciences); Morphology-; Nervous-System (Neural-Coordination); Neurology- (Human-Medicine, Medical-Sciences); Pathology-; Pharmacology-; Respiratory-System (Respiration-)
ST: Hominidae-: Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia- 
OR: human- (Hominidae-)
TN: animals-; chordates-; humans-; mammals-; primates-; vertebrates- 
CB: GADOPENTETATE-DIMEGLUMINE
RN: 86050-77-3: GADOPENTETATE DIMEGLUMINE
MI: CASE-STUDY; DIAGNOSTIC-METHOD; DIAGNOSTIC-DRUG; GADOPENTETATE-DIMEGLUMINE; MAGNETIC-RESONANCE
AN: 199497361927
Determination of brain death

We present diagnostic criteria of brain death determination that were determined by physicians based on physical signs, "tests of death" and confirmatory tests. All standards required by Polish law are also presented and discussed. They are compared with recent guidelines published by American Academy of Neurology. Confirmatory tests that are not required by law in Poland are also emphasised. They appear to be of great worth for cases in whom physical signs cannot be reliably interpreted. The aim of this article is to present how the definition of death was being changed for the centuries and what kinds of requirements the law in Poland needs at the beginning of the XXI century.
Coma mimicking brain death following baclofen overdose.
AU: Author
Ostermann ME; Young B; Sibbald WJ; Nicolle MW
AF: Author Affiliation
Department of Critical Care, London Health Sciences Centre,
Ontario, Canada.
SO: Source
Intensive care medicine, 2000 Aug, 26(8):1144-6
IS: ISSN
0342-4642
AB: Abstract
Baclofen toxicity can be a cause of profound coma with brainstem
dysfunction mimicking brain death, and is mainly a clinical
diagnosis. Measuring plasma levels is not always possible and may
be misleading. Imaging results are usually normal.
Electroencephalography may show a pattern of burst suppression. At
present no effective specific therapy is available. However, as
demonstrated in our case, the prognosis can be good even in severe
cases, provided it is recognized early enough, and appropriate
supportive measures are instituted.
LA: Language
English
PY: Publication Year
2000
PT: Publication Type
Journal Article
CP: Country of Publication
UNITED STATES
DE: Descriptors
Baclofen: poisoning; Brain Death: diagnosis; Case Report; Coma:
chemically induced; Coma: diagnosis; Diagnosis, Differential;
Human; Male; Middle Age; Muscle Relaxants, Central: poisoning;
Overdose: diagnosis; Overdose: therapy
RN: CAS Registry Number
0 (Muscle Relaxants, Central); 1134-47-0 (Baclofen)
UD: Update
20020109
RO: Record Owner
National Library of Medicine
SF: Subfile
Index Medicus
AN: Accession Number
11030173
[Diagnosis of brain death]
OT: Original Title
Aivokuoleman diagnoosi.
AU: Author
Palo J; Viitala S
SO: Source
Duodecim; laaketieteellinen aikakauskirja, 2000, 116(8):809-10
IS: ISSN
0012-7183
LA: Language
Finnish
PY: Publication Year
2000
PT: Publication Type
Editorial
CP: Country of Publication
Finland
DE: Descriptors
Brain Death: diagnosis; Brain Death: legislation & jurisprudence;
Finland; Human; Medical Records: standards; Medical Staff;
Hospital: standards; Tissue Harvesting: statistics & numerical data
UD: Update
20020213
RO: Record Owner
National Library of Medicine
SF: Subfile
Index Medicus
AN: Accession Number
11787124
Diagnosis and frequency of brain death.
AU: Author
Palo J; Viitala S
SO: Source
IS: ISSN
0140-6736
NT: Notes
Comment on: Lancet. 1997 May 24;349(9064):1558 [AN=9167495]
LA: Language
English
PY: Publication Year
1999
PT: Publication Type
Comment; Letter
CP: Country of Publication
ENGLAND
DE: Descriptors
Finland; Human; Organ Procurement: statistics & numerical data
LR: Last Revision Date
20011126
UD: Update
20020109
RO: Record Owner
National Library of Medicine
SF: Subfile
Abridged Index Medicus; Index Medicus
AN: Accession Number
10584754
[Diagnosis of brain death]
OT: Original Title
Aivokuoleman diagnoosi.
AU: Author
Palo J; Viitala S
SO: Source
Duodecim; laaketieteellinen aikakauskirja, 2000, 116(8):809-10
IS: ISSN
0012-7183
LA: Language
Finnish
PY: Publication Year
2000
PT: Publication Type
Editorial
CP: Country of Publication
Finland
DE: Descriptors
Brain Death: diagnosis; Brain Death: legislation & jurisprudence; Finland; Human; Medical Records: standards; Medical Staff, Hospital: standards; Tissue Harvesting: statistics & numerical data
UD: Update
20020213
RO: Record Owner
National Library of Medicine
SF: Subfile
Index Medicus
AN: Accession Number
11787124
Reliability in diagnosis of brain death.

AU: Author
Paolin A; Manuali A; Di Paola F; Boccaletto F; Caputo P; Zanata R; Bardin GP; Simini G
AF: Author Affiliation
Department of Anesthesia and Critical Care, Ospedale Generale S. Maria dei Battuti, Treviso, Italy.
SO: Source
IS: ISSN
0342-4642
NT: Notes
AB: Abstract
OBJECTIVE: To compare some of the confirmatory investigations of brain death with clinical criteria in order to achieve the most sensitive and accurate diagnosis of brain death. DESIGN: All patients with isolated brain lesions and Glasgow Coma Scale (GCS) = 3 were subjected to neurological examination after ruling out hypothermia, metabolic disorders and drug intoxications and diagnosed as clinically brain-dead when the brainstem reflexes were absent and the apnea test positive. PATIENTS: 15 patients with clinical diagnosis of brain death entered this study.
MEASUREMENTS AND RESULTS: The patients were submitted to the following investigations: electroencephalogram (EEG), transcranial Doppler (TCD) of the middle cerebral arteries (MCA), cerebral blood flow measurements with the i.v. Xe-133 method (CBF) and selective cerebral angiography (CA). EEG was isoelectric in 8 patients while the remaining 7 patients showed persistence of electrical activity. TCD was compatible with intracranial circulatory arrest in 18 MCA districts, compatible with normal flow in 2 and undetectable in 10 out of 30 districts insonated. In CBF examinations, however, all the patients showed a characteristic "plateau" of the desaturation curves lasting through the whole investigation and suggestive of absent cortical flow. CA showed circulatory arrest in both carotid and vertebral arteries. CONCLUSIONS: Our study suggests that cerebral angiography and CBF studies are the most reliable investigations whereas the role of EEG and TCD remains to be determined because of the presence of false negatives and positives.
LA: Language
English
PY: Publication Year
1995
PT: Publication Type
Journal Article
CP: Country of Publication
UNITED STATES
DE: Descriptors
Aged; Brain Death: diagnosis; Cerebral Angiography; Cerebral Arteries: ultrasonography; Cerebrovascular Circulation; Comparative Study; Electroencephalography; Female; Human; Male; Middle Age; Neurologic Examination; Reproducibility of Results; Sensitivity and Specificity; Ultrasonography, Doppler, Transcranial; Xenon Radioisotopes: therapeutic use
RN: CAS Registry Number
0 (Xenon Radioisotopes)
LR: Last Revision Date
20011126
UD: Update
20020109
RO: Record Owner
National Library of Medicine
SF: Subfile
Index Medicus
AN: Accession Number
8522670
Venous angiography: importance in the diagnosis of brain death. 125 cases

According to many ethical and humanitarian arguments, the diagnosis of "brain death" is more and more an emergency. The forensic criteria include abolition of consciousness, abolition of brain stem reflexes, abolition of spontaneous breathing joined to electrocerebral silence. However using EEG criteria of electrical silence may be unreliable because of technical artefacts or depressed electrical activity due to drug intoxication and hypothermia. Venous angiography was used in 125 cases: our experience proves reliability and efficiency of angiographic criteria for diagnosis of brain death. For organ transplant, it is better to be as fast as possible: transplanted organ will be better and it reduces the cost of a long useless intensive care. When it is necessary, we suggest to allow the choice between EEG and angiography.
Bedside diagnosis of brain death: Correlation of radionuclide cerebrovascular imaging (RCVI) and auditory brainstem response (ABR)

AU: Authors
Pjura, GA; Kim, EE

CS: Conference Sponsor
International Society of Radiology (ISR)

CF: Conference
XVI International Congress of Radiology -- ICR '85, Honolulu, HI (USA), 8-12 Jul 1985. (World Meeting Number 853 0010)

NT: Notes
Availability: International Society of Radiology, P.O. Box 9205, Albuquerque, NM 87119, USA, Conference proceedings distributed to conference participants. Copies will also be sold during RSNA meetings held in Chicago, November 1985

SF: Subfile Name
CPI, Conference Papers Index

CL: Classification Code
U 4500 EXPERIMENTAL MEDICINE; U 3500 CLINICAL MEDICINE

AN: Accession Number
1000264

AI: Alert Info
20001231
TI: Dissociative neurophysiological constellations in brain-dead patients.
AU: Pohlmann-Eden-B [a]; Dingethal-K; Quintel-M
AD: [a] Neurol. Klinik, Klinikum Mannheim, Fakultät der Univ., Heidelberg, Theodor-Kutzer-Ufer 1, 6800 Mannheim 1, Germany
PY: 1993
DT: Article-
IS: 0175-3851
LA: German; Non-English
LS: German; English
AB: Temporal dissociation of the dying of infra- and supratentorial structures during brain death leads to typical patterns of neurophysiological items. We investigated 22 brain-dead patients with an average age of 41.0 (range 3-74) years by means of brainstem auditory evoked potentials (BEAP), somatosensory evoked potentials (SEP), and electroencephalography (EEG). 86% of all patients showed total loss of all BEAP components; only three presented with either persisting wave I or wave II (uni- and bilateral), which reflected intact peripheral auditory pathway. In correlation to forebrain death, all patients had no cortical SEP-components in presence of normal peripheral responses. Surprisingly, four patients with primarily supratentorial lesions with definite clinical criteria of brain death and loss of all EP-components presented with remaining insular EEG-activity. This observation can be explained by external leptomeningeal collateralization and is irrelevant for a life-supporting brain metabolism and not in contradiction to a safe diagnosis of brain death.
AI: Y
MC: Metabolism-; Nervous-System (Neural-Coordination); Neurology- (Human-Medicine, Medical-Sciences); Pathology-
ST: Hominidae-: Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia-; Muridae-: Rodentia-, Mammalia-, Vertebrata-, Chordata-, Animalia-
OR: rat- (Muridae-); Hominidae- (Hominidae-)
TN: animals-; chordates-; humans-; mammals-; nonhuman-mammals; nonhumanvertebrates; primates-; rodents-; vertebrates-
MI: ENTORHINAL-CORTEX-LESION; MESSENGER-RNA; TRANSFORMINGGROWTH-FACTOR-BETA-1
AN: 199396042539
The diagnosis of brain death.

AU: Author
Rockoff MA; Thompson JE

SO: Source

IS: ISSN
0028-4793

NT: Notes
Comment on: N Engl J Med. 2001 Apr 19;344(16):1215-21
[AN=11309637]

LA: Language
English

PY: Publication Year
2001

PT: Publication Type
Comment; Letter

CP: Country of Publication
United States

DE: Descriptors
Brain Death: diagnosis; Child; Human; Pneumothorax: etiology;
Respiration, Artificial: adverse effects; Respiration, Artificial: methods

LR: Last Revision Date
20011109

UD: Update
20020109

RO: Record Owner
National Library of Medicine

SF: Subfile
Abridged Index Medicus; Index Medicus

AN: Accession Number
11529222
Nasopharyngeal electrode recording of somatosensory evoked potentials as an indicator in brain death

AU: Authors
Roncucci, P; Lepori, P; Carmilla, P; Bayat, A; Mok, MS

AF: Author Affiliation
First Dep. Anesthesia, Spedali Riuniti, Livorno, Italy

CS: Conference Sponsor
International Anesthesia Research Society; Glaxo Wellcome plc

CF: Conference
71st Annual Clinical and Scientific Congress of the International Anesthesia Research Society, San Francisco, CA (USA), 14-18 Mar 1997. (World Meeting Number 971 0026)

NT: Notes
Availability: International Anesthesia Research Society, 2 Summit Park Drive, Suite 140, Cleveland, OH 44131, Abstracts available. Paper No. S263

LA: Language
English

SF: Subfile Name
CPI, Conference Papers Index

CL: Classification Code
U 1000 Animal and Plant Science; U 2000 Biology; U 3500 Clinical Medicine; U 7500 Pharmacology

AN: Accession Number
3310609

A1: Alert Info
20001231
TI: Potential pitfalls in apnea testing.
AU: Rudolf-J {a}; Haupt-W-F; Neveling-M; Grond-M
AD: {a} Klinik Poliklinik Neurol., Univ. Koeln, Joseph-Stelzmann-Str. 9, D-50924 Koeln, Germany
PY: 1998
DT: Article-
IS: 0001-6268
LA: English
AB: To determine the influence of baseline paCO2 on the results of apnea testing in the diagnosis of brain death, we performed an open prospective study on 36 patients fulfilling all other criteria for the diagnosis of brain death according to the criteria proposed by the Advisory Board of the German Federal Chamber of Physicians. For testing of apnea, patients underwent hypoventilation with 100% oxygen supply until a baseline paCO2 of 40 torr (5.3 kPa; n = 24, group 1) or 60 torr (8.0 kPa, n = 12, group 2) was reached. Then, patients were disconnected from the ventilator and apneic oxygenation with insufflation of 61 O2/min into the tracheal cannula was performed for five minutes. Arterial blood gas samples were obtained every minute during the testing period. In parallel, patients were observed for signs of spontaneous breathing. All patients remained apneic during the five minute test period. No relevant hypoxia (paO2 < 80 torr (10.6 kPa)) was observed in either group. In group 1, a mean baseline paCO2 of 45 torr (6.0 kPa) was registered, mean end-paCO2 was 75 torr (10.0 kPa). In group 2, paCO2 values were 66 torr (8.8 kPa) and 90 torr (12 kPa), respectively. Baseline pH in group 1 (7.32) decreased to 7.18 at the end of testing and from 7.23 to 7.13 in group 2. Patients in group 2 were in possible danger of developing a CO2-induced narcosis mimicking apnea. Secondary organ damage due to severe respiratory acidosis could not be excluded in the patients of group 2. As no complications were observed in group 1 and apnea was evident in all these patients, we consider a baseline paCO2 of 40 torr (5.3 kPa) sufficient to establish apnea after five minutes of apneic oxygenation if an increase of baseline paCO2 of at least 20 mmHg is documented by arterial blood gas sampling. A higher baseline paCO2 may endanger patients without yielding more specific testing results.
AI: Y
MC: Neurology- (Human-Medicine, Medical-Sciences); Pulmonary-Medicine (Human-Medicine, Medical-Sciences)
ST: Hominidae:- Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia-
OR: human- (Hominidae-): female-, patient-, male-
TN: Animals-; Chordates-; Humans-; Mammals-; Primates-; Vertebrates-
CB: blood-gas: arterial-; carbon-dioxide: arterial-partial-pressure
DS: apnea-: respiratory-system-disease; cerebrovascular-disease: nervous-system-disease, vascular-disease
RN: 124-38-9: CARBON DIOXIDE
MQ: apnea-testing: diagnostic-method, potential-pitfalls
MI: brain-death
AN: 199800437347
UD: 19980825
Influence of antemortem medication on the determination of brain death.

AU: Author
Saito T; Takeichi S; Nakajima Y; Yukawa N; Osawa M
AF: Author Affiliation
Department of Forensic Medicine, Tokai University School of Medicine, Isehara, Japan.
SO: Source
IS: ISSN
0047-1887
AB: Abstract
Post-mortem concentration of pentobarbital in the blood and brain of two deceased neurosurgical patients was determined by gas chromatography/mass spectrometry. Patients treated with barbiturate for elevated intracranial pressure after head injury may incur brain death. In the present two cases of brain death a large amount of barbiturate remained in the brain, even when the blood concentration was not detectable, possibly because the blood flow was stagnant in the brain. It is suggested that a patient under barbiturate coma should be given serious consideration as to the determination of brain death, even if barbiturate is negative in the blood.
LA: Language
English
PY: Publication Year
1995
PT: Publication Type
Journal Article
CP: Country of Publication
JAPAN
DE: Descriptors
Adolescence; Brain: metabolism; Brain Death: diagnosis; Child, Preschool; Coma: diagnosis; Coma: etiology; Craniocerebral Trauma: drug therapy; Diagnosis, Differential; Female; Human; Male; Mass Fragmentography; Pentobarbital: pharmacokinetics; Pentobarbital: therapeutic use; Postmortem Changes
RN: CAS Registry Number
76-74-4 (Pentobarbital)
LR: Last Revision Date
20001218
UD: Update
20020109
RO: Record Owner
National Library of Medicine
SF: Subfile
Index Medicus
162
AN: Accession Number
8583693
Organ transplantation from brain death patients started in Japan in 1997. However, it is difficult to diagnose brain death in patients treated with barbiturate therapy. In this study, the influence of long continuous administration of barbiturate on diagnosis of brain death was investigated by measuring plasma concentration of barbiturate. In 15 patients treated with barbiturate therapy, plasma concentrations of thiamylal were measured by liquid chromatographic apparatus every day until its level decreased below 0.1 microgram/ml after cessation of continuous administration. At the same time, plasma thiamylal levels were checked on the day when burst-suppression (b-s) pattern had disappeared in 9 cases, light reflex of pupil appeared in 7 cases and spontaneous respiration had been detected by trigger lamp in 11 cases. The plasma concentrations of thiamylal on the day when b-s pattern had disappeared differed clearly among the cases in the range of 8.8 to 37.9 micrograms/ml. Those cases in which light reflex of the pupil had been recognized were also different in the range of 17.8 to 57.8 micrograms/ml. The cases in which spontaneous respiration had been detected were in the range of 4.4 to 23.0 micrograms/ml. These concentrations varied about 4, 3 and 5 times among the cases examined. The intervals between cessation of continuous administration of thiamylal and the decrease of plasma concentration to below 0.1 microgram/ml also varied from 2 to 14 days from case to case. The minimum concentration of thiamylal on the day when b-s pattern had disappeared, light reflex of the pupil had been recognized and spontaneous respiration had been detected was 8.8, 17.8 and 4.4 micrograms/ml respectively. These results suggest that diagnosis of brain death in patients treated with barbiturate therapy is able to be made when the plasma thiamylal level is below 4.4 micrograms/ml.
Spontaneous and reflex movements may be found in patients with brain death (BD). The authors prospectively evaluated their frequency using a standardized protocol. Among 38 patients who fulfilled criteria for BD, the authors found 15 (39%) with spontaneous or reflex movements. The most common movement was finger jerks. Undulating toe flexion sign, triple flexion response, Lazarus sign, pronation-extension reflex, and facial myokymia also were seen. These movements may be more common than reported and do not preclude the diagnosis of BD.
TI: Movements in brain death.
AU: Saposnik-G {a}; Maurino-J; Bueri-J-A
AD: {a} Charcas 4431, 4 '10', Buenos Aires, 1425: gsaposnik@intramed.net.ar, Argentina
PY: 2001
DT: Literature-Review
IS: 1351-5101
LA: English
LS: English
MC: Nervous-System (Neural-Coordination)
ST: Hominidae-: Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia-
OR: human- (Hominidae-): heart-beating-cadaver, patient-
TN: Animals-; Chordates-; Humans-; Mammals-; Primates-; Vertebrates-
PS: brain-: nervous-system; brainstem-: nervous-system; cortex-: nervous-system
DS: brain-death: diagnosis-, nervous-system-disease
MI: Lazarus's-sign; brainstem-reflexes; movements-; organ-transplantation; reflex-spinalmovements;
spontaneous-spinal-movements
ALT: Brain-Death-(MeSH)
AN: 200100219236
UD: 20010628
Facial myokymia in brain death.

Background: Brain death (BD) is the irreversible loss of all functions of the brain and brainstem. Spontaneous and reflex movements of the limbs have been described in this condition. However, facial myokymia (FM) in BD has not been previously reported. The origin of that motor phenomenon in alive patients is still uncertain, since supranuclear, nuclear and peripheral mechanisms have been proposed. Objective: We describe the presence of FM in a patient who fulfilled the criteria for BD. A 40-year-old-man had right-sided weakness and impaired consciousness. After 14 h admission, he fulfilled the criteria for BD. A CT scan of the head showed a large putaminal hemorrhage. The EEG was isoelectric. At that time, fine spontaneous twitches of the left cheek were noticed. They consisted of repetitive and rhythmic movements in groups of 3-5 lasting for < 5 s. These movements appeared every 2-10 min during 6 h. Discussion: Spinal reflexes have been described in BD. The presence of any movements other than the recognized reflexes may question this diagnosis and limit organ procurement for transplantation. The recognition of FM as an accepted movement in BD patients has practical and legal implications.

AT: Y
MC: Neurology- (Human-Medicine, Medical-Sciences)
ST: Hominidae-: Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia-
OR: human- (Hominidae-): adult-, male-, patient-
TN: Animals-; Chordates-; Humans-; Mammals-; Primates-; Vertebrates-
PS: brain-: nervous-system; brainstem-: nervous-system
MI: facial-myokymia; spontaneous-cheek-twitches; Case-Study
ALT: Brain-Death-(MeSH)
AN: 200100216754
UD: 20010628
Determination of cerebral perfusion by means of planar brain scintigraphy and 99mTc-HMPAO in brain death, persistent vegetative state and severe coma.

AU: Author
Schlake HP; Bottger IG; Grotemeyer KH; Husstedt IW; Brandau W; Schober O

AF: Author Affiliation
Department of Neurology, University of Munster, FRG.

SO: Source
Intensive care medicine, 1992, 18(2):76-81

IS: ISSN
0342-4642

AB: Abstract
A total of 24 patients with clinical evidence of brain death (n = 17), severe coma (n = 2; GCS approximately 3) and apallic syndrome (n = 4) underwent a comparative investigation with 99mTc-HMPAO brain scintigraphy, EEG, auditory and somatosensory evoked potentials. Accompanied by EEG and evoked potentials, brain scintigraphy enabled confirmation of cerebral death in 15/17 patients. In one case clinical examination and evoked potentials suggest brain death, but cerebral perfusion and EEG were normal ("brain stem death"). One patient with evidence of cerebral death in clinical examination, brain scintigraphy and evoked potentials, showed questionable focal EEG activity; however, autopsy revealed intravital autolysis of the entire brain. All patients with apallic syndrome and deep coma showed a distinct cerebral perfusion, but gross EEG abnormalities; evoked potentials were delayed or absent. Planar scintigraphy with 99mTc-HMPAO appears to be superior to neurophysiological techniques discriminating patients with agonal cerebral dysfunction from those with brain death.

LA: Language
English

PY: Publication Year
1992

PT: Publication Type
Journal Article

CP: Country of Publication
UNITED STATES

DE: Descriptors
Adolescence; Adult; Aged; Blood-Brain Barrier; Brain Death: physiopathology; Brain Death: radionuclide imaging; Case Report; Cerebrovascular Circulation; Coma: epidemiology; Coma: physiopathology; Coma: radionuclide imaging; Comparative Study; Diagnosis, Differential; Electroencephalography; Evaluation Studies; Evoked Potentials, Auditory, Brain Stem; Evoked Potentials, Somatosensory; Female; Human; Male; Middle Age; Neurologic Examination; Organotechnetium Compounds: diagnostic use; Organotechnetium Compounds: pharmacokinetics; Oximes: diagnostic use; Oximes: pharmacokinetics; Sensitivity and Specificity; Technetium Tc 99m Exametazime

RN: CAS Registry Number
0 (Organotechnetium Compounds); 0 (Oximes); 100504-35-6 (Technetium Tc 99m Exametazime)

LR: Last Revision Date
20001218
Brain death: timing of apnea testing in primary brain stem lesion.

AU: Author
Schwarz G; Litscher G; Pfurtscheller G; Schalk HV; Rumpl E; Fuchs G

AF: Author Affiliation
Department of Anesthesiology, University of Graz, Austria.

SO: Source
Intensive care medicine, 1992, 18(5):315-6

IS: ISSN
0342-4642

AB: Abstract
In a 73-year-old patient complete areflexia of the cerebral and peripheral nerves following the rupture of an aneurysm of the basilar artery was diagnosed. During apnea testing the spectral analysis of electroencephalography (EEG) revealed an irreversible shift of peak from 6 to 3 Hz within the low-frequency bands. These findings suggest that apnea testing in patients with primary lesion of the brain stem should be carried out only after an isoelectric EEG.

LA: Language
English

PY: Publication Year
1992

PT: Publication Type
Journal Article

CP: Country of Publication
UNITED STATES

DE: Descriptors
Aged; Apnea: diagnosis; Basilar Artery; Brain Death: diagnosis; Case Report; Electroencephalography; Human; Intracranial Aneurysm: physiopathology; Rupture, Spontaneous; Support, Non-U.S. Gov't; Time Factors

LR: Last Revision Date
20001218

UD: Update
20020109

RO: Record Owner
National Library of Medicine

SF: Subfile
Index Medicus

AN: Accession Number
1527266
Computer controlled brain death documentation in the intensive care unit

OT: Original Title
Computerkontrollierte Hirntoddokumentation an der Intensivstation.

AU: Author
Schwarz G; Pfurtscheller G; Litscher G; Grims R; Rom G; Rumpl E; Seiltinger H; Fuchs G

AF: Author Affiliation
Universitats-Klinik fur Anaesthesiologie, Graz.

SO: Source
Der Anaesthesist, 1993 Nov, 42(11):793-9

IS: ISSN
0003-2417

AB: Abstract
An interactive, knowledge-based computer system for brain death documentation is presented. The specific exponents BRAINDEX R and G were realised by the software tool Personal Consultant Plus and the programming language Clipper, respectively. The strategies of conclusion were forward chaining for approximate evaluation of coma stages and backward chaining for analysing the brain death syndrome. BRAINDEX was developed for use with an IBM personal computer or compatible equipment. Systemic analyses were compared retrospectively with the data from clinical brain death protocols (n = 132) of 128 comatose patients (mean age 35.1 +/- 15.8 years) with a Glasgow Coma Score of 3. Identical classifications (system vs physician) were found in all patients without diagnosis of brain death (n = 35). Differences related to the findings of the physician were evaluated in lower numbers of the systemic positive diagnosis of brain death (82 vs 89) and higher numbers of impossibility of systemic evaluation (11 vs 2). These results were obtained by conclusions of the computer system drawn by restrictive systemic mechanisms to avoid false-negative diagnoses. The system therefore seems to be useful for documentation, consultation, and as a teaching instrument and data bank in brain death.

LA: Language
German

PY: Publication Year
1993

PT: Publication Type
Journal Article

CP: Country of Publication
GERMANY

DE: Descriptors
Adult; Brain Death: diagnosis; English Abstract; Expert Systems; Human; Intensive Care Units; Middle Age; Support, Non-U.S. Gov't

LR: Last Revision Date
20001218

202

UD: Update
20020109

RO: Record Owner
National Library of Medicine

SF: Subfile
Index Medicus

AN: Accession Number
[Prognostic assessment and diagnosis of brain death on the intensive care unit]
OT: Original Title
Prognosebeurteilung und Hirntoddiagnostik auf der Intensivstation.
AU: Author
Schwartz G; Litscher G; Pfurtscheller G; Lechner A; Rumpf E; List WF
AF: Author Affiliation
Universitatsklinik fur Anaesthesiologie, Graz.
SO: Source
Klinische Anaesthesiologie und Intensivtherapie, 1994, 46:262-74
IS: ISSN
0341-5023
LA: Language
German
PY: Publication Year
1994
PT: Publication Type
Journal Article; Review; Review, Tutorial
CP: Country of Publication
GERMANY
DE: Descriptors
Adult; Aged; Brain Damage, Chronic: mortality; Brain Damage, Chronic: physiopathology; Brain Death: physiopathology; Brain Injuries: mortality; Brain Injuries: physiopathology; Coma: classification; Coma: mortality; Coma: physiopathology; Critical Care; Electroencephalography; Encephalitis: mortality; Encephalitis: physiopathology; Evoked Potentials, Auditory: physiology; Evoked Potentials, Somatosensory: physiology; Female; Human; Male; Middle Age; Prognosis; Reaction Time: physiology; Signal Processing, Computer-Assisted; Support, Non-U.S. Gov't
FE: Features
47 references
LR: Last Revision Date
20001218
UD: Update
20020109
RO: Record Owner
National Library of Medicine
SF: Subfile
Index Medicus
AN: Accession Number
8065100
The medical diagnosis of brain death. A detailed presentation

OT: Original Title
Die medizinische Diagnostik des Hirntodes Eine ausführliche Darstellung.

AU: Author
Schweppe L; Verheyen I

SO: Source

IS: ISSN
0944-8918

LA: Language
German

PY: Publication Year
1995

PT: Publication Type
Journal Article

CP: Country of Publication
GERMANY

DE: Descriptors
Brain Death: diagnosis; Human; Organ Transplantation

LR: Last Revision Date
20001218

UD: Update
20020109

RO: Record Owner
National Library of Medicine

SF: Subfile
Nursing

AN: Accession Number
8589894

AU: Shewmon-D-A {a}
AD: {a} Department of Pediatrics, Division of Neurology, UCLA Medical Center, MDCC 22-474, Los Angeles, CA, 90095-1752, USA
PY: 1999
DT: Article-
IS: 1362-4393
LA: English
LS: English
AB: The somatic pathophysiology of high spinal cord injury (SCI) not only is of interest in itself but also sheds light on one of the several rationales proposed for equating 'brain death' (BD) with death, namely that the brain confers integrative unity upon the body, which would otherwise constitute a mere conglomeration of cells and tissues. Insofar as the neuropathology of BD includes infarction down to the foramen magnum, the somatic pathophysiology of BD should resemble that of cervico-medullary junction transection plus vagotomy. The endocrinologic aspects can be made comparable either by focusing on BD patients without diabetes insipidus or by supposing the victim of high SCI to have pre-existing therapeutically compensated diabetes insipidus. The respective literatures on intensive care for BD organ donors and high SCI corroborate that the two conditions are somatically virtually identical. If SCI victims are alive at the level of the 'organism as a whole', then so must be BD patients (the only significant difference being consciousness). Comparison with SCI leads to the conclusion that if BD is to be equated with death, a more coherent reason must be adduced than that the body as a biological organism is dead.
AI: Y
MC: Neurology- (Human-Medicine, Medical-Sciences)
ST: Hominidae-: Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia- OR: human- (Hominidae-): patient-
TN: Animals-; Chordates-; Humans-; Mammals-; Primates-; Vertebrates-
PS: brain-: nervous-system; foramen-magnum: skeletal-system; spinal-cord: nervous-system
MQ: cervico-medullary-junction-transection: surgical-method; vagotomy-: surgical-method
MI: integrative-unity-rationale
ALT: Brain-Death-(MeSH); Diabetes-Insipidus-(MeSH)
AN: 199900212729
UD: 19990812
Multimodal neuromonitoring in impending brain death.
AU: Author
Shiogai T; Takeuchi K
AF: Author Affiliation
Department of Neurosurgery, Kyorin University School of Medicine, Tokyo, Japan.
SO: Source
Minerva anestesiologica, 1994 Oct, 60(10):583-8
IS: ISSN
0375-9393
LA: Language
English
PY: Publication Year
1994
PT: Publication Type
Journal Article
CP: Country of Publication
ITALY
DE: Descriptors
Brain Death: physiopathology; Electrophysiology; Human; Monitoring, Physiologic: methods
LR: Last Revision Date
20001218
UD: Update
20020109
RO: Record Owner
National Library of Medicine
SF: Subfile
Index Medicus
AN: Accession Number
7830925
Glasgow Coma Scale and brain death--a proposal.
AU: Author
Singounas EG
AF: Author Affiliation
Department of Neurosurgery, Evangelismos General Hospital, Athens, Greece.
SO: Source
Acta neurochirurgica, 1995, 133(1-2):60
IS: ISSN
0001-6268
LA: Language
English
PY: Publication Year
1995
PT: Publication Type
Journal Article
CP: Country of Publication
AUSTRIA
DE: Descriptors
Brain Death: diagnosis; Brain Death: physiopathology; Brain Stem: physiopathology; Glasgow Coma Scale; Human; Prognosis; Reflex, Abnormal: physiology
LR: Last Revision Date
20001218
UD: Update
20020109
RO: Record Owner
National Library of Medicine
SF: Subfile
Index Medicus
AN: Accession Number
8561038
Nuclear magnetic resonance spectroscopy: Biochemical evaluation of brain function in vivo and in vitro.

AU: Sonnewald-U; Gribbestad-I-S; Westergaard-N; Nilsen-G; Unsgard-G; Schousboe-A; Petersen-S-B
AD: MR-Cent., SINTEF UNIMED, N-7034 Trondheim, Norway
PY: 1994
DT: Literature-Review
IS: 0161-813X
LA: English
AB: Nuclear magnetic resonance spectroscopy (MRS) offers a unique opportunity to monitor mmolar concentrations of high energy phosphates, glucose, lactate and amino acids. The possibility of obtaining information about chemical constituents noninvasively is of great importance. MRS and chemical shift imaging (CSI) are emerging as tools for tumor grading, monitoring of treatment, ischemia research, in pediatric research for follow-up of children with borderline mental retardation, for defining brain death and to define epileptic foci. It is important to know which cell type (neuronal or glial) shows changes as a result of external manipulations (e.g. excitotoxins) or internal changes (brain pathology). Metabolic studies have been carried out on brain cell cultures. By using 13C labeled glucose and acetate in combination with 13C MRS it was shown that astrocytes release lactate, glutamine, citrate and alanine and that cerebral cortical neurons use glutamine released from astrocytes as a precursor for GABA synthesis. An important feature in MRS is the localization of N-acetyl aspartate in neurons, since this enables monitoring of neuronal reactions, such as survival after neurotoxic insults. Recent advances have yielded high speed functional echo planar imaging (EPI) techniques that are sensitive to changes in cerebral blood volume, blood flow and blood oxygenation (functional MRI). During cognitive task performance, local alterations in neuronal activity induce local changes in cerebral metabolism and cerebral perfusion, which can now be detected with MRI.
AI: Y
MC: Cell-Biology; Metabolism-; Nervous-System (Neural-Coordination); Neurology-(Human-Medicine, Medical-Sciences); Toxicology-
ST: Hominidae-: Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia-
OR: human- (Hominidae-)
TN: animals-; chordates-; humans-; mammals-; primates-; vertebrates-
MI: BRAIN-METABOLISM; CEREBRAL-PERFUSION; CHEMICAL-SHIFTIMAGING; N-ACETYL-ASPARTATE; NEURON-; NEUROTOXICITYAN: 199598038852

AU: Sonoo-Masahiro {a}; Tsai-Shozawa-Yasunobu; Aoki-Makoto; Nakatani-Toshio; Hatanaka-Yuuki; Mochizuki-Atsuko; Sawada-Mikio; Kobayashi-Kunio; Shimizu-Teruo

AD: {a} Department of Neurology, Teikyo University School of Medicine, Kaga 2-11-1 Itabashi-ku, Tokyo, 173, Japan


PY: 1999

DT: Article-

IS: 0022-3050

LA: English

LS: English

AB: Objectives-To record N18 in median somatosensory evoked potentials (SEPs) for deeply comatose or brain dead patients and to demonstrate the usefulness of N18 for the diagnosis of brain death in comparison with auditory brain stem responses (ABRs) and P13/14 in median SEPs, which have been conventionally used as complementary tests for the diagnosis of brain death. Methods-Subjects were 19 deeply comatose or brain dead patients. Thirteen recordings were performed in deeply comatose but not brain dead conditions, and 12 recordings were performed in brain death. N18 was evaluated in the CPl-C2S lead (or other scalp-C2S leads) to obtain a flat baseline. Results-N18 was preserved in 12 of 13 non-brain dead comatose recordings whereas it was completely lost for all of the 12 brain death recordings. P13/14 in median SEPs was preserved for all the comatose recordings, whereas apparent P13/14-like potentials, usually of low amplitude, were seen in nine of 12 brain death recordings-that is, frequent false positives. The ABRs already showed features which were characteristic for brain death (loss of components other than wave 1 or small wave 2) for four comatose recordings, in three of which N18 was preserved. The last result not only corresponds with the fact that ABRs can evaluate pontine and midbrain functions and not medullary function, but further supports the medullary origin of N18. In the four patients followed up for the course of progression from coma to brain death, N18s preserved in normal size during the comatose state were completely lost after brain death was established. Conclusions-The N18 potential is generated by the cuneate nucleus in the medulla oblongata in the preceding studies. N18 is suggested to be a promising tool for the diagnosis of brain death because there were no false positives and rare false negatives in the present series for detecting the remaining brain stem function.

AI: Y

MC: Neurology- (Human-Medicine, Medical-Sciences)

ST: Hominidae-: Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia-

OR: human- (Hominidae-): adult-, aged-, female-, middle-age, patient-, male-

TN: Animals-; Chordates-; Humans-; Mammals-; Primates-; Vertebrates-

PS: medulla-oblongata: cuneate-nucleus, nervous-system

ML: auditory-brainstem-response; brain-death: diagnosis-; median-somatosensory-evoked-potentials; N18-

AN: 199900286126

UD: 19991013
Evaluation of brain perfusion with high resolution single photon emission tomography in the diagnosis of brain death.

AU: Author
Soricelli A; Mainenti PP; Leone D; Discepolo A; Romano M; Varrone A; Servillo G; Serio S; Brunetti A; Salvatore M

AF: Author Affiliation
Chair of Nuclear Medicine, University of Naples Federico II, Italy.

SO: Source

IS: ISSN
0375-9393

AB: Abstract
Nuclear Medicine studies performed with tomographic acquisition and tracers such as Technetium-99m hexamethyl-propyleneamine oxime (99mTc-HMPAO) are able to assess cerebral blood flow. A case is reported of a patient with a large intracranial tumor, of possible pituitary origin, with a clinical and electroencephalographic suspicion of brain death. The patient had endocrinous-metabolic impairments for a history of impotence, since 18 months, and diabetes insipidus with a urine output of 350 ml/hr in the first 24 hours from the clinical suspicion of brain death. Due to the endocrinous-metabolic impairments, according to Italian law, it was necessary to confirm the diagnosis of brain death by performing a study able to assess cerebral blood flow. A single Photon Emission Tomography (SPET) scan was performed after the intravenous administration of 99mTc-HMPAO using a high resolution, brain dedicated device. No tracer uptake was evident in cerebral, cerebellar and brain stem structures. The cerebral blood flow study by SPET confirmed the diagnosis of brain death and made the organ transplant possible in a short period of time. High resolution SPET studies are useful to confirm the diagnosis of brain death when there are factors that can influence clinical and electroencephalographic signs, reducing time to authorise the organ explant.

LA: Language
English

PY: Publication Year
1996

PT: Publication Type
Journal Article

CP: Country of Publication
ITALY

DE: Descriptors
Adult; Brain Death: physiopathology; Brain Death: radionuclide imaging; Case Report; Cerebrovascular Circulation; Human; Male; Organotechnetium Compounds: diagnostic use; Oximes: diagnostic use; Technetium Tc 99m Exametazime; Tomography, Emission-Computed, Single-Photon

RN: CAS Registry Number
0 (Organotechnetium Compounds); 0 (Oximes); 100504-35-6 (Technetium Tc 99m Exametazime)

LR: Last Revision Date
20001218

UD: Update
20020109
Continuous pressure is preferred to flow triggering of respiration in the apnea test following the protocol for brain death determination

OT: Original Title
Liever druk-dan flowgestuurde beademing bij de apneutest volgens het hersendoodprotocol.

AU: Author
Speelberg B; van Wezel HB

AF: Author Affiliation
St. Elisabeth Ziekenhuis, afd. Intensive Care, Tilburg.

SO: Source
Nederlands tijdschrift voor geneeskunde, 1998 Jun 13, 142(24):1392-3

IS: ISSN
0028-2162

AB: Abstract
The apnea test is part of the brain death protocol of the National Health Council. If the patient is being given positive end-pressure respiration, he must not be uncoupled from the respirator. The apnea test should then be done by means of continuous positive airway pressure. Pressure triggering rather than the extremely sensitive flow triggering should then be chosen to trigger the respiration, since otherwise the patient may unjustifiably be declared 'not brain dead' as a result of slight aspecific movements (bumping against the bed, beating of the heart).

LA: Language
Dutch

PY: Publication Year
1998

PT: Publication Type
Journal Article

CP: Country of Publication
NETHERLANDS

DE: Descriptors
Apnea: diagnosis; Brain Death: diagnosis; English Abstract; Female; Human; Male; Netherlands; Positive-Pressure Respiration: methods; Practice Guidelines

LR: Last Revision Date
20001218

UD: Update
20020109

RO: Record Owner
National Library of Medicine

SF: Subfile
Index Medicus

AN: Accession Number
9752028
TI: Importance of the lateral view in the evaluation of suspected brain death.
AU: Spieth-Michael {a}; Abella-Elma; Sutter-Charles; Vasinrapee-Panukorn; Wall-Lisa; Ortiz-Marco
AD: {a} King/Dew Med. Cent., Dep. Radiol., attn: Michael E. Spieth, 12021 S. Wilmington Blvd., Los Angeles, CA 90059, USA
PY: 1995
DT: Article-
IS: 0363-9762
LA: English
AB: The authors present two cases of clinical brain death that failed to meet the criteria for whole brain death using Tc-99m HMPAO. Conventional anterior cerebral flow studies demonstrated no intracerebral perfusion. Anterior static images also failed to show cerebral activity. However, the lateral images clearly demonstrate cerebellar activity. These cases demonstrate the importance of Tc-99m HMPAO as the agent of choice in evaluating brain death and the necessity of lateral views to meet the criteria for whole brain death. Cerebellar perfusion challenges the present criteria for whole brain death. New criteria must re-evaluate the present technology.
AI: Y
MC: Neurology- (Human-Medicine, Medical-Sciences); Pathology-; Pharmacology-; Radiology- (Medical-Sciences)
ST: Hominidae-: Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia-
OR: human- (Hominidae-)
TN: animals-; chordates-; humans-; mammals-; primates-; vertebrates-
CB: TECHNETIUM-99M
RN: 14133-76-7: TECHNETIUM-99M
MI: CASE-STUDY; COMPUTED-TOMOGRAPHY; DIAGNOSTIC-METHOD; DIAGNOSTIC-DRUG; TECHNETIUM-99M-HYDROXYMETHYLPROPYLENEIMINOXIME
AN: 199698566582
TI: Direct comparison of Tc-99m DTPA and Tc-99m HMPAO for evaluating brain death.
AU: Spieth-Michael-E {a}; Ansari-Azizullah-N; Kawada-Tom-K; Kimura-Robyn-L; Siegel-Michael-E
AD: {a} Dep. Radiol., King/Drew Med. Cent., 12021 South Wilmington Way, Los Angeles, CA 90059, USA
PY: 1994
DT: Article-
IS: 0363-9762
LA: English
AB: Portable cerebral perfusion studies provide a quick and accurate alternative to traditional confirmatory examinations (such as four-vessel angiography and electroencephalography) to determine brain death. The authors retrospectively analyzed 26 cerebral perfusion studies using both Tc-99m DTPA and Tc-99m HMPAO. The flow agents gave identical results. Additionally, the delayed-phase Tc-99m HMPAO images gave the same results for brain death (14 positive and 12 negative) as the flow images from either agent. Because the Tc-99m HMPAO delayed images can be used for diagnosis, many technical problems become less crucial. Unlike Tc-99m DTPA, Tc-99m HMPAO normally visualizes the gray matter of the cerebellum, midbrain, and medulla. These areas must be evaluated to ensure that they meet the strict criteria for brain death. These differences and the present study suggest that Tc-99m HMPAO is a superior agent for cerebral perfusion studies to determine brain death.
AI: Y
MC: Neurology- (Human-Medicine, Medical-Sciences); Pathology-; Pharmacology-
ST: Hominidae-: Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia-
OR: human- (Hominidae-)
TN: animals-; chordates-; humans-; mammals-; primates-; vertebrates-
CB: TECHNETIUM-99M-DIETHYLENETRIAMINE-PENTAACETIC-ACID; TECHNETIUM-99M
RN: 77319-47-2: TECHNETIUM-99M DIETHYLENETRIAMINE PENTAACETIC ACID; 14133-76-7: TECHNETIUM-99M
MI: CEREBRAL-PERFUSION; DIAGNOSTIC-DRUG; TECHNETIUM-99MDIETHYLENETRIAMINE -PENTAACETIC-ACID; TECHNETIUM-99M-HEXAMETHYLPROPYLENEAMINOXIME
AN: 199497548606
Re: Timely diagnosis of brain death in an emergency trauma center.
AU: Author
Spieth M; Vasinrapee P; Wong D; Wade W
SO: Source
IS: ISSN
0361-803X
NT: Notes
[AN=8092037]
LA: Language
English
PY: Publication Year
1995
PT: Publication Type
Comment; Letter
CP: Country of Publication
UNITED STATES
DE: Descriptors
Human; Organotechnetium Compounds: diagnostic use; Oximes: diagnostic use; Technetium Tc 99m Exametazime; Trauma Centers
RN: CAS Registry Number
0 (Organotechnetium Compounds); 0 (Oximes); 100504-35-6 (Technetium Tc 99m Exametazime)
LR: Last Revision Date
20011126
UD: Update
20020109
RO: Record Owner
National Library of Medicine
SF: Subfile
Abridged Index Medicus; Index Medicus
AN: Accession Number
7645520
165
TI: Phenomenological diversity of spinal reflexes in brain death.
AU: Spittler-J-F {a}; Wortmann-D; von-Duering-M; Gehlen-W
AD: {a} Department of Neurology, Ruhr-University Bochum, Knappschafts-Krankenhaus,
In der Schornau 23-25, D-44 892, Bochum-Langendreer, Germany
PY: 2000
DT: Article-
IS: 1351-5101
LA: English
AB: In brain death, spinal reflexes and automatisms are observed which may cause irritation
and even doubt in the diagnosis. In the literature there are no dedicated descriptions of the
diversity and of neuroanatomical considerations. In 278 examinations of 235 patients for the
determination of brain death, on 42 occasions obvious spinal reflexes and/or spinal
automatisms were observed in 27 brain dead bodies. Because they were not systematically
searched for, minute forms have probably been missed. The reflexes (R) and automatisms
(A) are described according to the time of observation in relation to the development of brain
death, the presumable spinal localization and the possible phylogenetical interpretation.
Especially disquieting examples are discussed in more detail, e.g. monophasic
EndotrachealSuctionThoracicContraction-R supposedly switched in segments C2-6 or
TrapeziusPinchShoulderProtrusion-R conveyed by the accessory nerve (terminology
according to the scheme: for!
the reflexes, Trigger-Response-R: for the automatisms, Movement-A). After these
experiences a more thorough examination showed frequent observations of rather minute
forms of spinal reflexes, as well as automatisms and even the Lazarus sign (in possibly more
than two thirds of the examinations). An estimation of the factual frequency would
necessitate special attention to those much more frequent but less obvious minute spinal
reflexes and automatisms.
AI: Y
MC: Nervous-System (Neural-Coordination)
ST: Hominidae-: Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia-
OR: human- (Hominidae-): patient-
TN: Animals-; Chordates-; Humans-; Mammals-; Primates-; Vertebrates-
DS: brain-death: nervous-system-disease
MI: automatism-; spinal-reflex
ALT: Brain-Death-(MeSH)
AN: 200000356852
UD: 20001128
[Early recognition of brain death--a contribution to organ explantation]
OT: Original Title
Fruherkennung des Hirntodes--Ein Beitrag zur Organexplantation.
AU: Author
Stern S; Schneider M; Baust G
AF: Author Affiliation
Klinik und Poliklinik fur Chirurgie, Medizinische Fakultat,
Martin-Luther-Universitat Halle-Wittenberg.
SO: Source
Anaesthesiologie und Reanimation, 1993, 18(2):49-52
IS: ISSN
0323-4983
AB: Abstract
The criteria for brain death are presented and reference is made
to the legally required observation period. To shorten the
observation period, the Federal Medical Council
(Bundesarztekammer) set out in 1986 possible aids to making
decisions. The time at which extensive additional investigations
should start makes it necessary to approximately determine the
moment of brain death. The tear secretion test presented in this
paper could be a further decision aid.
LA: Language
German
PY: Publication Year
1993
PT: Publication Type
Journal Article
CP: Country of Publication
GERMANY
DE: Descriptors
Brain Death: diagnosis; Brain Death: legislation & jurisprudence;
English Abstract; Germany; Human; Organ Transplantation:
legislation & jurisprudence; Time Factors
LR: Last Revision Date
20001218
UD: Update
20020109
RO: Record Owner
National Library of Medicine
SF: Subfile
Index Medicus
AN: Accession Number
8397671
Determining brain death.

AU: Author
Sullivan J; Seem DL; Chabalewski F

AF: Author Affiliation
Neuroscience Intensive Care Unit, Thomas Jefferson University and Hospital, Philadelphia, Pa., USA.

SO: Source
Critical care nurse, 1999 Apr, 19(2):37-9, 41-6

IS: ISSN
0279-5442

LA: Language
English

PY: Publication Year
1999

PT: Publication Type
Journal Article; Review; Review, Tutorial

CP: Country of Publication
UNITED STATES

DE: Descriptors
Brain Death: diagnosis; Electroencephalography; Family: psychology; Human; Neurologic Examination: methods; Nursing Assessment: methods; Organ Procurement: methods; Reflex; Support, U.S. Gov't, P.H.S.

GI: Grant
Grant/Contract ID: 1K01NR00097-01A1 (NINR)

FE: Features
40 references

LR: Last Revision Date
20001218

UD: Update
20020109

RO: Record Owner
National Library of Medicine

SF: Subfile
Nursing

AN: Accession Number
10401300
Diagnosis of brain death and organ donation.

AU: Author
Surman OS

SO: Source
JAMA: the journal of the American Medical Association, 1992 Oct
14, 268(14):1859-60

IS: ISSN
0098-7484

NT: Notes
Comment on: JAMA. 1992 Apr 22-29;267(16):2229-33 [AN=1372944]

LA: Language
English

PY: Publication Year
1992

PT: Publication Type
Comment; Letter

CP: Country of Publication
UNITED STATES

DE: Descriptors
Ethics, Medical; Human; Tissue Donors

LR: Last Revision Date
20011126

UD: Update
20020109

RO: Record Owner
National Library of Medicine

SF: Subfile
Abridged Index Medicus; Index Medicus

AN: Accession Number
1404709
229
In September, 1997, the law of the transplantation of internal organs was promulgated and enforced from October the same year. Since the beginning of this year (1999), four cases of legal brain death judgement, based on after mentioned law have reported. With regard to the branch of clinical examinations the law designates EEG examination as a compulsory article, and the ABR (auditory brain stem response) examination, as an article that is desirable to carry out. An EEG examination of a highly precise level is required to confirm the "flat EEG" as the standard of judgement, in comparison with daily clinical examinations. Additionally, a request for an examination to ascertain whether brain death has occurred may be required abruptly. In the examination room, it is vital to ensure that staff have appropriate examination skills, and the guidelines on how to proceed are set in place.
The diagnosis of brain death.

AU: Author
Truog RD; Robinson WM

SO: Source
discussion 617-8

IS: ISSN
0028-4793

NT: Notes
Comment on: N Engl J Med. 2001 Apr 19;344(16):1215-21
[AN=11309637]

LA: Language
English

PY: Publication Year
2001

PT: Publication Type
Comment; Letter

CP: Country of Publication
United States

DE: Descriptors
Brain Death: diagnosis; Ethics; Human; Neurologic Examination;
Water-Electrolyte Balance

LR: Last Revision Date
20011109

UD: Update
20020109

RO: Record Owner
National Library of Medicine

SF: Subfile
Abridged Index Medicus; Index Medicus

AN: Accession Number
11529223
We report on a patient who suffered an acute, extensive intracerebral haemorrhage, leading to symptoms of cerebral herniation within a few hours. The clinical diagnosis of brain death was made based on a neurological examination, and an apnoea test eight hours after the haemorrhage. A few hours later the diagnosis was changed, as several reflexes reappeared. After six days mechanical ventilation was withdrawn, as the brain damage was considered so serious as to render further therapy futile. It was considered unethical to sustain therapy for a possible organ donation at a later date. A review of relevant the literature, however, shows that brain-dead patients may exhibit such varying degrees of autonomic and spinal reflexes as to cause confusion, thus delaying the physician in making a diagnosis. Often, an opportunity for organ donation is lost. Based on this review, we believe that our patient was indeed brain dead when the first diagnosis was made, and that a cerebral angiography should have been performed. Because organ donation is an important issue, the diagnosis of brain death must be definitive.
TI: Can brain death testing be perfect? In reply.
AU: Van-Norman-Gail-A {a}
AD: {a} Department of Anesthesiology, University of Washington, Seattle, WA; E-Mail: gvn@u.washington.edu, USA
URLJ: lww.anesthesiology.org; http://www.anesthesiology.org
PY: 2000
DT: Letter-
IS: 0003-3022
LA: English
MC: Nervous-System (Neural-Coordination)
ST: Hominidae: Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia-
OR: human- (Hominidae-): adult-, patient-
TN: Animals-; Chordates-; Humans-; Mammals-; Primates-; Vertebrates-
PS: brain-: nervous-system
MI: brain-death; end-of-life-care
AN: 200200076174
UD: 20020227
Barotrauma during apnea testing for the determination of brain death

We describe three cases of tension pneumothorax occurring during apnea testing for the determination of brain death. Every case needed needle thoracostomy for emergency chest deflation and/or a chest tube to be inserted rapidly. Moreover, haemodynamic and oxygenation parameters were impaired in each of the patients after these pneumothorax. This was uneventful for the two first patients (organs harvesting was contra-indicated or not consented by the patient's family), but might be responsible for damaging lungs in the third patient and consequently losing the pulmonary graft. Limitation of oxygen insufflation up to 8 L.min⁻¹ with a 12 F oxygen supply tubing inserted within 5 cm into the endotracheal tube should be recommended to avoid this iatrogenic complication.
Detection of brain death onset using the bispectral index in severely comatose patients.

AU: Author
Vivien B; Paqueron X; Le Cosquer P; Langeron O; Coriat P; Riou B

AF: Affiliation
Departement d'Anesthesie-Reanimation, Groupe Hospitalier Pitie Salpetriere, 47-83 Boulevard de l'Hopital, 75013 Paris, France.
benoit.vivien@psl.ap-hop-paris.fr

SO: Source
Intensive care medicine, 2002 Apr, 28(4):419-25

IS: ISSN
0342-4642

AB: Abstract
OBJECTIVES: To evaluate the accuracy of bispectral index (BIS) monitoring for the diagnosis of brain death in severely comatose patients. DESIGN: A prospective study in an intensive care unit of a university hospital. POPULATION: Fifty-six severely comatose patients (Glasgow Coma Score ≤ 5) admitted to the ICU mainly because of intracerebral hemorrhage, head injury, or postanoxic coma. METHODS: BIS was recorded continuously during the hospitalization in the ICU. Where necessary, clinical brain death was confirmed by EEG or cerebral angiography. MEASUREMENTS AND RESULTS: Twelve patients were already clinically brain dead at the time of admission, and their individual BIS values were 0. In each of these 12 patients brain death was thereafter confirmed by EEG or cerebral angiography. Forty-four patients were not clinically brain-dead at the time of admission, and their individual BIS values were between 20 and 79. Twenty-seven of these patients became brain-dead, and their individual BIS values dropped to 0 in a few hours to a few days. In these 27 patients EEG or cerebral angiography was performed after the BIS value decreased to 0 and confirmed brain death in all cases. Seventeen patients who did not become brain dead during their hospitalization in the ICU had persistent electrocerebral activity on EEG, and their average BIS values remained above 35. CONCLUSION: BIS can be used in severely comatose patients as an assessment of brain death onset, enabling appropriate scheduling of either EEG or cerebral angiography to confirm brain death.

LA: Language
English

PY: Publication Year
2002

PT: Publication Type
Evaluation Studies; Journal Article

CP: Country of Publication
United States

DE: Descriptors
Brain Death: diagnosis; Brain Death: physiopathology; Cerebral
Brain death revisited: utility confirmed for nuclear medicine.
AU: Author
Weckesser M; Schober O
SO: Source
European journal of nuclear medicine, 1999 Nov, 26(11):1387-91
IS: ISSN
0340-6997
LA: Language
English
PY: Publication Year
1999
PT: Publication Type
Editorial
CP: Country of Publication
GERMANY
DE: Descriptors
Brain: radionuclide imaging; Brain Death: diagnosis; Brain Death: radionuclide imaging; Cerebrovascular Circulation; Cysteine: analogs & derivatives; Cysteine: diagnostic use; Electroencephalography; Human; Organotechnetium Compounds: diagnostic use; Radiopharmaceuticals: diagnostic use; Technetium Tc 99m Exametazime: diagnostic use; Tomography, Emission-Computed, Single-Photon
RN: CAS Registry Number
0 (Organotechnetium Compounds); 0 (Radiopharmaceuticals); 0 (technetium Tc 99m bicisate); 100504-35-6 (Technetium Tc 99m Exametazime); 52-90-4 (Cysteine)
LR: Last Revision Date
20001218
UD: Update
20020109
RO: Record Owner
National Library of Medicine
SF: Subfile
Index Medicus
AN: Accession Number
10552078
TI: Technetium-99m HMPAO cerebral scintigraphy: A reliable, noninvasive method for determination of brain death.
AU: Wieler-Helmut {a}; Marohl-K; Kaiser-K-P; Klawki-P; Froessler-H
AD: {a} Dep. Nuclear Med., Bundeswehrzentralkrankenhaus, P.O. Box 7460/XV, D-5400 Koblenz, Germany
PY: 1993
DT: Article-
IS: 0363-9762
LA: English
AB: To determine the usefulness of cerebral blood flow imaging for the diagnosis of brain death, 4 female and 12 male patients, aged 19 to 69 years and suffering from various intracranial lesions, were studied. In addition to neurologic examination, electroencephalographic recording, and cerebral angiography, tomographic brain scintigraphy was performed using a SPECT system with a LEAP collimator after the intravenous administration of 555 MBq Tc-99m HMPAO. The radioisotopic scanning procedure revealed no intracranial perfusion in 14 of the 16 patients. Only minimal cerebellar blood flow was seen in one patient. In another, residual right-sided supratentorial flow was initially present but absent in a follow-up HMPAO SPECT. Carotid angiography (four-vessel contrast media angiography) confirmed the above results without exception. Because HMPAO is taken up by normal brain tissue with no significant redistribution for several hours, the tracer is particularly helpful in cases of suspected brain death. The quality of the tracer must be established by chromatography. Interpretation of the SPECT images produces reliable and reproducible results. In conclusion, cerebral blood flow imaging with HMPAO is a safe, noninvasive procedure for the determination of brain death, that produces fast, reliable, reproducible, and easy-to-interpret results.
AI: Y
MC: Cardiovascular-System (Transport-and-Circulation); Nervous-System (Neural -Coordination); Neurology- (Human-Medicine, Medical-Sciences); Pathology-; Pharmacology-; Radiology- (Medical-Sciences)
ST: Hominidae-: Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia-
OR: human- (Hominidae-)
TN: animals-; chordates-; humans-; mammals-; primates-; vertebrates-
CB: TECHNETIUM-99M
RN: 14133-76-7: TECHNETIUM-99M
MI: CEREBRAL-BLOOD-FLOW-IMAGING; DIAGNOSTIC-DRUG; SINGLEPHOTON-EMISSION -COMPUTED-TOMOGRAPHY
AN: 199395123890
Topsy turvydom in brain death determination.
AU: Author
Wijdicks EF
SO: Source
Transplantation, 2001 Jul 27, 72(2):355
IS: ISSN
0041-1337
NT: Notes
Comment on: Transplantation. 2000 Jul 15;70(1):131-5 [AN=10919589]
LA: Language
English
PY: Publication Year
2001
PT: Publication Type
Comment; Letter
CP: Country of Publication
United States
DE: Descriptors
Anti-Anxiety Agents, Benzodiazepine: therapeutic use;
Barbiturates: therapeutic use; Brain Death: diagnosis; Brain
Death: ultrasonography; Central Nervous System Depressants:
therapeutic use; Guidelines; Human; Intracranial Pressure: drug
effects; Tissue Donors; Ultrasonography, Doppler, Transcranial
RN: CAS Registry Number
0 (Analgesics, Opioid); 0 (Anti-Anxiety Agents, Benzodiazepine); 0
(Barbiturates); 0 (Central Nervous System Depressants)
LR: Last Revision Date
20011128
UD: Update
20020109
RO: Record Owner
National Library of Medicine
SF: Subfile
Index Medicus
AN: Accession Number
11477370
**TI:** Determining brain death in adults.

**AU:** Wijdicks-Eelco-F-M

**AD:** Dep. Neurol., Mayo Clinic, 200 First Street S.W., Rochester, MN 55905, USA

**SO:** Neurology-. 1995; 45 (5) 1003-1011.

**PY:** 1995

**DT:** Article-

**IS:** 0028-3878

**LA:** English

**MC:** Neurology- (Human-Medicine, Medical-Sciences); Pathology-; Pediatrics- (Human-Medicine, Medical-Sciences)

**ST:** Hominidae-: Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia-

**OR:** Hominidae- (Hominidae-)

**TN:** animals-; chordates-; humans-; mammals-; primates-; vertebrates-

**MI:** AMERICAN-ACADEMY-OF-NEUROLOGY; CHILD-; DIAGNOSIS-; HUMANADULT; QUALITY-STANDARDS-SUBCOMMITTEE

**AN:** 199598332206
TI: What anesthesiologists should know about what neurologists should know about declaring brain death.
AU: Wijdicks-Eelco-F-M {a}
AD: {a} Department of Neurology, Mayo Clinic, Rochester, MN; E-Mail: wijde@mayo.edu, USA
URLJ: lww.anesthesiology.org; http://www.anesthesiology.org
PY: 2000
DT: Letter-
IS: 0003-3022
LA: English
MC: Nervous-System (Neural-Coordination)
ST: Hominidae-: Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia-
OR: human- (Hominidae-): anesthesiologist-, neurologist-
TN: Animals-; Chordates-; Humans-; Mammals-; Primates-; Vertebrates-
PS: brain-: nervous-system
MI: brain-death: declaration-, diagnosis-
AN: 2002000076172
UD: 20020227
Objective: To survey brain death criteria throughout the world. Background: The clinical diagnosis of brain death allows organ donation or withdrawal of support. Declaration of brain death follows a certain set of examinations. The code of practice throughout the world has not been systematically investigated. Methods: Brain death guidelines in adults in 80 countries were obtained through review of literature and legal standards and personal contacts with physicians. Results: Legal standards on organ transplantation were present in 55 of 80 countries (69%). Practice guidelines for brain death for adults were present in 70 of 80 countries (88%). More than one physician was required to declare brain death in half of the practice guidelines. Countries with guidelines all specifically specified exclusion of confounders, irreversible coma, absent motor response, and absent brainstem reflexes. Apnea testing, using a PCO2 target, was recommended in 59% of the surveyed countries. Differences were also found in time of observation and required expertise of examining physicians. Additional provisions existed when brain death was due to anoxia. Confirmatory laboratory testing was mandatory in 28 of 70 practice guidelines (40%). Conclusions: There is uniform agreement on the neurologic examination with exception of the apnea test. However, this survey found other major differences in the procedures for diagnosing brain death in adults. Standardization should be considered.
TI: The diagnosis of brain death.
AU: Wijdicks-Eelco-F-M {a}
AD: {a} Mayo Clinic, 200 First St. SW, Rochester, MN, 55905: wijde@mayo.edu, USA
PY: 2001
DT: Literature-Review
IS: 0028-4793
LA: English
LS: English
MC: Neurology- (Human-Medicine, Medical-Sciences)
ST: Hominidae-: Primates-, Mammalia-, Vertebrata-, Chordata-, Animalia-
OR: human- (Hominidae-): patient-
TN: Animals-; Chordates-; Humans-; Mammals-; Primates-; Vertebrates-
PS: brain-stem: nervous-system
DS: brain-death: clinical-criteria, diagnosis-, nervous-system-disease, neurological-mimics;
coma-: nervous-system-disease
MI: brain-stem-reflexes; clinical-examination; confirmational-tests
ALT: Brain-Death-(MeSH); Coma-(MeSH)
AN: 200100153860
UD: 20010430
Tc-99m HMPAO cerebral scintigraphy. A reliable, noninvasive method for determination of brain death.

AU: Author
Wieler H; Marohl K; Kaiser KP; Klawki P; Frossler H
AF: Author Affiliation
Department of Nuclear Medicine, Academic Teaching Hospital, Johannes Gutenberg-University, Mainz, Germany.
SO: Source
Clinical nuclear medicine, 1993 Feb, 18(2):104-9
IS: ISSN
0363-9762
AB: Abstract
To determine the usefulness of cerebral blood flow imaging for the diagnosis of brain death, 4 female and 12 male patients, aged 19 to 69 years and suffering from various intracranial lesions, were studied. In addition to neurologic examination, electroencephalographic recording, and cerebral angiography, tomographic brain scintigraphy was performed using a SPECT system with a LEAP collimator after the intravenous administration of 555 MBq Tc-99m HMPAO. The radioisotopic scanning procedure revealed no intracranial perfusion in 14 of the 16 patients. Only minimal cerebellar blood flow was seen in one patient. In another, residual right-sided supratentorial flow was initially present but absent in a follow-up HMPAO SPECT. Carotid angiography (four-vessel contrast media angiography) confirmed the above results without exception. Because HMPAO is taken up by normal brain tissue with no significant redistribution for several hours, the tracer is particularly helpful in cases of suspected brain death. The quality of the tracer must be established by chromatography. Interpretation of the SPECT images produces reliable and reproducible results. In conclusion, cerebral blood flow imaging with HMPAO is a safe, noninvasive procedure for the determination of brain death, that produces fast, reliable, reproducible, and easy-to-interpret results.

LA: Language
English
PY: Publication Year
1993
PT: Publication Type
Journal Article
CP: Country of Publication
UNITED STATES
DE: Descriptors
Adult; Aged; Brain: physiology; Brain: radionuclide imaging; Brain Death: radionuclide imaging; Cerebrovascular Circulation: physiology; Female; Human; Male; Middle Age; Organotechnetium Compounds: diagnostic use; Oximes: diagnostic use; Technetium Tc 99m Exametazime
RN: CAS Registry Number
0 (Organotechnetium Compounds); 0 (Oximes); 100504-35-6 (Technetium Tc 99mExametazime)
LR: Last Revision Date
20001218
UD: Update
20020109
RO: Record Owner
The success of transplantations relies on uninjured organs i.e., harvested before circulatory failure. At present, French law concerning cerebral death criteria (circulaire ministerielle no. 3 du 21.01.91) requires the association of clinical patterns and 2 repeated, unreactive and flat electroencephalographic (EEG) tracings. Blood and urinary samples also need to be free from any nervous system depressant drug, the patient has not to be hypothermic. These obligations are not always compatible with patients status or local organization. The consequence might be organ loss or delay in harvesting schedule. A review of the literature points out the trap in realization and analysis of EEG in this kind of intensive care patients. Angiogram, on the opposite, is influenced neither by nervous system depressant drug nor by hypothermia. As it is in some other western countries, it should be proposed as the reference.
Brain death determination in adults: more than meets the eye.

AU: Author
Williams MA; Suarez JI

SO: Source
Critical care medicine, 1997 Nov, 25(11):1787-8

IS: ISSN
0090-3493

NT: Notes

NT: Notes
Editorial; KIE BoB Subject Heading: determination of death/brain death [Kennedy Institute of Ethics (Georgetown University)]

RP: Report Number
KIE 63460; NRCBL 20.2.1

LA: Language
English

PY: Publication Year
1997

PT: Publication Type
Comment; Editorial

CP: Country of Publication
UNITED STATES

DE: Descriptors
Brain Death: diagnosis; Diagnostic Errors; Electroencephalography;
Human; Organ Procurement

ID: Identifiers
Kennedy Institute of Ethics (Georgetown University): Brain Pathology; Clinical Approach/Source; Death and Euthanasia;
Determination Of Death; Organ Donation; Standards

LR: Last Revision Date
20011128

UD: Update
20020109

RO: Record Owner
National Library of Medicine

SF: Subfile
Abridged Index Medicus; BIOETHICSLINE; Index Medicus

AN: Accession Number
9366758
The diagnosis of brain death with technetium-99m HMPAO.

Evaluation of blood flow to the brain using various radiopharmaceuticals can be used to confirm brain death. Agents available for this purpose include Tc-99m HMPAO, Tc-99m pertechnetate, Tc-99m glucoheptonate, and Tc-99m DTPA. The authors evaluated the use of Tc-99m HMPAO in 17 patients suspected of brain death using flow images and static images at several time intervals: immediately, between 30 and 60 minutes, and at 2 hours. These studies were compared to several studies performed with Tc-99m glucoheptonate and Tc-99m DTPA. The results of the Tc-99m HMPAO brain death studies correlated well with the patients' clinical conditions. Static images 1 to 2 hours after the injection of 5 to 30 mCi of Tc-99m HMPAO were satisfactory for an accurate interpretation; however, an immediate answer could as easily be supplied using flow images alone. Tc-99m HMPAO was found to be more easily interpreted and less dependent on imaging technique than Tc-99m glucoheptonate and Tc-99m DTPA, and it is the agent of choice for the evaluation of brain death.
Coma, vegetative states, and brain death evaluated by xenon/CT blood flow mapping
AU: Authors
Yonas, H; Latchaw, RE; Snyder, J; Brenner, R; Gur, D; Colsher, JG
CS: Conference Sponsor
Radiological Society of North America (RSNA); American Association of Physicists in Medicine
CF: Conference
Radiological Society of North America, 70th Annual Scientific Assembly, Washington, DC (USA), 25-30 Nov 84. (World Meeting Number 844 0246)
NT: Notes
Abstract No. 496
SF: Subfile Name
CPI, Conference Papers Index
CL: Classification Code
U 4500 EXPERIMENTAL MEDICINE; U 3500 CLINICAL MEDICINE
AN: Accession Number
0808952
A1: Alert Info
20001231
Preenhanced computed tomographic findings in brain death.

AU: Author
Yoo H; Kim IO; Wang KC; Cho BK

AF: Author Affiliation
Division of Pediatric Neurosurgery, Seoul National University, Children's Hospital, Korea.

SO: Source

IS: ISSN
1011-8934

AB: Abstract
A patient complying with the clinical criteria for brain death was studied by preenhanced computed tomography (CT). Preenhanced CT showed apparent increased density at the base of the brain along the course of the major arterial vessels, and abnormally dense-appearing deep venous structures, like those of contrast-enhanced CT. There was a diffuse decrease in brain density with a poorly delineated ventricular system. These CT findings were very characteristic. CT as a non-invasive method seems to be valuable in the diagnosis of brain death. The relevant literature is reviewed and mechanisms showing those CT findings are discussed.

LA: Language
English

PY: Publication Year
1993

PT: Publication Type
Journal Article

CP: Country of Publication
KOREA

DE: Descriptors
Brain Death: radiography; Case Report; Human; Infant; Male; Perfusion; Tomography, X-Ray Computed

LR: Last Revision Date
20001218

UD: Update
20020109

RO: Record Owner
National Library of Medicine

SF: Subfile
Index Medicus

AN: Accession Number
8198767
Plain CT findings of brain death confirmed by hollow skull sign in brain perfusion SPECT.

AU: Author
Yoshikai T; Tahara T; Kuroiwa T; Kato A; Uchino A; Abe M; Tabuchi K; Kudo S
AF: Author Affiliation
Department of Radiology, Saga Medical School, Nabeshima, Japan.
SO: Source

IS: ISSN
0288-2043
AB: Abstract
Computed tomographic (CT) findings of 13 patients manifesting brain death were reviewed. This diagnosis was confirmed by the so-called "hollow skull" pattern observed in brain perfusion single photon emission computed tomography (SPECT), which was performed between 4 hours before and 3 days after the CT scans, and by subsequent corporal death. The brain perfusion SPECT was performed with the intravenous administration of technetium (Tc)-99m-hexamethylpropyleneamine oxime (HMPAO) or iodine (I)-123-N-isopropyl-p-iodoamphetamine (IMP). CT scans showed diffuse cerebral edema and the loss of gray-white matter differentiation in all the cases, and transtentorial herniation in 12 patients. These CT findings were considered predictive of brain death.

LA: Language
English
PY: Publication Year
1997
PT: Publication Type
Journal Article
CP: Country of Publication
JAPAN
DE: Descriptors
Adolescence; Adult; Aged; Amphetamines: diagnostic use; Brain: radiography; Brain: radionuclide imaging; Brain Death: radiography; Brain Death: radionuclide imaging; Cerebrovascular Circulation; Female; Human; Iodine Radioisotopes: diagnostic use; Iofetamine; Male; Middle Age; Radiopharmaceuticals: diagnostic use; Technetium Tc 99m Exametazime: diagnostic use; Tomography, Emission-Computed, Single-Photon; Tomography, X-Ray Computed
RN: CAS Registry Number
0 (Amphetamines); 0 (Iodine Radioisotopes); 0 (Radiopharmaceuticals); 100504-35-6 (Technetium Tc 99m Exametazime); 95896-48-3 (Iofetamine)
LR: Last Revision Date
20001218
UD: Update
142
20020109
RO: Record Owner
National Library of Medicine
SF: Subfile
Index Medicus
AN: Accession Number
9495795
The interpretation of clinical tests for brain death is often complicated by the presence of facial trauma, or the use of barbiturate therapy for reduction of intracranial pressure. We propose a non-invasive technique -transcranial Doppler (TCD) sonography for the diagnosis of brain death. One hundred and forty comatose patients, 111 of whom were believed to be brain dead underwent TCD examinations. TCD assessments of the middle cerebral arteries (MCAs) and the basilar artery were performed before formal clinical testing for brain death. The TCD spectra recorded in the brain dead (BD) patients consisted of short, sharp systolic peaks followed by retrograde flow during diastole or just systolic peaks with absent flow in either direction. There were no survivors among patients who displayed these two TCD patterns. The 29 comatose control patients always showed flow throughout the cardiac cycle-no retrograde flow was ever recorded in these patients all of whom survived. Of particular interest were the basilar artery results. In nine BD patients no MCA signals could be obtained while good quality signals were recorded from the basilar artery. The TCD results agreed essentially with 100% accuracy with clinical testing and four vessel cerebral angiography. This paper illustrates the usefulness of TCD examination of the MCAs and especially the basilar artery in the diagnosis of brain death.
CC11304 (Chordate-Body-Regions
-Head)
CC12512 (Pathology-General-and-Miscellaneous-Therapy)
BC: BC86215 Hominidae
AN: 199293102291
UD: 1992