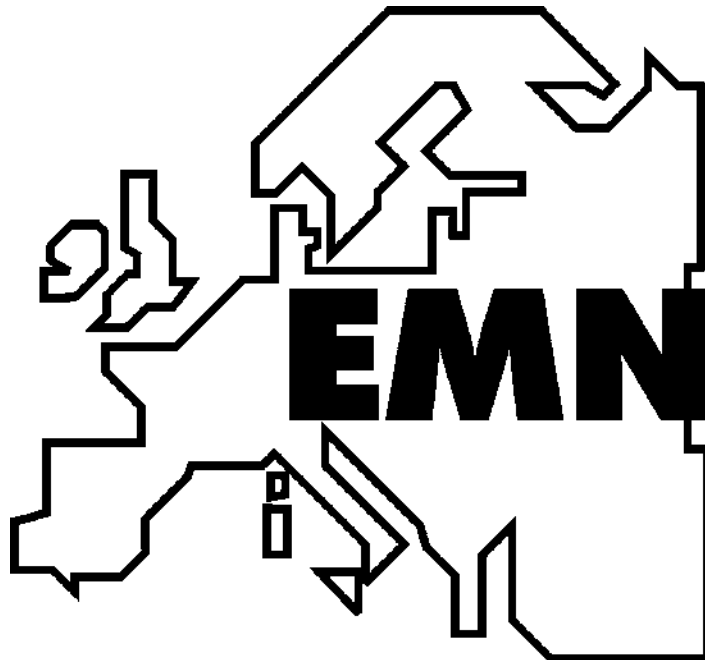


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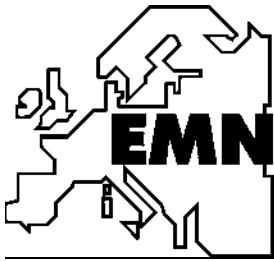


Bucharest, ROMANIA

19-22 May 2004

Organized by the Romanian Society of Neurosurgery





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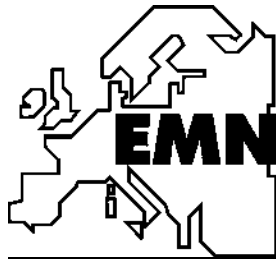
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S.C. CRAPMAR SERCOM S.R.L.

CONTROL TRADING S.R.L.

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9th EMN Congress - Scientific Program

19 May - EMN Presidium meeting (16:00-18:00)

Crowne Plaza Hotel

19 May - EMN Members meeting (18:00-20:00)

Crowne Plaza Hotel

19 May 20:00 - Welcome Reception

Crowne Plaza Hotel

20 May - Opening Ceremony (08:30-09:00)

Conference Room - Crowne Plaza Hotel

Presidium: Prof. Dr. med. Klaus von Wild (Germany), Hofrat o.Univ. Prof. em. Dr. Dr. h.c. Hans Erich Diemath (Austria), Prof. Dr. Alexander V. Ciurea (Romania), Prof. Alexander David Mendelow (United Kingdom), Prof. Dr. Andrew I.R. Maas (Netherlands), Prof. Dr. med. habil. Jan-Peter Jantzen (Germany), Prof. Dr. N. Ianovici (Romania)

20 May - Intro Lectures (09:00-10:30)

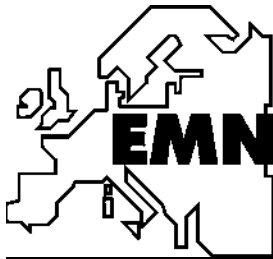
Chairmen: Prof. Dr. A. V. Ciurea (Romania), Prof. Dr. Hans Erich Diemath (Austria)

Title Road Safety is no Accident

Authors Dr. Victor Olsavszky

Institution World Health Organisation Liaison Office Bucharest
Bvd. Primaverii 48A, UN house, Bucharest, Romania

presenting author Dr. Victor Olsavszky



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Title Road safety problems in Romania

Authors Ovidiu Satalan, Iustina Diaconu

Institution Romanian Ministry of Transportation and Tourism
Global Road Safety Partnership
Bucharest, Romania

presenting author Iustina Diaconu

Title Traffic accidents - main factor in neurotrauma

Authors Prof. Ciurea AV, Coman Teodora, MD, Tascu A, MD,
Nuteanu L, MD, Cristescu M, MD.

Institution Clinic Hospital "Bagdasar-Arseni"
Av. Berceni 10-12, Sector 4, Cod 75622, Bucarest

presenting author Prof. Ciurea AV

Title Specific causes of the traffic accidents in Romania

Authors G. Vasilescu, V. Ciubotaru

Institution 3rd Neurosurgical Dpt., Bagdasar Hospital
Bucharest, Romania

presenting author G. Vasilescu

Title Brain and Spinal Cord Trauma and the Effect of Injury Mitigation and Accident Prevention

Authors Zobel, Robert

Institution Volkswagen AG
1484 K-EFFB/S
Volkswagen AG
38436 Wolfsburg

presenting author Zobel, Robert

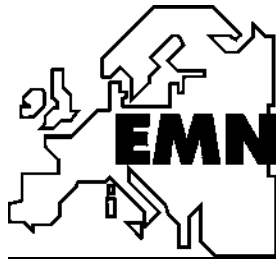
Title The cost/ benefit ratio in Head Trauma secondary to Traffic Accidents

Authors Cristescu A., Dascalu G., Ioana Darie, Monica Hodor, Moraru H., Alexianu D.

Institution Bucharest Emergency Hospital, Dept. of Neurosurgery
8, Calea Floreasca
Bucharest, Romania

presenting author Cristescu A.

Coffee break (10:30-11:00)



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20 May (11:00-11:30)

DOUGLAS MILLER MEMORIAL LECTURE

Presented by: Prof. Dr. Iftikhar Ali RAJA

Pakistan

Introduced by Prof. Dr. med. Klaus von Wild (Germany)

20 May - First session (11:30-13:00)

Chairmen: Prof. Dr. N. Ianovici (Romania), Prof. Alexander David Mendelow (United Kingdom)

Title IMPACT OF THE NATIONAL INSTITUTE OF CLINICAL EXCELLENCE (NICE)
GUIDELINES ON HEAD-INJURY IMAGING

Authors S Ushewokunze*, K Amos*, C Biggin#, D Tennant‡, B Sen\$, R Nannapaneni*
and A D Mendelow*

Institution *Regional Neurosciences Centre* and Accident & Emergency*

*Department\$, Newcastle General Hospital, Newcastle-upon-Tyne; Accident & Emergency# and Radiology
Department‡, North Tyneside General Hospital, North Shields, UK. Newcastle General Hospital, Westgate
Road, Newcastle upon Tyne, NE4 6BE United Kingdom*

presenting author S Ushewokunze

Title DYNAMIC INFRARED IMAGING - CUTTING EDGE TECHNOLOGY

Authors Mihai D. Dimancescu, M.D., F.A.C.S.

Institution *Neurological Surgery*

Freeport, N.Y.

presenting author Mihai D. Dimancescu

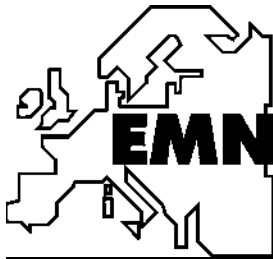
Title Teleconsulting in multidisciplinary approach to the trauma patient

Authors Mariusz Głowacki(1), Zbigniew Czernicki(1,2), Jerzy Jurkiewicz(1,2)

Institution *(1)Department of Neurosurgery, Medical Research Centre, Polish*

*Academy of Sciences, (2)Department of Neurosurgery, 2nd Faculty of Medicine, Medical
University of Warsaw, Poland Ceglowska 80 str., 01-809 Warsaw, Poland*

presenting author Mariusz Głowacki



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Title Skull base fractures: Correlation of clinical findings and a new comprehensive craniofacial classification

Authors H. Bächli(1), O. Gratzl(1), E.W. Radü(2), L. Audige(3), C.H. Buitrago-Téllez(2)

Institution Department of Neurosurgery (1) and Neuroradiology (2) University

Hospital Basel, AO Clinical Investigation and Documentation (3), Switzerland;

Neurosurgical Clinic, University Hospital Basel, Spitalstr. 21, CH-4031 Basel

presenting author H. Bächli

Title The timing of surgery with intracranial haemorrhagic mass lesions

Authors A David Mendelow

Institution Dept. Neurosurgery, Newcastle General Hospital, England, UK

Dept. Neurosurgery, Newcastle General Hospital, Westgate Road,
Newcastle upon Tyne, NE4 6BE, England, UK

presenting author A David Mendelow

Title SUPRATENTORIAL EPIDURAL HEMATOMA IN INFANTS

Authors Prof. Ciurea AV, Coman Teodora, MD, Tascu A, MD, Nuteanu L, , Cristescu M.

Institution Clinic Hospital "Bagdasar-Arseni"

Av. Berceni 10-12, Sector 4, Cod 75622, Bucarest

presenting author Prof. Ciurea AV

Title Cerebral displacement as an index to control post-traumatic brain swelling in patients with acute subdural haematomas.

Authors A. De Tommasi, MD,PhD, C. De Tommasi, MD, D. Di Maggio, MD, G. Occhiogrosso, MD, G. Vailati,MD,PhD.

Institution Neurosurgery - University of Bari -Italy

Via delle Azalee n.16 Parchitello 70016 Noicattaro, Italy

presenting author A. De Tommasi, MD,PhD

Title Multiple acute intracranial haematomas due to severe brain injuries: report of two cases.

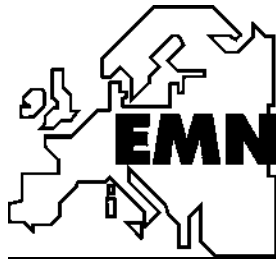
Authors A. De Tommasi, MD,PhD, C. De Tommasi, MD, A. Colamaria, MD, G. Vailati

Institution Neurosurgery - University of Bari -Italy

Via delle Azalee n.16 Parchitello 70016 Noicattaro, Italy

presenting author A. De Tommasi, MD,PhD

Lunch (13:00-14:00)



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20 May - Second session (14:00-15:30)

Chairmen: Prof. Dr. A. Cristescu (Romania), Prof. Dr. Jan-Peter Jantzen (Germany)

Title PENETRATING CRANIOCEREBRAL INJURIES

Authors A.V. Ciurea, A. Tascu, D. Mircea, D. Voinescu, T. Coman, R. Radulescu

Institution *Neurosurgical Clinic « Bagdasar-Arseni » Clinical Hospital
Bucharest, Romania*

presenting author A.V. Ciurea

Title Surgery of penetrating cranio-cerebral injuries: review of 33 cases of survivors.

Authors A. De Tommasi, MD, PhD, C. De Tommasi, MD, P. Diaferia, MD, T. Zaccaria, MD, M. Occhiogrosso, MD, PhD, Vailati, MD, PhD.

Institution *Neurosurgery - University of Bari -Italy
Via delle Azalee n.16 Parchitello 70016 Noicattaro, Italy*

presenting author A. De Tommasi, MD, PhD

Title Accidental penetrating head injury by a screwdriver: case report and review of the literature.

Authors A. De Tommasi, MD, PhD, P. Cascardi, MD, C. De Tommasi, MD, A. Colamaria, MD, M. Occhiogrosso, MD, PhD, Vailati, MD, PhD.

Institution *Neurosurgery - University of Bari -Italy
Via delle Azalee n.16 Parchitello 70016 Noicattaro, Italy*

presenting author A. De Tommasi, MD, PhD

Title Our experience with decompressive craniectomy in the event of severe head injury

Authors Putnins R, Kurme D, Aksiks I, Valeinis E, Sverzickis R

Institution *Department of Neurosurgery, P. Stradins Clinical University Hospital, Riga,
Latvia; Pilsonu str. 13, Riga, Latvia, LV-1002*

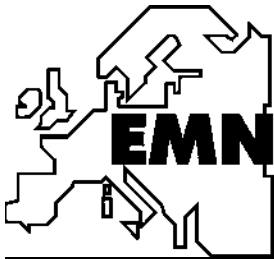
presenting author Putnins Renars

Title Etomidate vs. propofol for craniotomy: does it make a difference?

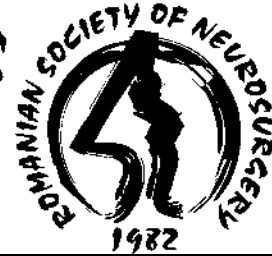
Authors Jan-Peter Jantzen, Kyra Schneider, Dieter Suhr

Institution *Department of Anaesthesiology and Intensive Care, Academic Teaching
Hospital, Hannover Nordstadt, Klinikum Hanover Nordstadt, Haltenhoffstr.
42, D-30167 Hannover, Germany*

presenting author Jan-Peter A.H. Jantzen



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Title CAN ONCOTHERAPY BE A PROMISING TREATMENT OPTION IN TRAUMATIC BRAIN EDEMA?

Authors Ç.ÖNAL R.ERGUVAN-ÖNAL A.TEKİNER E.DURAN B.ŞAHİNBEYOĞLU
Ö.TARIM , Ö.ATEŞ , F.ÜNAL and M.Ý.TURANTAN

Institution *Inönü University School of Medicine Departments of Neurosurgery and Pathology, Inönü University School of Medicine, Department of Neurosurgery Malatya - TURKEY*

presenting author Cagatay ONAL M.D.

Title Value of ICP- and BAEP monitoring in Outcome Assessment of Severe TBI

Authors Mihaela Teodoru, Cristescu A., Bentia D., N. Sandu

Institution *Bucharest Emergency Hospital, Dept. of Neurosurgery
8, Calea Floreasca, Bucharest, Romania*

presenting author Mihaela Teodoru

Title Multidisciplinary Team Approach: Traumatic Brain Injury Care in Politrauma Patients – Early Phase Management.

Authors J. Ciurea, AV Ciurea, Eva Gheorghita

Institution *Emergency Clinical Hospital „Bagdasar – Arseni”
Sos. Berceni, 10, Bucharest, Romania*

presenting author J. Ciurea

Coffee break (15:30-16:00)

20 May - Third session (16:00-17:30)

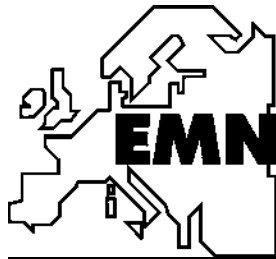
Chairmen: Prof. Dr. I. Pocata (Romania), Prof. Dr. Andrew I.R. Maas (Netherlands)

Title Quality management in Early Neurorehabilitation following acute TBI.
Lessons from the review of phase “B” in 100 patients one year after the accident

Authors Klaus von Wild* and P. Wenzlaff **

Institution **Professor for Neurosurgery Medical Faculty, Westfälische Wilhelms-
University Münster, D **Centre for Quality Management (ZQ), Medical
Association of Lower Saxony, Hannover, D
Frauenburgstrasse 32, D 48155 Münster*

presenting author K. von Wild



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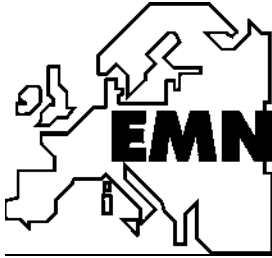
Title	IMPORTANT PROGNOSIS FACTORS IN SBI IN CHILDREN
Authors	Ciurea AV*, Teodora Coman*, A. Tascu*, F. Brehar*, Sonia Băiașu*, V. Rotarescu**.
<i>Institution</i>	* 1st Neurosurgical Clinic – Pediatric Division, ** Neuropsychologist Emergency Hospital “Bagdasar Arseni”, Bucharest, Romania.
	presenting author Ciurea AV

Title	Managing the elderly severely head-injured comatose patient – a three centre study
Authors	Ushewokunze S*, Nannapaneni R *, Mendelow AD*, Marshall L [§] , Teasdale G [#]
<i>Institution</i>	Regional Neurosciences Centre, Newcastle General Hospital*, Neurosurgical Division, University of California, San Diego [§] and the Institute of Neurological Sciences, Southern General Hospital, Glasgow [#] Newcastle General Hospital, Westgate Road, Newcastle upon Tyne, NE4 6BE United Kingdom
	presenting author Ushewokunze S

Title	COMA AROUSAL
Authors	Mihai D. Dimancescu, M.D., F.A.C.S.
<i>Institution</i>	Neurological Surgery Freeport, N.Y., USA
	presenting author Mihai D. Dimancescu

Title	Posturography as a new tool in the evaluation of the outcome in mild traumatic brain injury patients.
Authors	A. De Tommasi, MD, PhD, C. De Tommasi, MD, P. Cascardi, MD, S. Luzzi, M. Occhiogrosso, MD, PhD, G. Vailati, MD, PhD.
<i>Institution</i>	Neurosurgery - University of Bari -Italy Via delle Azalee n.16 Parchitello 70016 Noicattaro, Italy
	presenting author A. De Tommasi, MD, PhD

Title	THERAPEUTICAL ALGORITHM OF MANAGEMENT IN POLYTRAUMA INCLUDING FACIAL LESIONS
Authors	I. P. FLORESCU, CARMEN GIUGLEA, NOELA IONESCU, S. MARINESCU
<i>Institution</i>	PLASTIC SURGERY DEPARTMENT, CLINICAL EMERGENCY HOSPITAL “BAGDASAR-ARSENI”, ȘOS. BERCEI, NO 10, BUCHAREST
	presenting author CARMEN GIUGLEA



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Title CSF levels of free-radical peroxidation products and cognitive functioning patterns differentiate between active, arrested and post-traumatic normal pressure hydrocephalus

Authors Ewa Fersten(1), Wanda Gordon-Krajcer(2), Mariusz Głowacki(1), Barbara Mroziak(3), Jerzy Jurkiewicz(1,4), Zbigniew Czernicki(1,4)

Institution (1)Department of Neurosurgery, Medical Research Centre, Polish Academy of Sciences, Poland
(2) Department of Neurochemistry, Medical Research Centre, Polish Academy of Sciences, Poland
(3)Department of Psychology and Mental Health Promotion, Institute of Psychiatry and Neurology, Poland
(4)Department of Neurosurgery, 2nd Faculty of Medicine, Medical University of Warsaw, Poland
Ceglowska 80 str., 01-809 Warsaw, Poland

presenting author Mariusz Głowacki

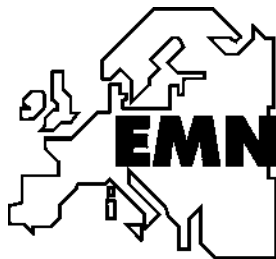
Title Right Cerebral Hemisphere and Speech Recovery

Authors Philippe Van Eeckhout¹, Dan Mircea², Yves Samson¹

Institution ¹ Federation of Neurology, Speech Therapy, Pitié Salpêtrière Hospital, Paris, France
² Department of Basic Research in Neurosciences, Clinic of Neurosurgery, Romania

presenting author Dan Mircea

Folkloric Dinner (20 May 20:00)



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21 May - First session (08:30-10:00)

Chairmen: Prof. Dr. F. E. Exergian (Romania), Prof. Dr. Thomas Pentelényi (Hungary)

Title SPINAL TRAUMA IN SPINAL SURGERY DEPARTMENT "BAGDASAR – ARSENI"
HOSPITAL (EPIDEMIOLOGICAL STUDY - 1999-2003)

Authors FI . EXERGIAN M.D., Ph.D. , S. CRACIUNAS M.D.

Institution Department of Spinal Surgery, Emergency Hospital "Bagdasar-Arseni"
Bucharest, Romania

presenting author FI . EXERGIAN M.D.

Title Modern Treatment of Severe Spinal Injuries without Standards and Guidelines
after 2002.

Authors Dr. Prof. Pentelényi Thomas , Zsolczai S., Kenéz J.

Institution National Institute of Traumatology, Department of Neurosurgery,
OBSI, VIII. Fiumei ut 17. 1081 Budapest, Hungary

presenting author Prof. Pentelényi Thomas

Title Traumatic instability of craniocervical junction, neurological complication -
pentaplegia

Authors S.Zsolczai , A.Nagy, A.Szikszai

Institution National Institute of Traumatology and Emergency
1081 Fiumei str, Budapest, Hungary

presenting author Sandor Zsolczai MDPhD

Title Spinal shock or irreversible damage? Combined acute approach with "Nazareth" vascular
tunnel plate fixation as a minimal invasive method in severe T spine injury

Authors Andras Csókay M.D.Ph.D. Attila Németh M.D.Lajos TakácsM.D. Vilmos
PapM.D.Mátyás , BobestM.D.

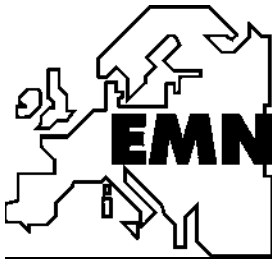
Institution Markusovszky Hospital Dept. of Neurosurgery
Markusovszky str.3. Szombathely Hungary 9700

presenting author Andras Csókay M.D.

Title ANTERIOR DECOMPRESSION OF THORACOLUMBAR BURST FRACTURES
THROUGH RETROPERITONEAL APPROACH

Authors Zapuhlîh Gr., Şincari M., Safta R.
Chişinău, Republic of Moldova

presenting author Zapuhlîh Gr.



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Title The evolution of the therapy and surgical strategies at the basis of the positive outcome in cervical injury patients.

Authors A. De Tommasi, MD, PhD, C. De Tommasi, MD, C. Del Vecchio, MD, T. Zaccaria, MD, G. Occhiogrosso, MD, Vailati, MD, PhD.

Institution Neurosurgery - University of Bari -Italy
Via delle Azalee n.16 Parchitello 70016 Noicattaro, Italy

presenting author A. De Tommasi, MD, PhD

Title MEDICAL AND SOCIAL PROBLEMS FACING TETRA AND PARAPLEGIC PERSONS AT HOME AND INSIDE THE COMMUNITY

Authors Angheliescu A, Mihailescu Cezara, Georgescu Doina, Chiparus Carmen, Lapadat Madgalena, Marinescu FI., Tudor I.

Institution Bagdasar-Arseni Hospital
Bucharest, Romania

presenting author Angheliescu A.

21 May - Commercial presentation (10:00-10:30)

Non-fusion technology in Spinal Surgery - Artificial Disk SB Charite III
DePuy Spine & Codman

presented by Dr. Predrag Andric

introduced by Dr. F. E. Exergian

Coffee break (10:30-11:00)

21 May - Miscelania (11:00-11:30)

Chairmen: Prof. Dr. Teodor STAMATE (Romania), Prof. Dr. Gisela Stoltenburg-Didinger (Germany)

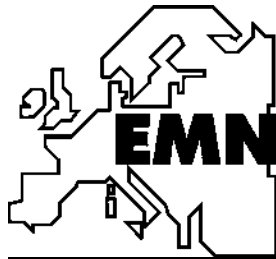
Title A new concept in surgical treatment of brachial plexus palsy

Authors Stamate T*, Budurca A.R. *, Lazar A.N. *, Tamas Camelia*, Stamate Mariana**

Institution * University of Medicine and Pharmacy, Clinic of Plastic and Reconstructive Surgery, Pilot Center " SOS HAND ", Emergency Hospital - Iasi - ROMANIA

** Electrophysiology Laboratory, Neurosurgical Hospital - Iasi - ROMANIA
Str. G-ral Berthelot 2, 6600 IASI, ROMANIA

presenting author Prof. Teodor STAMATE, M.D., Ph.D.



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Title Should we randomized new surgical treatment in life threatening illness or not?

Authors Andras Csókay M.D.Ph.D. Tamás Pentelényi M.D.Ph.D. Attila Németh

Institution *Markusovszky Hospital*
Markusovszky str.3. Szombathely, Hungary 9700.

presenting author András Csókay

Title Internet access to health information and related neurotrauma patient demand:
linguistic, technical, financial, and truth considerations

Authors David W. Mulholland

Institution *Landmark College*
PO Box 208
Putney, VT 05346
USA

presenting author David W, Mulholland

21 May - Panel discussion (11:30-12:00)

Ethical issues on brain death and donors

Presidium: Prof. Dr. Klaus von Wild (Germany), Prof. Dr. Vladimir Belis (Romania), Prof. Dr. Jan-Peter Jantzen (Germany), Lilica ROSU MD (Romania), V. Zotta MD (Romania)

21 May - WORKSHOP (12:00-13:00)

QUALITY OF LIFE AFTER NEUROTRAUMA

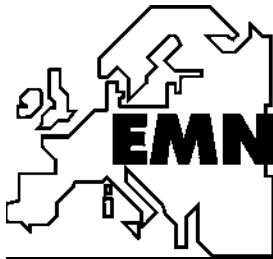
Presidium: Prof. Univ. Med. Jean Luc Truelle (France), Prof. Dr. Andrew I.R. Maas (Netherlands), Prof. Dr. Edmund A. M. Neugebauer (Germany)

Introducing David W. Mulholland

Landmark College, USA

With I, the Case: Experiences with Neurological Sequelae and Testing

Lunch (13:00-14:00)



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21 May - Second session (14:00-15:30)

Chairmen: Prof. Dr. Mihai DIMANCESCU (USA), Prof. Dr. Zbigniew Czernicki (Poland)

Title Regional Energy Metabolism following Short-Term Neural Stem Cell Transplantation into the Injured Spinal Cord

Authors Mautes AEM*, Liu J, Brandewiede J, Schachner M

Institution *Neurochirurgisches Forschungslabor Universität des Saarlandes, Homburg/Saar,
Zentrum für Molekulare Neurobiologie, Universität Hamburg, Germany
Neurochirurgisches Forschungslabor
Universität des Saarlandes,
D66421 Homburg/Saar
Germany

presenting author Angelika Mautes

Title Experimental Results in Peripheral Axonal Regeneration Phenomenon under the Electromagnetical Irradiation – A Potential Treatment Alternative for Facial and Peripheral Nerves Trauma or Spinal Cord Injury

Authors Dan Mircea(1), Georgio Lovisollo(2), Ion Rusu(3), Laura Masuelli(4), Alexandru Vlad Ciurea(1), Andrea Ortensi(5)

Institution (1) Department of Basic Research in Neurosciences, Clinic of Neurosurgery, "Bagdasar-Arseni" Clinical Hospital, Bucuresti, Romania
(2) ENEA Research Center, Cassacia, Roma, Italy
(3) Carfem Electronic SRL, Bucuresti, Romania
(4) Department of General Pathology, "La Sapienza" University, Roma, Italy
(5) Department of Microsurgery, "La Sapienza" University, Roma, Italy
Bucharest. Romania

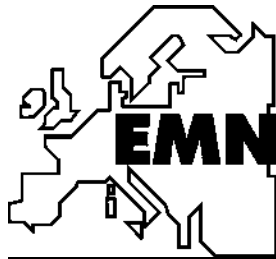
presenting author Dan Mircea

Title CORRELATIONS OF THE NEUROCHEMICAL MARKERS, AGE-SPECIFIC SECONDARY PHYSIOLOGICAL DERANGEMENTS AND OUTCOME IN CHILDREN WITH TRAUMATIC BRAIN INJURY

Authors T.Y.M. LO, P.A. JONES AND R.A. MINNS

Institution CHILD LIFE AND HEALTH, UNIVERSITY OF EDINBURGH
20 Sylan Place, Edinburgh EH9 1UW

presenting author T.Y.M. LO



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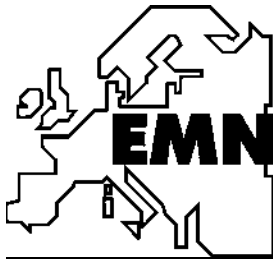
Title	Role of p53 and NFkappaB in traumatic brain lesion expansion from focal injury
Authors	Louisa v. Baumgarten(1), Carsten Culmsee(2), Alexander Baethmann, Nikolaus Plesnila (1)
<i>Institution</i>	(1)Institute for Surgical Research, (2)Department for Pharmacy University of Munich, Germany
	presenting author Nikolaus Plesnila

Title	THE EFFECTS OF ENVIRONMENTAL LIGHT-DARK CHANGES ON EXPERIMENTAL MILD TRAUMATIC BRAIN INJURY
Authors	Tanju UCAR, M.D., Gul OZKAYA, M.D., Ph.D., Necdet DEMIR, M.D., M.Zulkuf ONAL M.D.
<i>Institution</i>	AKDENİZ UNIVERSITY, MEDICAL FACULTY NEUROSURGERY, PHYSIOLOGY, HISTOLOGY AND NEUROLOGY AKDENİZ UNIVERSITY, MEDICAL FACULTY NEUROSURGERY Department, Antalya, TURKEY
	presenting author Tanju UCAR

Title	Cell death after experimental traumatic brain injury in the rat
Authors	Gisela Stoltenburg-Didinger and Ruediger Busse
<i>Institution</i>	Institute of Neuropathology, Charite, University Medical Faculties of Berlin Campus Virchow Clinic, Forschungshaus, Augustenburger Platz 1 D13353 Berlin , Germany
	presenting author Gisela Stoltenburg-Didinger

Title	A Proposal of Neuroprotective Agents Classification Based on Phase-Sequenced Pathophysiological Mechanisms of Secondary Neuronal Lesions in Nervous System Trauma
Authors	Dan Mircea, Alexandru Vlad Ciurea, Alexandru Constantinovici
<i>Institution</i>	Department of Basic Research in Neurosciences, Clinic of Neurosurgery, "Bagdasar-Arseni" Clinical Hospital, Bucuresti, Romania
	presenting author Dan Mircea

Coffee break (15:30-16:00)



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POSTER Session (21 May 16:00-17:00)

Chairmen: Prof. Dr. Angelika Mautes (Germany), Prof. Dr. Grigore Zapuhliu (Moldova)

Title Quality of Life after a Holistic Neurorehabilitation Program

Authors Koskinen Sanna, Sarajuuri Jaana, Jokitalo Paula

Institution Käpylä Rehabilitation Centre, Finnish Association of People with Mobility Disabilities, Nordenskiöldinkatu 18 B, P.O.Box 103 FI-00251 Helsinki Finland

presenting author Koskinen Sanna

Title Differential effects of hyperbaric oxygenation on tissue necrosis and loss of ATP following focal cerebral ischemia

Authors ¹Mautes AE, ²Karutz T, ²Woitzik J and ²Schilling L

Institution ¹Neurochirurgische Forschung, Universitätsklinikum Homburg/Saar, 66421 Homburg/Saar und ²Neurochirurgische Klinik und Forschung, Universitätsklinikum Mannheim, Ruprecht-Karls-Universität Heidelberg, 68135 Mannheim Neurochirurg. Forschungslabor, Unikliniken, D 66421 Homburg

presenting author Angelika Mautes

Title Morfological analysis of CT images in the differential diagnosis of normotensive hydrocephalus and cerebral atrophy.

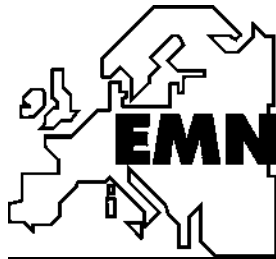
Authors (1)Piotr Marszałek, (1,2)Jerzy Jurkiewicz, (1,2)Zbigniew Czernicki

Institution (1)Department of Neurosurgery, Medical Research Centre, Polish Academy of Sciences
(2)Department of Neurosurgery, 2nd Faculty of Medicine, Medical University of Warsaw, Poland
Ceglowska 80 str., 01-809 Warsaw, Poland

presenting author Zbigniew Czernicki

Title Carbon Dioxide cerebrovascular reactivity in patients after aneurysmal subarachnoid hemorrhage treated with microsurgical clipping or endovascular coiling technique

Authors (1)Katarzyna Jarus Dziedzic, (1)Mariusz Głowacki, (1,2)Jerzy Jurkiewicz, (1,2)Zbigniew Czernicki



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Institution

(1)Department of Neurosurgery, Medical Research Centre, Polish Academy of Sciences

(2)Department of Neurosurgery, 2nd Faculty of Medicine, Medical University of Warsaw, Poland

Ceglowska 80 str., 01-809 Warsaw, Poland

presenting author Mariusz Glowacki

Title Skin enlargement as a treatment of compartment sy.after decompressive craniectomy

Authors Attila Németh M.D. András CsókayM.D.Ph.D.

Institution

Markusovszky Hospital Dept.of Neurosurgery

Markusovszky str.3. Szombathely, Hungary 9700

presenting author Attila Németh

Title Open skin method as a treatment of compartment sy.of the brain after decompressive craniectomy

Authors Attila Németh M.D. Andras Csókay M.D.Ph.D.

Institution

Markusovszky Hospital Dept of Neurosurgery

Markusovszky str.3.Szombathely, Hungary 9700

presenting author Attila Németh M.D.

Title The importance of compartment syndrome after cervical spinal cord injury. (Spinal shock or irreversible damage?)

Authors Attila Németh M.D. Lajos Takács M.D.András csókayM.D.Ph.D.

Institution

Markusovszky Hospital Dept.of.Neurosurgery

Markusovszky str.3.Szombathely ,Hungary 9700.

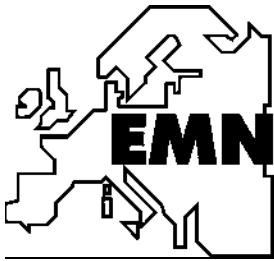
presenting author Attila Németh

Gala Dinner (21 May 20:00)

Congress closing remarks (22 May 09:00)

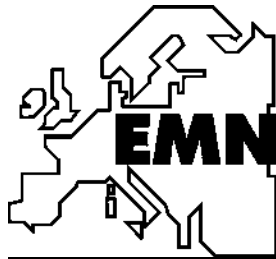
Romanian Culture and Wine Tour (22 May from 14:00 on request)

WINE TASTING IN THE PRAHOVA VALLEY CELLARS



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9th EMN Congress – Abstracts

Title Road Safety is no Accident

Authors Dr. Victor Olsavszky

Institution World Health Organisation Liaison Office Bucharest
Bvd. Primaverii 48A, UN house, Bucharest, Romania

presenting author Dr. Victor Olsavszky

On the occasion of the world health day the 7th of April 2004, the World health Organization and the World Bank, launched the "World Report on road traffic injury prevention". The report is presenting on the global level the dimension of the problem and emphasizes road traffic injuries as a major public health issue.

Road traffic injuries killed an estimated 1,2 million persons every year

Over 70 % nearly 850,000 persons – killed in road traffic injuries were under 45 years of age (the most healthy and productive group of ages)

Deaths from those injuries are projected to rise to 8.4 million in 2020 that will place road traffic injuries the third cause of decease after ischemic heart disease and unipolar major depression

Currently deaths and disabilities caused by road traffic injuries account for 2.8% of all global deaths and disabilities.

Economic costs are enormous, some 50% of road traffic fatalities worldwide involve young adults aged 15-44 years corresponding to the most economically productive segment of the population

Key factors worldwide responsible for road traffic injuries:

§ Driving under influence of alcohol, § Speeding, § Under-utilization of seat belts, § Poor road design and roadway environment, § Unsafe vehicle design, § Under-implementation of road safety standards

The report is describing some key recommendation for governments and authorities to reduce the impact of road traffic accidents, calling for action al all levels.

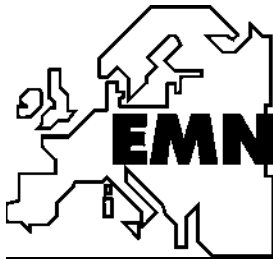
Road safety is no accident, road traffic injuries are preventable.

Title Road safety problems in Romania

Authors Ovidiu Satalan, Iustina Diaconu

Institution Romanian Ministry of Transportation and Tourism
Global Road Safety Partnership
Bucharest, Romania

presenting author Iustina Diaconu



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Title Traffic accidents - main factor in neurotrauma

Authors Prof. Ciurea AV, Coman Teodora, MD, Tascu A, MD,
Nuteanu L, MD, Cristescu M, MD.

Institution Clinic Hospital "Bagdasar-Arseni"
Av. Berceni 10-12, Sector 4, Cod 75622, Bucarest

presenting author Prof. Ciurea AV

Title Specific causes of the traffic accidents in Romania

Authors G. Vasilescu, V. Ciubotaru

Institution 3rd Neurosurgical Dpt.
Bagdasar Hospital
Bucharest, Romania

presenting author G. Vasilescu

The traffic accidents tend to have some general causes in all countries.

Besides those, the authors have identified and analysed a number of specificities of the road traffic in Romania with direct deleterious effects to the avoidable traffic accidents national statistics.

Title Brain and Spinal Cord Trauma and the Effect of Injury Mitigation
and Accident Prevention

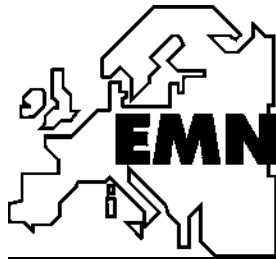
Authors Zobel, Robert

Institution Volkswagen AG
1484 K-EFFB/S
Volkswagen AG
38436 Wolfsburg

presenting author Zobel, Robert

keywords: Brain, spine, injury, effectiveness, belt, airbag, braking, ESP, skidding, injury mitigation, accident prevention

An overview is given on the relevance of brain and spinal cord trauma in GIDAS, the German In Depth Accident Survey. The injuries are discussed under the view point of age, gender, impact location and velocity etc. The injury severity is studied distinguishing between belted and unbelted occupants with and without airbag deployment and taking into account the behavior of vehicle structures. Improvements of car structures together with the enhancement of the restraint systems mitigate this injury type. Additional positive development of the accident avoidance capability of ESP and enhanced braking systems can already be seen in the accident scene This effect will dominate all mitigation measures in the future. After the introduction of safety belts, ESP is the most relevant improvement in vehicle safety, even more beneficial than airbags.



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Title **The cost/ benefit ratio in Head Trauma secondary to Traffic Accidents**

Authors Cristescu A., Dascalu G., Ioana Darie, Monica Hodor, Moraru H., Alexianu D.

Institution *Bucharest Emergency Hospital, Dept. of Neurosurgery*
8, Calea Floreasca
Bucharest, Romania

presenting author Cristescu A.

keywords: TBI, Traffic accidents, cost/benefit ratio

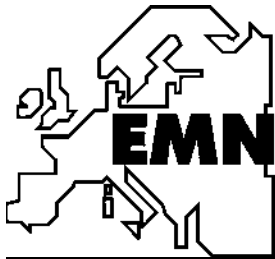
In Romania, at present, the costs resulted from traffic accidents represent about 3 - 4 % of raw internal product. On a casuistic of 664 cases, aleatory selected from the total number of admittances for head trauma (H.T.) of this etiology during the year 2003, there was calculated per patient the cost of internment per day and per total together with costs related to medical and/or surgical management, separately the costs of Intensive Care management. These findings were distributed recording to clinical classification of head trauma in patients with only this lesion, as well as in multiple traumatized patients with included traumatic cerebral lesions. The analysis of mean costs related to above mentioned topics revealed the following values: H.T. level 0 - 2.220.000 ROL / 63,15 EUR, minor H.T. - 4.500.000 ROL/ 128,0 EUR, moderate H.T. - 26.760.000 ROL / 761,1 EUR, and severe H.T. - 49.080.000 ROL / 1396,2 EUR. In multiple traumatized patients with cerebral implication the same cost was 62.160.000 ROL / 1768,3 EUR. The cost of hospitalization day varied from 2.750.000 ROL / 78,2 EUR in minor H.T. to 10.380.000 ROL / 295,3 EUR /day in severe H.T., as well as in multiple traumatized patients. Meanwhile, the cost/day for patients treated in the ICU was in severe H.T. - 9.080.000 ROL / 258,3 EUR, and 5.420.000 ROL / 154,2 EUR for multiple traumatized patients. There are discussed some factors which influence the amount of cost, i.e. co-operation among neurosurgeons and anesthesiologists, use of antibioprotection and realistic neuroprotection, improvement of post-cure and rehabilitation management.

Title **IMPACT OF THE NATIONAL INSTITUTE OF CLINICAL EXCELLENCE (NICE) GUIDELINES ON HEAD-INJURY IMAGING**

Authors S Ushewokunze*, K Amos*, C Biggin#, D Tennant£, B Sen\$, R Nannapaneni* and A D Mendelow*

Institution *Regional Neurosciences Centre* and Accident & Emergency Department\$, Newcastle General Hospital, Newcastle-upon-Tyne; Accident & Emergency# and Radiology Department£, North Tyneside General Hospital, North Shields, UK. Newcastle General Hospital, Westgate Road, Newcastle upon Tyne, NE4 6BE United Kingdom*

presenting author Ushewokunze S



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keywords: head injury, guidelines, NICE

Background

The NICE Head Injury guidelines¹ published in 2003, aimed to improve the detection of intracranial haematomas by increasing the use of computed tomography (CT) in an accident and emergency (A&E) setting.

Aim

To analyse the effect of the NICE head-injury guidelines on the imaging used.

Method

A pilot survey of the NICE guidelines was carried out at the North Tyneside General Hospital (NTGH) A&E Department in May 2003. Data was prospectively collected and compared to data collected in November 2002 in the same department.

Data was also collected at the Newcastle General Hospital (NGH) A&E Department, which did not participate in the NICE pilot project over the same period of time.

Results

November 2002

NTGH had a total of 4401 attendances: 52 skull x-rays and 4 CT scans were performed for head injury. NGH had 5434 attendances: 59 skull x-rays and 17 CT scans were performed.

May 2003

NTGH had 5127 attendances: 2 skull x-rays and 33 CT scans were performed during the pilot period. NGH had 5991 attendances: 80 skull x-rays and 24 CT scans were performed.

Discussion

The NICE guidelines have increased the use of CT scans in head injury. This has a reciprocal effect on the use of skull x-rays. The resource implications for radiological imaging in acute head injury are discussed.

Reference

1. National Collaborating Centre for Acute Care. Head Injury. Triage assessment, investigation and early management of head injury in infants, children and adults. National Institute for Clinical Excellence (NICE) June 2003..

Title DYNAMIC INFRARED IMAGING - CUTTING EDGE TECHNOLOGY

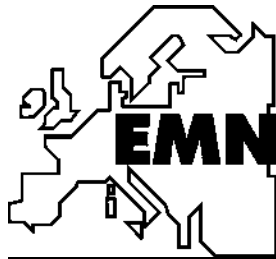
Authors Mihai D. Dimancescu, M.D., F.A.C.S.

Institution Neurological Surgery
Freeport, N.Y.

presenting author Mihai D. Dimancescu

Neurosurgical intra-operative imaging is a challenge that has not yet been successfully mastered. The only imaging techniques available at present are portable X-ray, intra-operative angiography and MRI in the few operating rooms where it is available. All three techniques provide static images and require interruption of the operative procedure to obtain the requested images.

Early infrared technology developed in the 1960's for biomedical applications depended on sensors that lacked sensitivity (1 degree C), lacked resolution (comparable to analog TV) and lacked data acquisition (1 frame per minute) to be of any practical medical value.



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The development of quantum well infrared photon detectors by the US military and by NASA for satellite detection of distant firing of enemy ballistic missiles represented a major advance in the detection of heat generated infrared rays. Licensing of the technology to private industry for biomedical applications in the 8-10 micrometer photon infrared wave length allowed the development of a scanning camera coupled with appropriate computer software to provide precise, fast, non-invasive dynamic functional information related to blood perfusion of human tissues.

Beneficial applications in neurosurgery have included functional brain mapping in seizure surgery and in tumor surgery, delineation of tumor boundaries and analysis of cerebral cortical perfusion in AVM and in aneurysm surgery. The potential use in neurosurgical trauma might provide information with respect to viable versus non-viable cerebral tissue.

Title **Teleconsulting in multidisciplinary approach to the trauma patient**

Authors

Mariusz Głowacki(1), Zbigniew Czernicki(1,2), Jerzy Jurkiewicz(1,2)

Institution

(1)Department of Neurosurgery, Medical Research Centre, Polish Academy of Sciences

(2)Department of Neurosurgery, 2nd Faculty of Medicine, Medical University of Warsaw, Poland

Ceglowska 80 str., 01-809 Warsaw, Poland

presenting author Mariusz Głowacki

keywords: Teleconsulting system, Multidisciplinary approach, Trauma Patient, development

Objective:

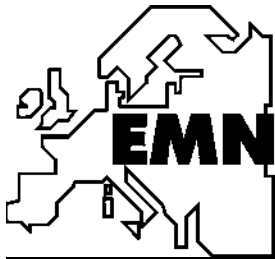
The study presents possibilities in development of teleconsulting systems in trauma patient care based on the experience of the Department of Neurosurgery Polish Academy of Sciences.

Material and Methods:

Rapid progress in telecommunication and in medical digital imaging as well as a need of constant improvement in trauma patient care requires continuous development in teleconsulting systems. Nowadays there are many possible ways of building up teleconsulting network. Except of DICOM 3.0(Digital Imaging and Communication in Medicine) standard different technologies could be used, like frame grabbing, advanced optical scanning or digital photography. Differences lies in image acquisition technology , quality of transmitted images and installation expenses. Choice of technology depends on individual requirements. System in the Department Of Neurosurgery Polish Academy of Sciences (PAS) has started with frame grabbing technology (MultiView Standard 2.0D) used for neurosurgical consulting only. This system currently is upgraded to DICOM 3.0, new hospitals are connected and additionally digitised X-ray images are transmitted. We are developing expert centre with possibilities of consultation with different specialists' i.e. neurosurgeon, general surgeon, orthopaedic surgeon, maxillo-facial surgeon and radiologist. Introduction of General Pocket Radio Service (GPRS) technology opens possibilities to create portable terminals based on laptops and mobile phones or on Personal Digital Assistants (PDA's).

Results

Benefits of the teleconsulting system are presented on the example of the system used in our department. Introduced system is operational 24h/day and 7 days/week. During 8 years disturbances were noted in only



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4% of transmission. 70% of the consulted patients were treated in remote hospitals. 86% between out of 30% patients admitted to our department after teleconsultation were operated. We achieved significant savings in transportation costs.

Conclusions:

The teleconsulting systems demands continuous development due to technological changes and individual requirements.

The teleconsulting system allows for:

1. Accessibility of consultation of a different medical specialists in a short time.
2. To reach the experts independently on theirs location thanks to portable terminals.
3. To guide diagnostic and therapeutic procedures carried out in remote hospitals.
4. Proper qualification for emergency treatment i.e. neurosurgical, maxillo-facial etc.
5. Follow up of patients (repeated consultations).
6. Easy access to patient medical records.
7. Avoidance of unnecessary transportation.
8. Reduction of the radiological film expenses (filmless radiology).
9. Transportation costs reduction.
10. Protection of medical data.

Title Skull base fractures: Correlation of clinical findings and a new comprehensive craniofacial classification

Authors H. Bächli¹, O. Gratzl¹, E.W. Radü², L. Audige³, C.H. Buitrago-Téllez²

Institution Department of Neurosurgery ¹ and Neuroradiology ² University Hospital Basel, AO Clinical Investigation and Documentation ³, Switzerland
Neurosurgical Clinic, University Hospital Basel, Spitalstr. 21, CH-4031 Basel

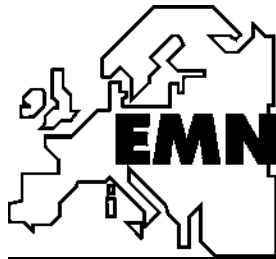
presenting author H. Bächli

keywords: Skull base fractures, classification system, rhinoliqorrhoe, pneumocephalus

Objective: To correlate clinical findings with a new classification system based on high resolution CT of the whole craniofacial region.

Materials and Methods: Single-slice CT (1mm slices/ 2 mm table increment) or multi-slice CT (4x1 mm) of the craniofacial region were performed in 22 patients with clinical signs (rhinoliqorrhoe, periorbital hematoma) of skull base fractures. Image evaluation of CTs was performed using a semiautomatic software system of a new AO/ASIF (Association for Study of Internal Fixation) analogue classification system by consensus diagnosis of 2 viewers. This system includes the whole craniofacial system taking into account the common association of skull base fractures with facial fractures. Clinical data were collected retrospectively from 1997-2002.

Results: The system is based on the use of the AO/ASIF scheme, defining three types (A, B, C), three groups within each type (e.g. A1, A2, A3) and three subgroups within each group (e.g. A1.1, A1.2, A1.3) with increasing severity from A1.1 (lowest) to C3.3 (highest). The craniofacial region is divided into three units:



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the lower midface (I), the upper midface (II) and the craniobasal-facial unit (III). Lateral and central fractures are also distinguished. Type A fractures are non-displaced fractures, type B are displaced fractures and type C are complex/defect fractures. Groups A1, B1 and C1 comprise fractures of an isolated unit; groups A2, B2 and C2, combined fractures without involvement of the skull base; and groups A3, B3 and C3 are those combined fractures with involvement of the skull base. From 12 patients with rhinoliqorhoe the distribution of most severe fractures showed four patients with C3.1, three with either C3.3 or C3.2 and two with C1.3 fractures. Pneumocephalus was observed in 16 cases including six C3.2 fractures, four either C3.1 or C3.3, one B3.2 and and one localized C1.3 injury.

Conclusion: The proposed classification system allows standardized documentation of midfacial and craniofacial fractures, especially including skull base fractures. The potential clinical usefulness for operative decision intervention will be discussed.

Title **The timing of surgery with intracranial haemorrhagic mass lesions**

Authors A David Mendelow

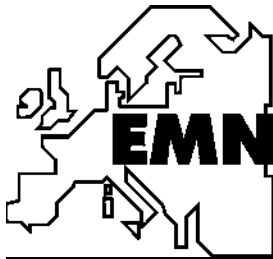
Institution *Dept. Neurosurgery, Newcastle General Hospital, England, UK*
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Newcastle upon Tyne, NE4 6BE, England, UK

presenting author A David Mendelow

keywords: Haematoma, Surgery

Observational studies in patients with traumatic Extradural and acute Subdural Haematomas have clearly shown that earlier surgical intervention is associated with a better outcome 1,2. With Spontaneous Intracerebral Haematomas (SICH) the Surgical trial in Intracerebral Haemorrhage (STICH) has indicated that earlier surgery cannot be shown to produce better outcomes compared with initial conservative treatment. Thus with SICH, clinical observation with delayed intervention is a reasonable clinical approach. There are well-documented differences between SICH and Traumatic Intracerebral Haemorrhage (TICH) 3, but in the absence of evidence about TICH from prospective randomised controlled trials or observational studies, it is reasonable to suppose that a similar policy of initial clinical observation is applicable to patients with TICH. Thus ICP monitoring (a sophisticated form of observation) would seem to be an acceptable and responsible way of observing such patients.

1. Mendelow AD, Karmi MZ, Paul KS, Fuller GA, Gillingham FJ. Extradural haematoma - effect of delayed treatment. *Brit. Med. J.* 1979;1:1240-1242,.
2. Seelig JM, Becker DP, Miller JD, Greenberg RP, Ward JD, Choi SC. Traumatic acute subdural hematoma: major mortality reduction in comatose patients treated within four hours. *New England Journal of Medicine* 1981; 305(25):1511-1518.
3. Siddique MS, Gregson BA, Fernandes HM, et al. Comparative study of traumatic and spontaneous intracerebral hemorrhage. *J Neurosurg* 2002;96:86-89



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Title SUPRATENTORIAL EPIDURAL HEMATOMA IN INFANTS

Authors Prof. Ciurea AV, Coman Teodora, MD, Tascu A, MD,
Nuteanu L, MD, Cristescu M, MD.

Institution Clinic Hospital "Bagdasar-Arseni"
Av. Berceni 10-12, Sector 4, Cod 75622, Bucarest

presenting author Prof. Ciurea AV

keywords: epidural hematoma, infants, CT-scan

INTRODUCTION: Authors present a study on 16 infants with epidural hematoma (EDH) admitted in the Pediatric Department of Neurosurgery of the Clinic Hospital "Bagdasar-Arseni" in the period of 1997-2003.

MATERIAL AND METHODS: 16 cases (8 girls and 8 boys) with supratentorial EDH aged between 0-1 years were admitted in the hospital in the last 7 years (1997-2003). The mean age was 10 months. The Children Coma Scale (CCS) at admission ranged between 13-15 in 6 cases, 9-12 in 7 cases and 4-8 in 3 cases. The clinical status was characterized in all cases by pallor and irritability; the comatose state in 3 cases was noticed. No associated coagulopathy is detected in this series. Eleven cases presented associated subgaleal hematoma and 12 cases had cranial fracture. All cases were investigated by CT scan within 6 hours by traumatic event. In 14/16 cases the size of the EDH was more than 2 cm with midline shift. These underwent to surgical intervention in emergency. The remained 2/16 cases with low size EDH without mass-effect and GCS of 13-15 were managed conservatively.

RESULTS: In 15/16 cases (93.75%) the evolution was good; the neurological status was improved both after surgical treatment and medical treatment only. One case (6.25%) died at 5 days postoperative. The median period of follow-up was 3 years. No posttraumatic sequels are noted except two cases who presented seizures at 3 months after surgery.

CONCLUSION: Authors consider that EDH in infants can be managed by surgery in cases with poor neurological status or in cases in which the neuroimagic signs shows brain compression, brain shift more than 0,5 cm or size of hematoma greatest than 2 cm. In these cases, the surgical treatment must be performed early in order to obtain a good outcome. The CT scan must be performed as soon as possible after admission, usually in the first 6 hours to realize the optimal management in EDH in infants.

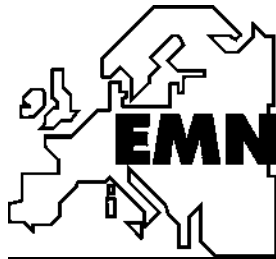
Title Cerebral displacement as an index to control post-traumatic brain swelling in patients with acute subdural haematomas.

Authors A. De Tommasi, MD, PhD, C. De Tommasi, MD, D. Di Maggio, MD, G. Occhiogrosso, MD, G. Vailati, MD, PhD.

Institution Neurosurgery - University of Bari -Italy
Via delle Azalee n.16 Parchitello 70016 Noicattaro, Italy

presenting author A. De Tommasi, MD, PhD

keywords: head injury, acute subdural haematoma, brain swelling



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Background: The paper reports a method to calculate the survival probability (S.P.) in patients with acute unilateral post-traumatic subdural haematoma by means of morphometric parameter determination.

Material and methods: A series of 50 patients affected by severe brain injuries and operated on for acute subdural haematomas was reviewed. Patients whose CT scans demonstrated a haematoma thickness less than 2 mm were excluded. Ages ranged from 12 to 64 years. After studying the emergency brain CT scans two morphometric parameters were determined: haematoma thickness and median line brain shift. A third parameter, displacement (D) was obtained by calculating the difference between the median line brain shift and the haematoma thickness. On the basis of D, all patients were divided into 4 groups: patients with D from -15 to -10, patients with D from -9 to -5, patients with D from -4 to 0 and patients with D value equal to or greater than 1.

Results: The D varied between -15 and +6. In 60% of the patients the D resulted negative and the S.P. was 50%-100%, in 22.2% the D was equal to 0 and the S.P. resulted 20% -50%, in 17.8% the D was positive and the S.P. was 0% -20%.

Conclusion : The paper introduces a method to determine post-traumatic aedema severity and secondary cerebral injury extension. The discussion analyzes different methods to evaluate the prognosis in patients with acute unilateral post-traumatic subdural haematomas.

Title Multiple acute intracranial haematomas due to severe brain injuries: report of two cases.

Authors A. De Tommasi, MD, PhD, C. De Tommasi, MD, A. Colamaria, MD, G. Vailati

Institution Neurosurgery - University of Bari -Italy
Via delle Azalee n.16 Parchitello 70016 Noicattaro, Italy

presenting author A. De Tommasi, MD, PhD

keywords: severe head injury, multiple intracranial haematomas, cerebral coma

Background: Multiple intracranial haematomas are the most serious complications of brain injury responsible for the development of intracranial hypertension and brainstem symptoms.

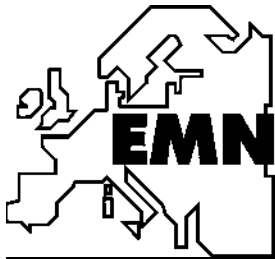
Material and methods: This paper reports two cases related to a 20 year-old male and a 13 year-old female patients affected by cerebral coma following severe road accidents.

The 20 year-old male patient was in G.C.S. 5 with bilateral decortication and mydriasis. The brain CT scan showed multiple skull fractures, left epidural haematoma, right temporo-parietal subdural haematoma, severe cerebral oedema. After bilateral craniotomy his neurological condition worsened. A second CT scan demonstrated a large bilateral frontal epidural haematoma. A bifrontal craniotomy was performed and a superior sagittal sinus laceration was repaired.

After intensive care, patient's condition improved even if a long period of apallic state followed.

At 3 year follow-up, the patient presented a right spastic hemiparesis and dysphasia.

The 13 year-old female patient was in G.C.S. 6 without corneal reflex. Emergency brain CT scan showed a right subdural temporal haematoma and a left intracerebellar haematoma. To achieve a brainstem decompression a left suboccipital craniectomy followed by a right pterional craniotomy were performed.



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At 2 year follow-up, the patient presented cerebellar ataxia and retrograde amnesia.

Conclusion: The discussion evidences the rarity of these cases underlining the importance of prompt therapy of the different evolution phases of intracranial haematomas as well as the importance of secondary brain damage monitoring in determining favourable outcomes.

Title PENETRATING CRANIOCEREBRAL INJURIES

Authors

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presenting author A.V. Ciurea

Penetrating craniocerebral injuries (PCI) determine a significant morbidity and mortality in all ages, despite of important imagistic and medical progresses. Decision-making and management of these lesions frequently challenge neurosurgeons.

Authors reported a retrospective study of 251 consecutive cases of penetrating craniocerebral injuries admitted in "Bagdasar – Arseni" Clinical Hospital from January 1993 to December 2002. Surgery was performed in 245 cases (97.6 %). Males were preponderant (183 cases – 72.9 %). Young adults were commonly involved (36 % of cases were between 20 and 30 year old). Children were prone to these injuries also (70 cases – 27.8 %). More PCI were related to vehicle accidents (33 %) and assaults (29.8 %). Firearms were involved in only 3.9 % of cases. Associated lesions were identified in 5.1 % of cases.

The initial assessment of Glasgow Coma Scale (GCS) revealed 158 cases of GCS = 13-15 (62.9 %), 50 cases of GCS = 9-12 (19.9 %) and 43 cases of GCS = 3-8 (17.1 %). Management included mechanical ventilation and ICP monitoring in the cases of severe traumas. Both the skull roentgenographic series and CT scan were obtained at admission. MRI and DSA remained an option in particular cases. Imaging studies identified the following localizations: frontal - 118 cases (47.0 %), parietal – 64 cases (25.8 %), temporal – 35 cases (13.9 %) and others sites– 34 cases (13.5 %). Surgery was the option in 97.6 % of cases, being performed within 8 – 12 hours after injury in the most cases, although rarely constituted an emergency. Antibiotics were administered in large doses. Complications were noted as follow: increased ICP – 60 cases (23.9 %), CSF leak – 12 cases (4.7 %), infections – 35 cases (13.9 %), hematomas – 8 cases (3.1 %), seizures – 40 cases (15.9 %), hydrocephalus – 19 cases (7.5 %) and traumatic intracranial aneurysms – 2 cases (0.7 %). The mortality rate was 9.9 % (25 cases). A good recovery was obtained in 145 cases (57.7 %), moderate recovery in 56 cases (22.3 %), but severe disability was noted in 16 cases (6.3 %) and vegetative state in 18 cases (7.1 %). Residual neurological deficits were common (55 cases – 21.9 %). Posttraumatic epilepsy was identified in 15 cases (5.9 %).

In conclusion, penetrating craniocerebral injury inflict special attention, focused on the surgical management and the prevention and treatment of complications.

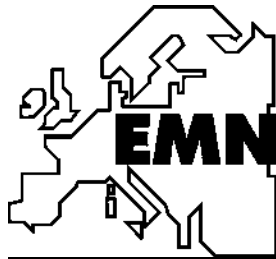
Title Surgery of penetrating cranio-cerebral injuries: review of 33 cases of survivors.

Authors

A. De Tommasi, MD, PhD, C. De Tommasi, MD, P. Diaferia, MD, T. Zaccaria, MD, M. Occhiogrosso, MD, PhD, Vailati, MD, PhD.

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presenting author A. De Tommasi, MD, PhD

keywords: severe head injury, penetrating cerebral injury, cerebral coma

Background: Severe cranio-cerebral traumas caused by penetrating tools represent a serious neuro-traumatological issue and often are responsible for disability or death in children and young adults. A great majority of survivors are under 30 and 2/3 of them need rehabilitation.

Material and methods: Among 300 patients affected by major cranial traumas the paper reviews 33 cases of survivors after penetrating cranio-cerebral injury surgery. The penetrating tools in 24 patients were gunshots, in 3 patients rifle shots, in 1 patient war missile, in 3 patients knives and in 2 patients wood missile. The frontal area resulted interested more frequently. All patients was divided into five groups on the basis of four parameters: consciousness, pupil diameter, pupil reflex and motor deficits. All patients were operated on removing bone fragments and/or penetrating tools.

Results: 7 patients presented serious complications: 2 patients suffered by pneumocephalus, 2 by cerebral abscess, 2 by liquoral fistula, 1 by pneumocephalus and abscess. 5 patients were re-operated and 2 patients died.

Conclusion: The paper reviewing the follow-up and outcomes of 33 survivors analyzes the different aspects of the penetrating cranio-cerebral injuries. The discussion underlines the importance to avoid logistic complications by means an accurate toilette of lacero-contusive areas, complete bone fragment or missile removal. Surgery timing and correct and precocious antibiotic therapy are also considered.

Title **Accidental penetrating head injury by a screwdriver: case report and review of the literature.**

Authors A. De Tommasi, MD, PhD, P. Cascardi, MD, C. De Tommasi, MD, A. Colamaria, MD, M. Occhiogrosso, MD, PhD, Vailati, MD, PhD.

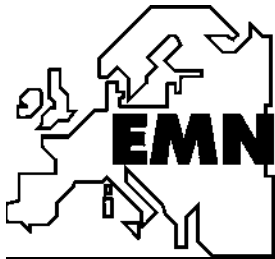
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keywords: Severe head injury, penetrating head injury, skull base injury

Background: Very few cases of penetrating brain injuries by foreign bodies are reported. To date, only 5 cases of penetrating head injuries by screwdriver have been described: in 4 cases, it was homicidal and in 1 case accidental self-inflicted injury. In the homicide cases the patients died suddenly. In the accidental case the patient died 14 days after the screwdriver had been successfully removed.

Material and methods: This paper describes the first case in which the patient is alive despite his injury. The 20 year-old patient suffered an accidental penetrating head injury by a cross-shaped tip screwdriver. The tool penetrated into the right maxillary suborbital foramen near tympanic chord coming through the skull base for almost 10 centimetres. The patient was in a GCS 15 without neurological deficits. Brain CT-scans revealed an oblique tool trajectory through the right maxillary bone up to the left sphenoid wing. Via a left



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pterional craniotomy the screwdriver was observed in the left medial-basal pole of the cerebrum and, passing over the left optical nerve and carotid siphon, seemed to stop in front of the left middle cerebral artery. The screwdriver was gently and successfully removed preserving vascular and nervous structures. In the post-operative course antibiotic therapy was given and no infective cerebral and meningeal complications were observed.

Results: The patient at six months follow-up resulted alive without neurological deficits.

Conclusion: The discussion analyzes the aspects of this particular kind of trauma and its results as well as the role played by dynamic factors in the outcome of penetrating skull base injuries.

Title **Our experience with decompressive craniectomy in the event of severe head injury**

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presenting author Putnins Renars

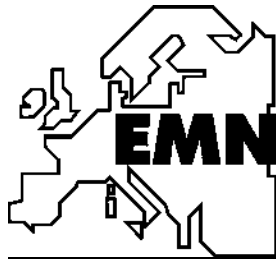
keywords: decompressive craniectomy

Objectives. In the event of severe traumatic brain injury (TBI) to avoid brain stem herniation the objective of an emergency operation is often not only to evacuate both epidural and subdural haematoma, but also to perform an extensive unilateral or bilateral decompressive craniectomy and duraplasty.

Material and methods. A group of 95 patients with head injury has been observed within the period of January 1, 2000 till December 31, 2003 in the P. Stradins clinical university hospital, who were subjected to decompressive craniectomy (11.2% of all head trauma patients within the above period). 84 of the 95 patients underwent unilateral decompressive craniectomy and 11 - bilateral craniectomy. Of 95 patients who suffered from head injury and had to be operated (medium age of 45.4 years) male/female patient proportion was 81 to 14. On admission to hospital 87% of patients had severe head injury (SHI) and correlated to Glasgow Coma Scale (GCS) 3 - 8 points, whereas for 13% of patients GCS scored 9-12 points. All patients with SHI were subjected to intracranial pressure (ICP) monitoring. Primary decompressive craniectomy was performed in 64 (67.4%) cases. For 31 (32.6 %) patient with evacuated haematoma with/without contusion who were not subject to primary decompressive craniectomy after computerized tomography (CT) control reoperation has been performed. For 12 patients rehaematoma was observed, for 9 patients - brain ischemia with oedema, for 7 patients - increasing oedema and for 3 patients - inflammatory complications. In the above cases all these patients underwent secondary decompressive craniectomy with duraplasty.

Results. In cases with primary decompressive craniectomy 42 (65.6%) patients survived and 22 (34.4 %) had a lethal outcome. In cases with secondary decompressive craniectomy 21 (67.8 %) patient survived and 10 (32.2 %) patients died.

Conclusion. Considering that most patients of the above group were in coma, with increasing brain oedema, we have concluded that decompressive craniectomy is essential for neurosurgery and it is recommended to apply it more extensively..



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Title Etomidate vs. propofol for craniotomy: does it make a difference?

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keywords: craniotomy, elective; anaesthesia, intravenous; etomidate, propofol, cortisol

Introduction: According to current German recommendations, total intravenous anaesthesia (TIVA) is to be preferred in patients undergoing surgery for head trauma (1). Etomidate (E) is not used in TIVA regimens because of high osmolarity and suppression of cortisol synthesis. However, limitations due to hyperosmolarity do not apply with a new lipid emulsion of E (Etomidat?Lipuro ®) and suppression of cortisol synthesis is not a factor in patients receiving corticosteroid treatment as part of the perioperative protocol. Furthermore, etomidate lowers intracranial pressure (2) and is considered "neuroprotective" by some authors (3). Experimental findings indicate that not cortico-steroid treatment, but cortisol antagonism may be supportive for the ischaemic brain (4), such as in patients with head trauma. This warrants reassessment of etomidate. We have compared etomidate (E) with propofol (P) as the hypnotic component of TIVA for elective craniotomy.

Methods: With ethics committee approval and written informed consent, 20 consecutive ASA I-III patients were randomly allocated to receive an equipotent infusion of either E or P, supplemented with sufentanil. All patients received dexamethasone at induction and for 5 days postoperatively. Blood samples were taken before induction, during anaesthesia and at 24 h and on the 7th day.

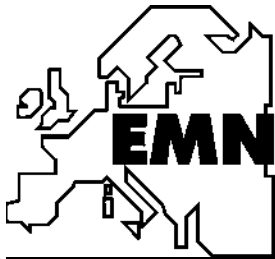
Results: Arterial blood pressure was lower and induction of mild hypothermia more rapid with P. Cortisol concentration decreased from 16 to 2 mg dL⁻¹ in both groups with the minimum at 24 h, followed by complete recovery at day 7. Triglycerides increased in both groups, significantly more with E.

Conclusion: Effects of E and P on cortisol concentration in patients receiving dexamethasone are identical. The more pronounced increase of triglycerides with E reflects the higher lipid content. P is a more powerful vasodilator, reflected both by a lower mean arterial pressure (macrocirculation) and more rapid cooling (microcirculation).

We conclude that etomidate is a suitable alternative to propofol for intracranial surgery, when transient hypertriglyceridaemia and delayed cooling are considered acceptable.

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Title CAN ONCOTHERAPY BE A PROMISING TREATMENT OPTION IN



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TRAUMATIC BRAIN EDEMA?

Authors Ç.ÖNAL R.ERGUVAN-ÖNAL A.TEKİNER E.DURAN B.ŞAHİNBEYOĞLU

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keywords: Oncotherapy human serum albumin mannitol brain edema trauma

The primary and secondary consequences of traumatic brain edema and the experimental trials for the treatment of this severe disease still consist a principal focus of interest. A series of oncotherapeutic experiments have been performed to challenge this idea.

Human serum albumin is administered via cerebroventricular route stereotactically after focal freeze injury in rats. The goal is to enhance the migration of edema fluid with the aid of oncotic pressures. CSF osmolality, cerebral water content, tissue specific gravity, and blood brain barrier permeability results disclosed a positive therapeutic effect of this application.

Controlled cortical impact in rabbits after craniectomy and administration of human serum albumin via cisterna magna consisted the second stage of the trial. CSF osmolality and cerebral water content values of control and therapy groups revealed that this application may be an effective way of treating vasogenic brain edema.

A third trial is performed by controlled cortical impact in rabbits after craniectomy. Hypertonic mannitol solution is administered via cisterna magna and the efficacy of therapy is evaluated by cerebral water content, MDA, GSH, and NO levels of brain tissue. The early significant decrease of MDA levels in the therapy group with a single dose of mannitol is encouraging.

Primary results show that human serum albumin may be a potent oncotherapeutic agent and mannitol acts as an antioxidant.

Title Value of ICP- and BAEP monitoring in Outcome Assessment of Severe TBI

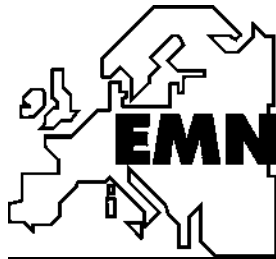
Authors Mihaela Teodoru,Cristescu A.,Bentia D.,N. Sandu

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presenting author Mihaela Teodoru

keywords: TBI ,ICP,BAEP monitoring

In a casuistic of 138 patients presenting severe TBI (GCS <= 8) admitted 2001 - 2003 , there were monitorized Auditive Evoked Potentials, together with ICP in 44 cases. The distribution of patients recording to G.C.S. was, as follows: - G.C.S.= 3-4 - 57 cases (41,3%); G.C.S. = 5-6,- 33



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(23,9%); G.C.S. = 7-8 – 48 cases (34,8%), and related to Marshall's anatomic-CT scan classification, as follows : I.- 3 (2,2%), II.- 15(10,8 %), III.- 47(34, 0%), IV.- 33 (23, 9%), and V. (operated) : – 40 (29,0%).

The initial BAEP aspects were: - normal – 3 cases (2,2 %); - cerebral death : - 15 cases; - various BAEP waves III,IV,V alterations as amplitude,length of intervals ,etc. – in 120 cases.Among them, repeated investigation at 7th-14th- 21th day showed improvement in 65 patients, – 14 with evolution to Vegetative State , together with a low rate of high ICP; meanwhile, 55 patients with repeated stationary or aggravated aspect of BAEP,together with ICP > 20mm Hg for 1-7 days, - deceased.As a main conclusion,related to cost / benefit relationship, it will be necessary to re – establish more realistic standards in management of such patients.

Title Multidisciplinary Team Approach: Traumatic Brain Injury Care in Politrauma Patients – Early Phase Management.

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presenting author J. Ciurea

keywords: Polytrauma, Head Injury, Early phase

Background

This is a retrospective study, focused on early phase management (“golden hour” to three month) of the head injured patients associated with multiple trauma.

Patients and Methods

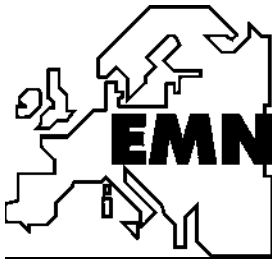
A total 1254 multiple injured patients were admitted in Emergency Hospital “Bagdasar – Arseni” during the last 5 years. Only 322 were traffic accidents fulfilling the criteria of inclusion: at least 24 hours in ICU and well documented. There were 112 women and 210 men. The age ranged between 1 to 90 years with a mean of 28. Eleven patients presented a multiple trauma without head injury. There were a total of 208 severe brain injured patients, extremities 303, thorax 146, abdomen 95, spine 26. A number of 44 patients were operated by different surgeons (neurosurgeons, orthopedic, thoracic, general, etc....

Results

A total of 71 death were recorded, 128 good recovery, 123 moderate disabled and severe disabled. The emergency transport conditions, hospital resuscitation and triage, ICU multidisciplinary approach, including early rehabilitation are presented

Discussions

Factors influencing the outcome are analyzed. They are: severity of primary injury, secondary lesions, age, prolonged prehospital time, admission to inappropriate hospital and delayed or inappropriate interhospital transfer. Prioritization and simultaneous approach are discussed. The changes of ICP monitoring during femoral fracture orthopedic surgery with and without local anesthesia are presented. Strategies of early electrical stimulation for vegetative state candidates could be a prevention solution .



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Conclusion

Politrauma patients are a challenge for every main emergency hospital. Continuous improvement of the management is permanent duty of staff including all specialists and it consists retrospective analysis leading to the appropriate change decision.

Title **Quality management in Early Neurorehabilitation following acute TBI. Lessons from the review of phase "B" in 100 patients one year after the accident**

Authors Klaus von Wild* and P. Wenzlaff **

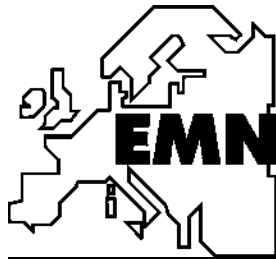
Institution *Professor for Neurosurgery Medical Faculty, Westfälische Wilhelms-University Münster, D **Centre for Quality Management (ZQ), Medical Association of Lower Saxony, Hannover, D; Frauenburgstrasse 32, D 48155 Münster

presenting author K. von Wild

Objectives: Lack of reliable figures on epidemiology of TBI and effectiveness of functional neurorehabilitation following TBI, especially in respect to the acute "early" phase "B" and outcome after one year required this prospective clinical study. The study was limited to two defined regions in Germany and aimed to evaluate quality management in TBI care.

Methods: Prospective multicentre study on epidemiology, acute hospital care and neurorehabilitation of patients because of the anamnesis of an acute TBI of all kind of severity (GCS) in the regions of Hanover and Muenster within one year. Definition of acute TBI according to ICD 10: S 02, S 04; S 06, S 07, S 09 in combination with at least two out of following complaints: dizziness or vomiting; retrograde or anterograde amnesia; consciousness disturbances; skull fracture; focal neurological impairment. Data collection was supervised and statistically analysed by ZQ Hannover in cooperation with the TBI task force.

Results: 6.819 patients were examined after admission to one of 27 out of 30 hospitals between 01.03.2000 to 01.03. 2001. Completed files for analysis in 6.783 TBI (58% male). Incidence was 368 TBI /100 000 population. GCS: mild in 319, moderate in 32, severe in 16 TBI/100.000 population.. 75% of 6793 pts. were hospitalised. Age groups: 28% <1 to 15 years; 11% TBI > 75 years. 4525 patients were reviewed and 4307 TBI could be interviewed (63.5%) one year after the accident.. 258 patients (3.8%) have been transferred for posttraumatic rehabilitation, 6 of them were still in rehabilitation. Early rehabilitation (phase B) was performed in 100 of 258 patients (=39%). Mean duration of "B" was 41 days (1 – 289 days) compared with "C" 41 days (2-300) and "D" 80 days(5-841). Early outcome at the end of "B" in 75 TBI classified was: 1 = 4%(dead) ; 2 = 2.2%; 3 = 37.5%; 4 = 26.7%; 5 = 29.3% .At the end of neurorehabilitation "B,C,D,E" GOS was assessed in 176 out of 258 TBI with



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1 = 1.2%; 2 = 1.2%; 3 = 21.6%; 4 = 35.8%; 5 = 39.2%. When calculated for all 4525 TBI reviewed GOS 1 was 4.7% (212 TBI) and mortality 3.-1% for all 6783 TBI.

Conclusions: Less than 5% of all TBI patients analysed received neurorahbilitation within one year . Figures showed marked differences for patients treated for phase "B" in Münster region at the early rehabilitation unit of neurosurgical department (own concept) when compared with Hannover region main hospital for rehabilitation. Outcome was as expected

Conclusion: Although less than 5% of TBI profited by neurorahbilitation , this study corroborates our conception for early neurosurgical rehabilitation. as it was introduced into clinical practise ten years ago in accordance with the German task force. This warrants the high standard and quality of neurorehabilitation in respect to TBI functional outcome.

Title IMPORTANT PROGNOSIS FACTORS IN SBI IN CHILDREN

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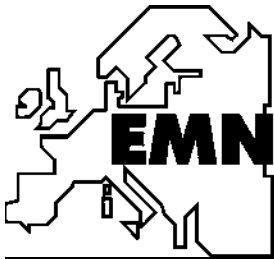
presenting author Ciurea AV

keywords: severe brain injury, children, ICP, GCS, DAI, outcome

Severe brain injuries (SBI) remain a major cause of mortality and morbidity in children. Authors present a seven years retrospective study on 85 cases of severe brain injuries (SBI) in children (GCS \leq 8) treated in the Pediatric and ICU Departments of the Clinic Hospital „Bagdasar-Arseni” Bucharest, Romania. From all of these, 46 cases (54.12%) were in a context of politrauma. The multiple trauma cases included association of 2 lesions in 33 cases and 3 lesions in 13 cases. The sex distribution was: 58 boys (68.2%) and 27 girls (31.8%). The age distribution was preponderant between 8 – 12 years: 31 cases (36,5%). The mechanisms of injury were: predominant by car accidents in 54 cases (63.5%). The relationship between ICP, GCS on admission, the CT-scan/MRI alteration and the outcome evaluated by the Glasgow Outcome Scale (GOS) were studied in order to highlight the most important factors to improve prognosis.

13/46 cases (28.3%) of SBI in context of politrauma died. The overall mortality was 25.9% (22/85 cases). The outcome at six months was: GOS=1 (died) in 22 cases (25.9%), GOS=2 (vegetative state) in 1 case (1.2%), GOS=3 (severely disabled) in 17 cases (20%), GOS=4 (moderately disabled) in 16 cases (18.8%) and GOS=5 (good recovery) in 29 cases (34.1%).

Authors concluded that the ICP values at admission \geq 20mmHg, the Diffuse Axonal Injury (DAI) on MRI and the GCS on admission are factors of severe prognosis in SBI in children. The politrauma context is an aggravator factor for SBI in this group of age. Other factors which influence GCS on admission and may have prognosis importance are: the prehospital care, the transport time and the adequate transport



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conditions. Patients with associated lesions had poor prognosis, longer period of hospitalization and more difficult recovery. Authors advocate improving the prehospital care and the patients monitoring during the hospitalization in order to improve prognosis in SBI.

Title **Managing the elderly severely head-injured comatose patient – a three centre study**

Authors Ushewokunze S*, Nannapaneni R *, Mendelow AD*, Marshall L\$, Teasdale G#

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keywords: elderly, severe head injury head injury, outcome

INTRODUCTION: Advancing age has long been recognised as a determinant of outcome in head injury¹. Increasing use of ITU/HDU and invasive pressure monitoring has influenced head injury management in the last ten years.

AIM. To determine whether there have been any changes in the outcome of elderly patients with a severe head injury in coma from the outset.

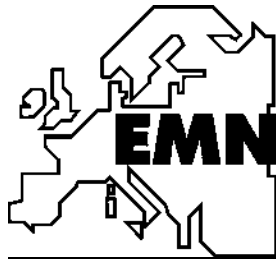
METHODS: A review of prospectively collected data from three major tertiary referral centres (Newcastle General Hospital, Newcastle; Southern General Hospital, Glasgow and San Diego, USA) was carried out. All patients aged 70 years and above who had sustained a severe head injury (Glasgow Coma Score of 8 or less from the outset) were included. The Glasgow Outcome Score² (GOS) was determined at 6 months.

RESULTS: One hundred and twenty five patients were identified suitable for the study. There were four (5%) favourable outcomes (GOS 4, 5) - one good recovery and three with moderate disability. Fourteen patients (11.2%) had severe disability and 3(2.4%) remained in a persistent vegetative state. One hundred and four patients (83.2%) died.

CONCLUSIONS: This study confirms that elderly patients who sustain a severe head injury and are in coma from the outset seldom have a favourable outcome. This extremely poor prognosis needs to be considered when evaluating intervention for severe head injury in elderly patients. Only 1 of 125 patients made a good recovery.

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Title COMA AROUSAL

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presenting author Mihai D. Dimancescu

A catastrophic sequel of traumatic brain injury is prolonged coma lasting several weeks to months or more. Traditionally, a coma lasting more than a month has been considered to be irreversible. Considerations regarding the definition of coma require a re-assessment of the various levels of unresponsiveness as well as a re-evaluation of the multiple myths generated by both medical opinion and public opinion.

Appropriate updated definitions and elimination of long standing myths allows the development of treatment programs that depend on both sensory and motor functions of the brain along with overall physiology of the various biological functions of the body.

A full coma arousal treatment program requires management of nutrition, careful monitoring of necessary medications, provision of good general medical management and intense attention to mobility and to sensory functions including visual, olfactory, gustatory, auditory and tactile functions.

The results in 1300 successive patients (67% M and 33% F) aged 2-84 with a mean age of 27 and a GCS of 3-5 at onset of program are presented. Duration of coma at time of first examination varied from 6 hours to 24 months with the majority over 1 month. Causes of coma included traumatic brain injury (65%), hypoxia (30%) and other causes (5%). Time to responsiveness from onset of arousal program varied from 2 days to 1 month. Arousal from coma occurred in 1235 (95%) of the patients treated.

The results and comparison to untreated patients are discussed and further ethical and medical questions are raised.

Title Posturography as a new tool in the evaluation of the outcome in mild traumatic brain injury patients.

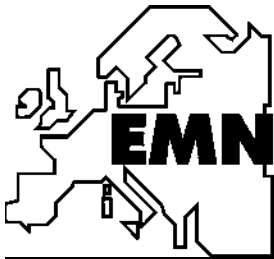
Authors A. De Tommasi, MD, PhD, C. De Tommasi, MD, P. Cascardi, MD, S. Luzzi, M. Occhiogrosso, MD, PhD, G. Vailati, MD, PhD.

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presenting author A. De Tommasi, MD, PhD

keywords: head injury, posturography, mild traumatic brain injury

Background: The consequences of mild traumatic brain injury (MTBI) are not well established. Apart from post-concussion syndrome, nowadays assessed by several studies, those patients suffering from MTBI often show significant neuro-physiological dysfunctions despite the absence of abnormalities in traditional neuro-radiologic examination or EEG.



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Literature reports only one study on neuro-behavioural outcome assessment of MTBI.

The aim of this study is to examine the usefulness of posturography to establish the neuro-physiological damages caused by MTBI and its neuro-behavioural outcome.

Material and methods: Posturography measures the number and amplitude of oscillations made by the patient in orthostatic posture on a weight offsetting pad. The signal is recorded by a sensor around the waist and computer-processed to show the trend on a bi-dimensional graph.

Out of 3542 patients with MTBI [GCS 15 (89.8%)-GCS 14 (10.2%)] 248 were subjected to posturography one month after the trauma. The pattern of injured patients was compared with that of a cohort group of 100 uninjured patients.

Results: The 41% of GCS 14 and 28.2% of GCS 15 injured patients made more amplitude fluctuations compared with those uninjured.

Conclusion: The discussion hypothesizes that the astasia reported by injured patients may be due to anatomical and/or functional cell damage. Posturography may measure the damage caused by MTBI, allowing a better follow up and outcome.

Title **THERAPEUTICAL ALGORITHM OF MANAGEMENT IN
POLYTRAUMA INCLUDING FACIAL LESIONS**

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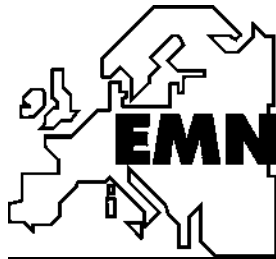
presenting author CARMEN GIUGLEA

keywords: POLYTRAUMA, ALGORITHM, RECONSTRUCTION

Polytrauma includes associating pathology of various gravity, located on different body levels. Depending on severity, after precocious clinical and paraclinical evaluation, the treatment should be addressed to each lesion, keeping in consideration its vital and functional impact. Severe facial trauma, with or without skull and brain damage, requires high attention due to the presence of important sense organs at the level (eye, ear, nose, mouth). The priority means to pay attention to vital major lesions. Primary reconstruction of functional facial structures has surgical indication, which some times is limited to simple, but efficient maneuvers. Secondary procedures are performed in sequellas, after the patient is out of any vital danger. The purpose in secondary reconstruction is to obtain functional and aesthetic rehabilitation. The paper presents our last 10 years experience in establishing treatment's priorities in polytrauma patients (including complex facial damage).

Title **CSF levels of free-radical peroxidation products and cognitive
functioning patterns differentiate between active, arrested and post-traumatic
normal pressure hydrocephalus**

Authors Ewa Fersten(1), Wanda Gordon-Krajcer(2), Mariusz Głowacki(1), Barbara



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keywords: Free radical peroxidation, hydrocephalus, cognitive disorders

Objective

The aim of the present study was to examine possible development of peroxidation processes in the brain and the relation between free-radical oxidation and cognitive functioning patterns differentiate between active, arrested and post-traumatic normal pressure hydrocephalus.

Material and Methods

24 patients admitted to the Department of Neurosurgery Polish Academy of Sciences (PAS) due to the ventricular system dilatation were selected to this study. In all the patients the diagnostic procedure included Computed Tomography (CT), neurological examination and the lumbar infusion test and neuropsychological examination has been performed. The following three groups of 8 patients each were identified using all these diagnostic methods and detailed techniques:

1. patients with active idiopathic NPH, qualified for shunting - (A);
2. patients with suspected "arrested" hydrocephalus, in whom shunting was given up- (AH);
3. patients with post-traumatic NPH, i.e. with the ventricular system dilatation due to an injury - (PT).

Informed consent was obtained from all the patients. The control group consisted of patients whose CSF had been collected due to medical indications, but any CNS disease was excluded.

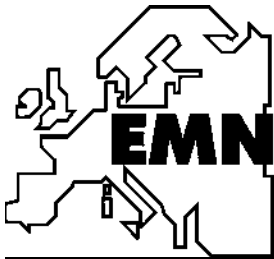
Measurements of free radicals peroxidation products in CSF were based on the thiobarbituric acid-reactive material (TBAR) and protein thiol groups estimation.

Results

1. Group A- statistically significant increase of TBAR and the level of soluble thiol groups (SH) was significantly lower than in the control group;
2. Group AH- TBAR and the group-SH levels were mildly, but statistically insignificantly lower than in the control group;
3. Group PT- in all the cases very high CSF levels of TBAR corresponding to A group. SH level turned out to be the lowest in PT patients. We observed individual differences between patient in this group.

Conclusions

Our findings suggest that a high level of peroxidation involving damage to cytoplasmatic membranes may be one of factors affecting the patient's cognitive functioning. Those results are promising and demand further studies leading to a new, possibly better prognostic and diagnostic factor in hydrocephalus treatment.



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Title Right Cerebral Hemisphere and Speech Recovery

Authors Philippe Van Eeckhout¹, Dan Mircea², Yves Samson¹

Institution 1 Federation of Neurology, Speech Therapy, Pitié Salpêtrière Hospital, Paris, France; 2 Department of Basic Research in Neurosciences, Clinic of Neurosurgery, Romania

presenting author Dan Mircea

keywords: aphasia, prosody, perilesional re-activated cortical areas, artistic personality

Aim. The authors present the therapeutic strategies applied in aphasic patients, which succeed to reveal and use the art capacities of the subject (such as drawing - re-education to draw with the left hand), offering new possibilities for speech recovery. The melody, used as accentuated speech prosody, produces the "arousal" of certain perilesional areas from the left hemisphere, taking into account that the music or prosody processing centers are localized in the right hemisphere.

Materials and methods. A group of 7 patients were investigated and evaluated before and after the treatment and the speech rehabilitation was assessed. The patients proved a progressive good speech recovery. Consequently, one case presentation with a favorable evolution is, especially, reported.

Conclusion. Using the right hemisphere capacities to reveal the artistic personality of the aphasic subject is the base of the new therapy methods applied in the neurorehabilitation of speech disorders, by discovering new channels of communication and the re-activation of different cortical areas around the lesion, on the level of the left hemisphere.

Title SPINAL TRAUMA IN SPINAL SURGERY DEPARTMENT

"BAGDASAR – ARSENI" HOSPITAL (EPIDEMIOLOGICAL STUDY - 1999-2003)

Authors FI . EXERGIAN M.D., Ph.D. , S. CRACIUNAS M.D.

Institution Department of Spinal Surgery, Emergency Hospital " Bagdasar-Arseni" – Bucharest, Romania

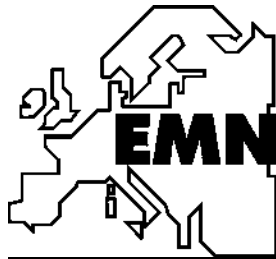
presenting author FI . EXERGIAN M.D.

keywords: SPINAL TRAUMA, SPINAL SURGERY

The study we present was done in the Spinal Surgery Department – "Bagdasar – Arseni " Hospital , is retrospective and covers a period of five years (between 01.01.1999 – 31.12.2003) . A similar study was done between 01.01.1992 – 31.12.1992 by the International Red Cross Federation team and will be used to compare our data.

2256 patients were included in the study , all of them being hospitalized. Our data and those currently available do not include the group of patients deceased before admission or not admitted because of minor vertebral lesions.

This study shows statistical data referring to age distribution , sex distribution , annual distribution , causes of injuries , level and type of injury (bony and neurological) , associated injuries , complications , operations, evolution and mortality..



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Title **Modern Treatment of Severe Spinal Injures without Standards and Gidelines after 2002.**

Authors Dr. Prof. Pentelényi Thomas , Zsolczai S., Kenéz J.

Institution *National Institute of Traumatology, Department of Neurosurgery, Budapest , OBSI, VIII. Fiumei ut 17. 1081 Budapest, Hungary*

presenting author Prof. Pentelényi Thomas

keywords: Spinal injury, treatment, guidelines

This is a keynote lecture on up-to-date treatment of severe spinal injuries in the mirror of the latest evidence-based guidelines for spinal trauma management. There are no standards, no guidelines, all modalities are options. We have choose among them those options by which proper modern treatment-strategy can be constructed.

Severe spinal truma cases must be operated on in 60-80 %. There are emergency, absolute and relative indications for surgery.

Emergency operations and neuroprotective treatment must be started in 6-8 hours.

Local treatment includes reduction, decompression and stabilisation.

Their conservative and operative methods as up-to-date options are skeletal traction , halo fixation, odontoid screw fixation,

C 1-2 transarticular screw fixation, ventral, spondylodesis with plate or cage implants, rarely posterior softwire or long rod fixations in the cervical spine, and transpedicle screw, plate or rod fixation, ventral plate and cage fixation or combined posterior-anterior dynamical long rod stabilization with ventral butressing in the Th-L spine.

Titanium implants and dynamical stabilization are preferred.

Longlasting neurorehab. is compulsory. Surgical decompression must be done always from the side where compression occurs.

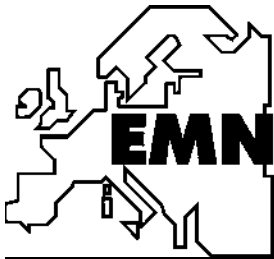
Conclusion:

1. In spinal trauma all treatment modalities are only options.
2. Neurological improvement after surgery must be at least as good or even better then that after conservative treatment.
3. If surgical decompression is indicated it has to be performed among all conditions on the contrary that no proving prospective randomized clinical trial is available in its statistical effectivity!

Title **Traumatic instability of craniocervical junction, neurological complication - pentaplegia**

Authors S.Zsolczai , A.Nagy, A.Szikszi

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presenting author Sandor Zsolczai MDPHd

keywords: craniocervical junction, instability, pentaplegia

The traumatic injury of the spine and of the spinal cord both from medical and economic point have had an ever increasing importance concerning the given health insurance system, according to the experiences. Data in the literature prove that the occurrence of the craniocervical injuries increased parallel with the development of motorisation and involves the younger generation. The development of traffic morale lead to newer generations of security equipments. As a result of this there was a significant decrease in the number of skull-, thoracic- and abdominal injuries. As opposed to this the traumatic force imputes on the relatively unprotected regions of the body, in the craniocervical transition and on the cervical spine, have become more underlying. Due to the anatomical characteristics in the childhood the number of craniocervical instability shows a growing tendency.

The instability of the craniocervical transition may have inflammatory, traumatic and developmental or tumours causes. Authors analysed 173 adults and 26 children admitted to their institute between 1996-2002 with traumatic craniocervical instability that were treated conservatively or surgically.

Authors consider this anatomic region as a functional unit and they explain that with all types of injuries a complex osteoligamentary injury may happen.

The classification of the injury was based on the characteristics and features of the given leading injury. In their lecture they discuss their diagnostic, conservative, surgical and rehabilitation experiences as well as the results through introducing a couple of typical and exceptional cases, for example: severe neurological injuries with pentaplegia from their practice.

Title Spinal shock or irreversible damage? Combined acute approach with "Nazareth" vascular tunnel plate fixation as a minimal invasive method in severe T spine injury

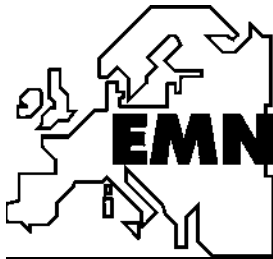
Authors Andras Csókay M.D.Ph.D. Attila Németh M.D.Lajos Takács M.D. Vilmos Pap M.D.Mátyás Bobest M.D.

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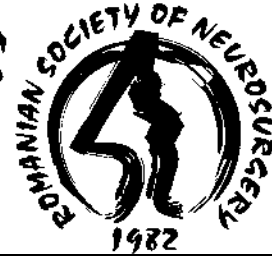
presenting author Andras Csókay M.D.

keywords: T injury, Nazareth plate, combined approach

Neurosurgeons couldn't know what is the real reason of complete motor and sensory loss on admission of the patient after severe T spinal cord injury. The actual cause could be the spinal shock which may be reversible or primary irreversible damage. Because of this reason we should treat the severe spinal cord injury as a reversible process acutely. It means that it should be done as radical decompression as possible with minimal intraoperative invasion of the contused medulla. The acute approach after severe T spine injury has a lot of controversy. To remove the ventral encroachment from posteriorly on T spine often impossible



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POSTOPERATIVE RESULTS
EVOLUTION OF KYPHOTIC ANGULATION

	McAfee series (48 patients)	Our series (25 patients)
Preoperative kyphosis	Average 24.3 degrees	Average 14.9 degrees
	Range 12 to 37 degrees	Range 4 to 33 degrees
Postoperative kyphosis at follow-up	Average 31,8 degrees	Average 21 degrees
	Range 22 to 57 degrees	Range 5 to 30 degrees
Average follow-up	3,4 years	1,5 years

CONCLUSIONS

Spinal canal clearing through retroperitoneal approach provides an optimum environment for the recovery of incomplete neural deficit by following facts:

- ✓ decompression of the entire anterior aspect of the thecal sac is performed under direct vision;
- ✓ decompressive procedure do not violate the dural tube;
- ✓ intervertebral discs are removed more radically that is a promoter of bony union;
- ✓ the injured vertebral body is displaced by a tricortical cortico-cancellous graft that also provides a good bony fusion;
- ✓ this approach does not destabilized the posterior osteo-ligamentous complex.

Title **The evolution of the therapy and surgical strategies at the basis of the positive outcome in cervical injury patients.**

Authors A. De Tommasi, MD,PhD, C. De Tommasi, MD, C. Del Vecchio,MD, T.

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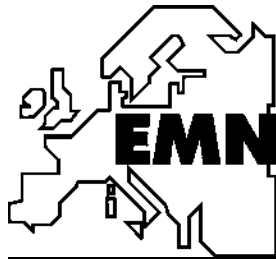
presenting author A. De Tommasi, MD,PhD

keywords: cervical injury, quadriplegia, cervical decompression

Background:The paper aims to evaluate the therapeutic and surgical evolution of cervical injuries and their results by reviewing the treated patient outcomes.

Methods :A series of 200 patients affected by cervical injuries and operated on by spinal decompression and/or stabilization are reported. The patients affected by C1-C2 injuries were excluded. All the patients were treated following a precise timing and treatment schedule. The patients were divided into two groups. The first group comprised 110 patients treated by desametazone, mannitol and naloxone and operated on by posterior decompression. The second group comprised 90 patients treated by metilprednisolone and operated on by anterior decompression and/or stabilization.

Results:The more evident improvement regarded incomplete quadriplegic patients. In the second group a favourable outcome in 50% of the patients was observed compared to the only 20% in the first group. In complete quadriplegic patients the improvement regarded 10% in the second group compared to 0% in the



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first group. In patients affected by minor neurologic deficits, the improvement was observed in 10% of the cases.

Conclusion :The results confirm the validity of the therapeutic protocol and the efficacy of metilprednisolone in quadriplegic patients. The discussion analyzes the evolution of therapy and surgical strategies in cervical injuries and underlines the importance of surgical timing in determining a positive outcome in quadriplegic patients.

Title MEDICAL AND SOCIAL PROBLEMS FACING TETRA AND PARAPLEGIC PERSONS AT HOME AND INSIDE THE COMMUNITY

Authors

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Institution

*Bagdasar-Arseni Hospital
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presenting author Angheliescu A.

Objective: to evaluate the quality of life and the medicosocial problems facing Tetra- or Paraplegic persons after spinal cord injury (SCI) at home and inside the community.

Setting: the Rehabilitation department, Emergency Hospital "Bagdasar-Arseni", Bucharest, Romania.

Methods: a number of 660 SCI patients, were reviewed by the questionnaire technique. There were 19 open questions which gave the subjects the possibility to self-assess the major problems, including medical and social items and the suggestions to solve these.

Results: 465 subjects from the 660 SCI individuals answered the questionnaire, corresponding to a response rate of 70,5%.

The death rate was 9% (40 patients) during the follow-up period of 7 years.

The study included 425 spinal patients: 205 tetraplegic (48%) and 220 paraplegic (52%) subjects.

Most of the patients had a good accessibility to medical services; unfortunately 140 patients (33%), had a tiny or even almost nonexistent medical supervision. Many problems are incriminated in the fact that the patients can not reach the local doctor (long distances, absence of adapted transport, financial difficulties).

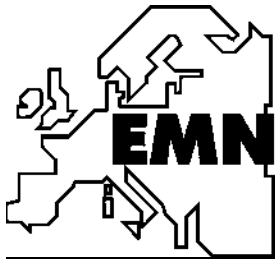
The serious medical problems facing patients at home are: pressure sores (22% cases), recurrent urinary infections (52%) and incontinence (20%).

After discharge 53% of the patients had continued the therapy program and 18% had managed to walk independently. Because of the financial difficulties, only 13% of the patients managed to make minor adaptations at home and ambient.

During the hospitalization period all patients were trained to gain independence in daily living; in spite of these efforts, 58% of paraplegic persons are not active at home or in community (work, intellectual and leisure activities). This percent situates paraplegic subjects at a similar level with the tetraplegic patients (65%). Most of the patients remained isolated, inactive, depressive and totally dependent.

The sociomedical problems explain the low percent of scholar reintegration; only 14% of the subjects aged under 25 y.o. had continued studies after discharge.

Only 12,6% of the patients were professionally reintegrated (continue the work in the same job or in a protected work place). The low possibility of professional integration is explained by the lack of recalcification



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courses, transport conditions and of adapted work places, specially for the SCI handicapped persons, the inconsistency of the legal frame and the trend of the expertise commissions to pension and not to professionally reintegration.

Conclusions: Our society is not fully prepared and educated to accept, to solve and to reintegrate – (professionally, educationally, socially) the subjects with neuromotorically handicap.

Title **A new concept in surgical treatment of brachial plexus palsy**

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keywords: brachial plexus reconstruction, neuro-neuronal neurotization, neuro-muscular neurotization, muscular transfers

None of the currently used techniques for elbow flexion recovery in brachial plexus recovery offers enough strength for normal life activities. The association between several methods grants a better result by a summarising effect compared to each method used separately. The paper reveals improvement of functional results in brachial plexus reconstruction by combining the techniques of nerve repair (nerve grafts, nerve transfers or direct muscular neurotization) with palliative muscular transfers. Of the 54 cases of microsurgical reconstruction of brachial plexus palsy, in 20 cases we associated a muscular transposition: 7 latissimus dorsi transfers (5 monopolar and 2 bipolar), 5 pectoralis major and 8 triceps transfers. The direct neuro-muscular neurotisation of the biceps – EMG efficient – was associated with a muscular transfer in 8 cases: in 4 of the 7 latissimus dorsi transfers, in 3 cases of triceps transfer and in 2 case of pectoralis major transfer. The association of the 3 methods – direct neuro-muscular neurotisation, neuro-neuronal neurotisation and muscular transfer – have a summarising effect in the flexion restoration of the elbow flexion, which represents a major problem in the brachial plexus palsy.

Title **Should we randomized new surgical treatment in life threatening illness or not?**

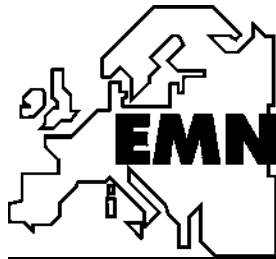
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keywords: bioethics, randomized trial, brain injury,spinal trauma

Nowadays the evidence based medicine based on multicenter prospective randomized trial is the well known route to accept a new medical (surgical or non surgical)treatment. Scientist and doctors often don't consider the rules of bioethics which means: "in lifethreatening illness the historical controll absolutely



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enough to prove evidence for the introduction of new medical treatment", and even the main book of Bioethics proclaims "In lifethreatening illness the scientific rationale for the treatment must be sufficiently strong that a positive result would be widely accepted. (Warren T. Reich Encyclopedie of Bioethics page 2276). We introduced in our department some new surgical procedure which has been published in last 3 years, in the treatment of severe brain and spinal cord injury. The procedure called "vascular tunnel" method improved significantly the effect of decompressive craniectomy. The methods of "radical durotomy" in severe cervical spinal cord injury and "combined acute approach" in severe T spine injuries also improve the effect of medical treatment in these severe cases which characterized by spinal shock as lifethreatening illness. The spinal shock often covers the reversible damage of spinal cord as an irreversible definitive state. During the spinal shock may complete the neurovascular damage if we hesitate about radical decompression. These new procedures have been justified good effect in above mentioned severe cases. We suggest to graduate up these procedures from the option category to recommendation category without performing further prospective randomized trial as rules of bioethics mention.

Title Internet access to health information and related neurotrauma
patient demand: linguistic, technical, financial, and truth considerations

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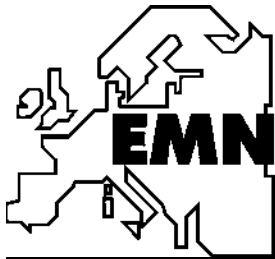
presenting author David W, Mulholland

keywords: internet, back surgery, search engines, media content analysis

Objective: To determine the nature of published health information accessible by patients through the World Wide Web, which may influence patient demand.

Background: With internet utilization increasing globally yearly, neurosurgery patients have unprecedented access to medical information regarding diagnoses, surgical procedures, surgical risks, rehabilitation, and non-surgical therapies. However, not everyone has equal access to the same information, due to a lack of disseminating all information in multiple languages, and of unequal distribution of technology, training, medical staff, facilities, and funding. Further, no guarantee exists that information presented is either medically sound, or consistent with local cultural values. This study examines the nature of internet-accessible information available to neurosurgery patients.

Methods: Back surgery was researched through three popular internet search engines – Google, Yahoo!, and MSN in eight combinations of keywords and formats. In addition, thirteen country and seven continent names were added to the term "back surgery" to explore variations in results presented in English. The term "neurosurgery" was translated into 15 languages and researched to note non-English search effects. "Back surgery" was not used since variation across dialects within linguistic groups could not be controlled.



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Frequencies were reported for the occurrences by keyword combinations. Further, media content analysis was completed on the first 50 articles selected by the search engines for the terms: "back surgery," back surgery (without parentheses), and spine surgery. The term, surgery back (without parentheses), was added to study the effect of patient error in word order. Advertisements posted in search results were also analyzed by keyword. Overall, 600 articles and 325 accompanying advertisements were classified by content. Informational categories included: government generated, corporate sales, educational institution (regarding study opportunities), medical provider specific, information to increase patient knowledge and choice, patient self-reported stories (BLOGs), news media coverage, and unrelated articles (search engine failures).

Results: Of 530 relevant articles, 124 (20.1%) intended to aid patient knowledge or choice, 180 (30.0%) advertised facilities, treatments, or physicians, 132 (22.0%) informed medical personnel, and 18 (3.0%) were patients sharing experiences. Regarding advertisements, 111 (34.2%) offered patients back surgery or physician complaint information. Reversing the keywords back and surgery skewed the ratio of corporate promotional articles to provider and patient information from 2/5 to 1/1. Finally, "hit" frequencies by term searched yielded differences across search engines and between terms, ranging from 28,029 total references for "+back surgery' and +trauma", to 16,983,587 for back surgery (without parentheses). The errant variant, surgery back, yielded 16,936,517 articles.

Conclusions: Internet search engines provide neurosurgical information, which will likely vary by keyword, language, and word order used, and due to individual technical knowledge about search engines. Most information found will increase neither patient knowledge nor options, and will consist largely of advertisements that may increase patient demand for services, which are not necessarily locally available, affordable, best practices, or provider preferred. False information aside, the preponderance of similar, repeated advertisements could persuade patients that those methods, goods, or services are widely accepted by medical professionals.

Title Ethical issues on brain death and donors

Authors Lilica ROSU, Oana RATA

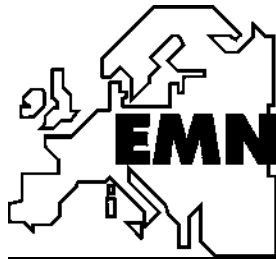
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presenting author Lilica ROSU, MD

In the Intensive Care Unit of our hospital because here is frequent neurotrauma and neurovascular pathologic often we have to make the diagnosis of brain death and start the treatment and preparation for potential donor.

Our main focus is of course, following the therapeutic and diagnosis protocols. Often we are obliged to solve ethic problems, especially toward the families. Our experience show that the most difficult situations are when the potential donors are children or young people, which happens frequently.

This topic proposes to discuss these issues which are not always very well specified in our legislation and for solving of which it matters the experience of each unit.



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Title QOLIBRI

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Despite the dimension of this health plague, there is no specific tool for traumatic brain injury (TBI).

E. NEUGEBAUER organised, in October 1999 a systematic literature review and an international expert consensus leading to a research group comprising the representatives of 14 countries and 10 languages, under the aegis of 4 societies EMN, EBIS, NBIRTT and EBBS and the coordination of JL TRUELLE.

We selected from 4 tools EBIQ, BICRO-39, SQLP, QOLBI, 6 domains (physical, cognitive, psychological, functional, social and personal) and 56 items with a 5 points scoring.

The validation in process is based on self questionnaires QOLIBRI filled out by TBI and relative, a generic reference SF36, a depression and anxiety scale, the HADS. The examiner fills-in a handicap scale the GOSE (Glasgow Outcome Scale Extended), a co-morbidity and clinical status scale.

In each language, 5 teams will test each 40 patients in 6 months. All the cases will be collected by the methodological centre (N. von STEINBUECHEL). A new tool, filled out in less than 20 minutes, will be reformulated and tested, leading to the final QOLIBRI in 2005.

QOLIBRI is intended to represent a metadimension, beyond the handicap, in TBI outcome measures, taking in account the point of view of the patient and family. It assesses the progress of one individual, the efficiency of a therapeutic programme, re-hierarchizes the goals of rehabilitation and is a fast screening of one TBI's troubles and needs.

Title I, the Case: Experiences with Neurological Sequelae and Testing

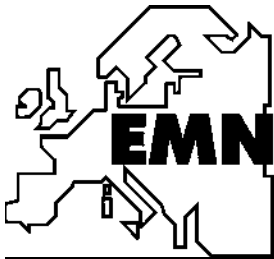
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keywords: neuropsychological evaluation, neuropsychological sequelae, TBI, litigation

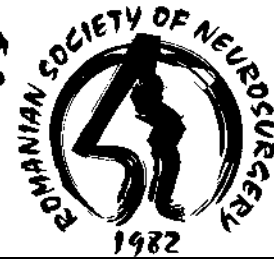
Introduction: This paper serves as an autobiographical account of neuropsychological sequelae, neuropsychological tests, and outcomes, which I incurred as the result of a motor vehicle accident (MVA). Its purpose is to examine tests performed, physician beliefs, and medical practice encountered in my



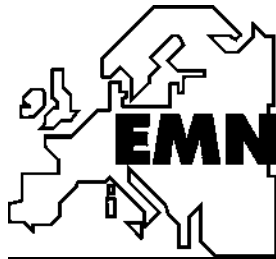
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experiences, in light of historical development of the literature. Background: I have lived with a moderate post-MVA brain injury since August 1993 (GCS 10-12). During the crash, my head, from above the left ear across the left temple and orbit to the bridge of the nose, struck the hard plastic-covered steel top of the inside doorframe. Subsequently, the top of my spine compressed and twisted as body shifted towards the top of the roof, where my head was lodged and unable to move in the same direction as the spine and rest of my body. Since the other vehicle was accelerating and had greater mass, the force of the impact was implicitly strong. During tests, diagnoses, and treatment that followed, I experienced a variety of neuropsychological sequelae consistent with moderate TBI, post-concussive syndrome, and PTSD. However, medical staff relayed divergent beliefs about tests, effectiveness of treatments, and the nature of TBI that was often contradictory and resulted in non-linear clinical pathway. My interest is to examine my experiences in light of best practices, available knowledge, or other factors that might have influenced the use of neuropsychological testing independently of presenting sequelae. Method: I performed a literature search using InfoTrac and MedPub to locate refereed journal articles that mentioned keywords or textwords, "neuropsychological evaluations," "neuropsychological sequelae," or "neuropsychological tests," and TBI in Boolean search fashion. The articles were arranged chronologically on a timeline and topics assessed for predominant themes during specific intervals. Next, I arranged personal key neuropsychological tests or other significant events on the same timeline, in order to perform an exploratory, qualitative assessment that might suggest a relationship worth further exploration. Results: During the late 1980's through 1995, the literature on neuropsychological sequelae was predominated by articles on malingering, preparing head injury cases for trial as either plaintiff or defendant, or the prospects of long-term improvement within mild to moderate TBI patients. Later, the literature contained a proliferation of articles related to using neuropsychological testing to determine the severity of injuries to school-aged children, especially athletes, as the number of legal-based articles on neuropsychological testing waned. Finally, from the late 1990s to today, the number articles increased regarding the use of neuropsychological testing to guide medical treatment to improve quality of life in TBI survivors. Articles regarding long-term benefits to children are well represented here, too, including those informing educators how to teach or to assist students with TBI. Throughout the 20-year period examined, the literature that focused on adults often dealt with returning to employment for previously employed individuals. However, whereas numerous works once focused on identifying malingerers who might be feigning inability to return to employment, later published studies, which mentioned labor, typically sought to identify best practices in vocational rehabilitation, predicting long term prognoses from initial injury information, or sequencing effective tests and treatments at proper times to increase quality of patient life or to reduce overall costs. My experiences with tests, diagnoses, and treatments reflect the development of the literature. Many neuropsychological tests were repeated on me by representatives of insurers, litigants, and health care payers to test for malingering or prognoses during the first three years of my TBI survivorship. While this was the most active period of legal and insurance involvement for me, medical staff frequently told me that I would only progress for about two years and then plateau. Neuropsychological tests were repeated by the various parties to ascertain to what degree I had progressed in two years, and to what degree I was earnestly trying to recover. This concern was heightened when I started to report seizure activity after about two years, which I had not previously experienced. Conclusion: The use of neuropsychological evaluations in my experience seems to parallel certain societal and physician beliefs about TBI and the benefits of neuropsychological testing. After litigation, there was far less interest in conducting neuropsychological tests or predicting vocational or other quality of life outcomes



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for me. It is difficult to say with certainty the degree to which the changes in the use of neuropsychological tests by 1997 was influenced by the end of litigation, the shift in the literature, or increases in physician understanding about TBI. Future researchers should conduct a multiple case study of TBI survivors with different dates of onset, to determine the degree to which litigation, physician belief, technology and other factors influence the use of specific neuropsychological evaluations apart from presenting symptoms.

Title **Regional Energy Metabolism following Short-Term Neural Stem Cell Transplantation into the Injured Spinal Cord**

Authors Mautes AEM*, Liu J, Brandewiede J, Schachner M

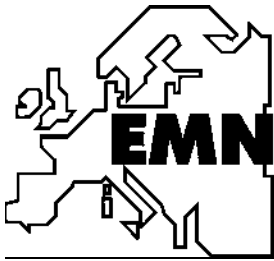
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presenting author Angelika Mautes

keywords: Stem cells, CNS function, energy metabolism

Stem cells are shown to partly restore CNS function after transplantation into the injured CNS. Nothing is known about their influence on acute energy metabolism after spinal cord injury. The present study was designed to analyse regional changes in energy metabolites. Young adult mice were subjected to laminectomy with subsequent hemisection at the L3/4 vertebral level. Immediately thereafter 2 µl of a suspension of the C17.2 neural stem cell line in phosphate buffered saline, pH 7.3 (PBS) were injected into the lesion site. PBS served as a vehicle control. After 4 and 24 h spinal cords were removed and ATP and glucose were analysed by a bioluminescence approach in serial sections and compared to a laminectomized or hemisectioned vehicle control groups. The area of ATP decline was also determined morphometrically. At both time points ATP content of the hemisectioned group in the tissue segments adjacent to the lesion was increased and glucose content decreased when compared to the laminectomized control. At 24 h the area of ATP decline at the lesion site was significantly lower in the PBS group as compared to the hemisectioned or transplanted group. The decrease in glucose combined with an increased ATP in the adjacent segments may indicate that the tissue adjacent to the lesion responds with an increased use of glucose to support the tissue with sufficient ATP. The lower area of ATP decline 24 h after PBS administration suggests that PBS washes out toxic mediators, thus ameliorating hemisection-dependent secondary tissue damage.

Supported by Deutsche Forschungsgemeinschaft.



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Title Experimental Results in Peripheral Axonal Regeneration

Phenomenon under the Electromagnetical Irradiation – A Potential Treatment Alternative for Facial and Peripheral Nerves Trauma or Spinal Cord Injury

Authors

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keywords: axonal regeneration, experimental microsurgery, facial nerve reconstruction,

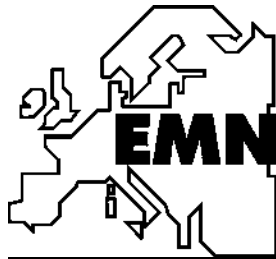
microwaves irradiation, muscle-in-vein graft, nerve grafting, spinal cord injury

Aim. The direct surgical end-to-end nerve anastomosis is considered the method of choice in the reconstruction of the peripheral or cranial nerves lesions. Although, there are frequently cases of severe nerve injury, when a microsurgical procedure of nerve grafting is required. The goal of this research was to evaluate the effects of electromagnetical fields (microwaves) irradiation on axonal regeneration phenomenon in two types of nerve graft: classical nerve-graft and “muscle-in-vein” tubulization technique.

Material and method. The experimental microsurgical nerve anastomosis were performed in 36 Wistar adult male rats (approximately 200g each), under general anesthesia. After the section and exeresis of 1cm from the sciatic nerve, the nerve gap was reconstructed by means of classical nerve graft (from the controlateral sciatic nerve) or by the tubulization technique – “muscle-in-vein” graft, using the controlateral a segment of the femoral vein filled with longitudinal cvadriceps muscle fibers. In the postoperative period the animals were irradiated with a special microwaved loop antenna for local irradiation, after a specific protocol. The follow-up was performed at: 24 hours, 7 days and 30 days. The optical microscopy and imaging computed processing were the assessing methods of axonal regeneration.

Results. The evaluation was performed in the transversal sections of the grafts invaded by the axonal sprouts. The images were computed processed, the axons were counted in the same area of the graft and the same level of the section (considering the distance from the proximal microsurgical suture of the graft). The results demonstrate an increasing of axonal regeneration phenomenon, a better axonal fascicles organization and less muscle fibers in the irradiated probes, comparing to non-exposed ones. The “muscle-in-vein” graft was well integrated and the axonal regeneration was excellent.

Conclusion. The association of microsurgical nerve grafting by different techniques (direct or tubulization) and microwaves irradiation is a potential alternative method for peripheral and facial nerve reconstruction, as well as for the spinal cord injury peripheral nerve by-passing. The electromagnetic field exposure increase the axonal regeneration and the tubulization technique spares the normal nerve to be sacrificed for grafting.



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Title CORRELATIONS OF THE NEUROCHEMICAL MARKERS, AGE-SPECIFIC SECONDARY PHYSIOLOGICAL DERANGEMENTS AND OUTCOME IN CHILDREN WITH TRAUMATIC BRAIN INJURY

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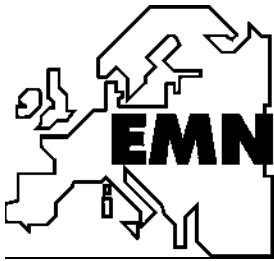
keywords: NEUROCHEMICAL MARKERS, TRAUMATIC BRAIN INJURY, CHILDREN, OUTCOME

Objectives: Traumatic brain injury (TBI) initiates a complex cascade of pathophysiological events involving biochemical mediators like cytokines and brain specific proteins. The development and use of these mediators as markers of injury severity and predictors of outcome after head injury has gained considerable interest in the adult populations but has never been adequately studied in children. We aim to investigate the relationship of neuronal, glial, myelin and inflammatory markers with secondary physiological derangements and outcome in children with TBI.

Methods: A prospective observational study was carried out on 27 consecutive children admitted to a single Paediatric Neuro-intensive Care Unit following a moderate to severe head injury whose clinical conditions required continuous minute-by-minute physiological monitoring. Arterial blood samples were obtained at day 1 and 5 post injury for the analyses of the following markers: S-100B, NSE, IL-6, IL-8, IL-10, S-ICAM, L-selectin, and endothelin using ELISA technique. Prospective time-series data included intracranial pressure, arterial blood pressure, CPP, oxygen saturation, temperature and heart rate were downloaded from the bedside monitors and were analysed to identify abnormal (i.e. outside pre-set normal age-specific physiological limits) epochs lasting more than 5 minutes. Outcome was assessed at 6 and 12 months post injury using the modified Glasgow Outcome Scale (GOS) and quantified as 'independent' (good recovery, moderate disability) or 'poor' (severe disability, vegetative or dead). The concentrations of the eight markers measured were correlated with the clinical details, the amount of age-specific secondary physiological derangements and the outcome.

Results: Brain injured children who subsequently died had significantly higher concentrations of IL-6, L-selectin and S-100B in the day 1 samples than those who survived. IL-10 was only detectable in the day 1 samples of those with severe injury and all survivors had a significantly higher concentration than the non-survivors. IL-6 and S-ICAM were the only two markers to have higher levels on day 5. A significantly elevated S-ICAM level at day 5 post injury was observed in the late TBI death. IL-8 concentration post head injury did not predict injury severity or outcome.

Conclusion: Neurochemical markers are produced in head injured children. Raised IL-6, L-selectin and S-100B levels post head injury are associated with an increased mortality while a high IL-10 level is associated with increased survival.



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Title Role of p53 and NFkappaB in traumatic brain lesion expansion
from focal injury

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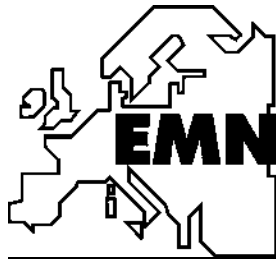
presenting author Nikolaus Plesnila

Programmed cell death is a well known feature of secondary brain damage following traumatic brain injury (TBI). The objective of the current study was to characterise the role of the pro-apoptotic transcription factor p53 for delayed post-traumatic cell death.

Male C57/Bl6 mice (BW 25-28g) were subjected to controlled cortical impact injury (CCI, 8 m/s, 1 mm indentation). After closure of the cranium animals (n=6 per group) were sacrificed at 15 min, 3, 6, 12, and 24 h after CCI for quantification of p53 expression in tissue extracts by Western blotting or by immunohistochemistry. In a second series p53 transcriptional activity was inhibited with the p53 translocation inhibitor pifithrin (4 or 8 mg/kg i.p.) either given before or 15 min, 1, 3, or 6 h after trauma. NFkappaB transcriptional activity was investigated in NFkappaB-luciferase reporter mice. In addition, the influence of p53 on the transcriptional activity of NFkappaB was assessed in pifithrin-treated NFkappaB-luciferase reporter mice.

Following brain trauma, p53 was gradually upregulated reaching a maximum of 200% (vs. sham) approx. 24h after the insult. Immunohistochemistry revealed strong p53 immunoreactivity in and around the contused cortex. The p53 inhibitor pifithrin prevented secondary lesion expansion by more than 40% (n=10 per group; p<0.01). Pifithrin was still neuroprotective when given as a single dose up to 6h after trauma (contusion volume at 24 h: -53%; n=7 per group; p<0.05). Brain trauma reduced NFkappaB transcriptional activity in the contused cortex by more than 50% at 3 and 24h after the insult (n=3; p<0.05). This reduction was confined to the necrotic contusion and the still viable peri-contusional parenchyma. Inhibition of p53 by pifithrin resulted in an almost 2-fold increase in NFkappaB transcriptional activity in brain tissue of sham operated animals and notably prevented the decline of NF-kB activity in the contused cortical tissue.

Our results demonstrate that p53 is upregulated after brain trauma and that it is responsible for delayed post-traumatic cell death and, hence, for secondary lesion expansion. Inhibition of lesion growth up to 60% can be achieved with the p53 inhibitor pifithrin. In addition to the activation of apoptotic signalling pathways, p53 also seems to inhibit intrinsic neuroprotective signalling, e.g. the activation and nuclear relocation of NFkappaB. Accordingly, neuroprotection by pifithrin can be attributed to the inhibition of p53-mediated pro-apoptotic pathways as well as to the preservation of endogenously activated neuroprotection by NFkappaB. This dual way of action may make p53 inhibitors, e.g. pifithrin, interesting candidate molecules for future clinical investigations.



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Title THE EFFECTS OF ENVIRONMENTAL LIGHT-DARK CHANGES ON
EXPERIMENTAL MILD TRAUMATIC BRAIN INJURY

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keywords: brain injury, experimental, melatonin, light-dark changes

Object: The purpose of this study is to evaluate the effects of environmental light-dark changes on experimental mild traumatic brain injury (MTBI) model and also investigate the effect of endogenous and exogenous melatonin in this process.

Methods: Fifty six male Sprague-Dawley rats were subjected MTBI with weight drop device. They were divided into four groups: sham-operated (trauma only, normal day-night cycle) ; melatonin treatment (trauma + melatonin, normal day-night cycle) ; dark group (48 hours constant dark) ; melatonin and dark (48 hours constant dark +melatonin). Melatonin was administered (50mg/kg intraperitoneally) immediately after trauma. EEG recordings were taken at three times (pre-trauma, immediately after trauma, 48 hours after trauma). Motor functions were tested pre-trauma, 24 hr and 48 hr after trauma. Serum melatonin levels were determined pre-trauma and 48 hr post-trauma. Tissue samples from right frontal area were taken 48 hr after trauma for light and electron microscopic examinations.

Conclusion: Following mild traumatic brain injuries, light deprivation alone and light deprivation in combination with exogenously administered melatonin have significant neuroprotective effects. Although there may be other important pathways, dark-induced elevation in endogenous melatonin secretion also plays an important role in this neuroprotective outcome.

Title Cell death after experimental traumatic brain injury in the rat

Authors Gisela Stoltenburg-Didinger and Ruediger Busse

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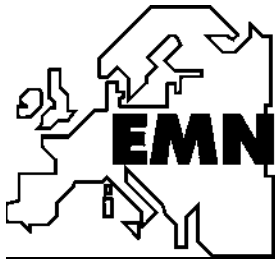
presenting author Gisela Stoltenburg-Didinger

keywords: traumatic brain injury, apoptosis, necrosis, bax, bcl-2, microcirculation

Cell loss after traumatic brain injury is a common and frequently recognized event.

Our study was undertaken to elaborate aspects of pathophysiology leading to final apoptotic and necrotic cell death.

Adult Sprague-Dawley rats were subjected to a unilateral experimental "Controlled Cortical Impact Injury" (CCII). Animals were sacrificed at 0.5, 1, 4, 8, 16, 24, 48, 72, 96, and 120 hours (h) post trauma (pt) (n = 2



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per time point). Additionally, control animals were sham operated (n = 2) and non-surgically treated animals (n = 3) were sacrificed. Electron microscopic investigation was performed with immersion fixed brain slices. Frozen sections were used to examine by immunohistochemistry the localization of the apoptosis-related proteins bcl-2, bax, and the FAS-receptor.

Immunohistochemistry with antibodies against the intercellular adhesion molecule-1 (ICAM-1) protein demonstrated microcirculatory disorders leading to cell death.

Paraffin sections were investigated for the detection of apoptotic cells by direct immunoperoxidase staining of digoxigenin-labeled genomic DNA. After CCII the necrotic area increased with time. Most of the neuronal cells in the necrotic area showed the typical morphology of necrosis, but apoptotic morphology was also seen.

The neuronal expression of apoptotic regulatory proteins was localized inside the necrotic area and more distinct in the marginal zone. The expression of FAS appeared earlier than bcl-2 and bax. The peak bax and bcl-2 expression occurred after 24 hours. The apoptotic features were restricted to neurons and oligodendroglia.

The first appearance of ICAM-1 expression of endothelial cells in the necrosis was detected at 1 - 2 h pt. The peak expression of ICAM-1 was seen at 24 h pt. The occurrence of ICAM-1-expressing microvessels correlated with the infiltration of the tissue by polymorphs. At the trauma site as well as in the marginal zone, adhesion of platelets and leukocytes to endothelial cells was demonstrated after 24 h pt. Many microvessels were occluded by thrombi after 48 h. At 96 h pt the occluded vessels were necrotic.

Posttraumatic tissue damage after experimental traumatic brain injury in the rat is triggered by irritation of the microcirculation and by dynamics of apoptosis-related proteins. The susceptibility of neurons to necrosis and apoptosis during a prolonged posttraumatic period indicates different pathways to cell death.

Title **A Proposal of Neuroprotective Agents Classification Based on Phase-Sequenced Pathophysiological Mechanisms of Secondary Neuronal Lesions in Nervous System Trauma**

Authors Dan Mircea, Alexandru Vlad Ciurea, Alexandru Constantinovici

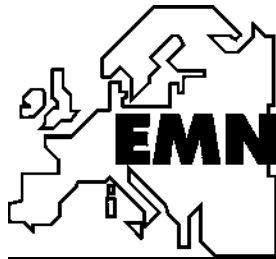
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presenting author Dan Mircea

keywords: central nervous system severe injury, neuroprotection, phase-neuroprotectors, secondary neurolesional phenomenon

Motivation. The authors try to emphasize the importance of the secondary neurolesional phenomena triggered by the primary mechanical factor, in central nervous system severe injury. In present, the pathophysiology of these mechanisms, as well as the therapeutical approach is multimodal and extremely complex. An increasing number of neuroprotective agents are discovered and, based on their different mechanism of action, experimental and clinical studies are performed.

Aim. In this regard, the authors propose, after an extensive literature overview, a simple classification of the



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“neuroprotectors”, based on their blocking level in the different phases of the time-sequenced pathophysiology of the secondary neurolesional mechanism. Consequently, there are:

“Phase I Neuroprotectors” – blocking the Phase I - Potassium Accumulation and Depolarization:

“Phase II Neuroprotectors” – blocking the Phase II – Exitotoxigenesis:

“Phase III Neuroprotectors” – blocking the Phase III – Exitotoxicity:

“Phase IV Neuroprotectors” – blocking the Phase IV - Intracellular Calcium Accumulation:

“Phase V Neuroprotectors” – blocking the Phase V - Calcium Secondary Effects:

“Multimodal Neuroprotectors” – with a multiple mechanism of action:

“Unknown Mechanism Neuroprotectors” – with an un-elucidated mechanism:

In conclusion, the proposed classification of the neuroprotective agents allows a better understanding and a logical approach of the therapeutical strategies specifically applied, in order to prevent or to block the neurolesional cascade in a certain pathopsysiological phase, in central nervous system severe traumas.

POSTERS

Title Quality of Life after a Holistic Neurorehabilitation Program

Authors Koskinen Sanna, Sarajuuri Jaana, Jokitalo Paula

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presenting author Koskinen Sanna

keywords: Traumatic Brain Injury, Quality of Life, Neurorehabilitation

Background and goals

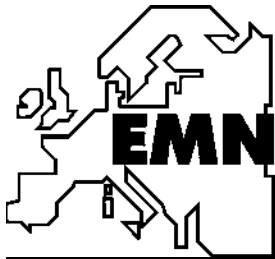
Despite the fact that traumatic brain injury (TBI) is a major cause of suffering and disability the quality of life (QoL) of the patients and the strain felt by the relatives have only recently started to interest the researchers. However, apart from medical and economic consequences the QoL after TBI is increasingly important in outcome assessment (1).

The goal of this study was to evaluate the QoL of TBI patients and their significant others 2-4 years after a holistic rehabilitation program.

Methods

Nineteen (16 men, 3 women) TBI patients participated the INSURE-program (2) at the Käpylä Rehabilitation Centre, Finland. Their mean age at the time of the injury was 30.5 years, the mean time since injury to the program was 3.5 years and the mean Glasgow coma scale score was 7.9.

The INSURE-program is a post-acute, intensive, interdisciplinary, 6-week program for TBI patients who have realistic chances to productivity and psychological balance. The focus is on neuropsychological rehabilitation and psychotherapy with vocational interventions and follow-up support. Peer support and working with the significant others are elementary.



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The QoL and strain were evaluated 2-4 years after the program by a questionnaire (life satisfaction: global, self-care/ADL, leisure, togetherness/friends, togetherness/family, marriage/courtship, sexuality).

Results

Almost 80 % of the patients reported being at least rather satisfied. The satisfaction was highest in togetherness/friends and self-care/ADL and lowest in marriage/courtship and sexuality. All the significant others reported being at least rather satisfied in life. About 70 % of them reported mild strain and about 30 % moderate strain. No relation was found between satisfaction in life and the severity of the injury, age at the injury, chronicity, or the severity of neuropsychological symptoms.

Conclusions

The high estimate of the QoL is in accordance with an earlier study using the same questionnaire (3). However, satisfaction with social relationships is much higher in this group referring to the importance of a comprehensive holistic rehabilitation program and peer support.

The instrument used in this study takes into consideration many of the important aspects but neglects the cognitive aspects. According to international consensus groups the need for further investigation on QoL instruments after TBI is strongly emphasized (1,4).

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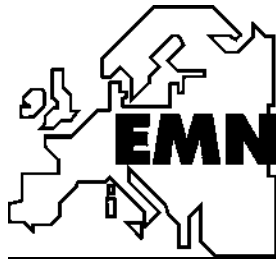
Title Differential effects of hyperbaric oxygenation on tissue necrosis and loss of ATP following focal cerebral ischemia

Authors ¹Mautes AE, ²Karutz T, ²Woitzik J and ²Schilling L

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presenting author Angelika Mautes

keywords: hyperbaric oxygenation; tissue necrosis; cerebral ischemia; ATP loss



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Objective Failure of energy metabolism and ATP synthesis may play a pivotal role in tissue necrosis following cerebral ischemia. The aim of the present study was to determine the neuroprotective effect of normo- and hyperbaric oxygenation and its relationship to the ATP content of the tissue.

Methods In male SD rats anesthetized with isoflurane a focal ischemia was produced by unilateral occlusion for 8 hours of the middle cerebral artery (MCAO) by an intraluminal thread. After MCAO animals were kept in normal air (control), 100% oxygen (normobaric oxygenation, NBO) or 100% oxygen including a 1 hour hyperbaric period (HBO). Brains were frozen in situ with liquid nitrogen and tissue necrosis and loss of ATP were evaluated by planimetric analysis from serially cut coronal slices.

Results Lesion volume was 303 ± 54 mm³ (mean \pm SD) in controls and 295 ± 56 mm³ in NBO animals. Volume of ATP loss amounted to $72.9 \pm 19.7\%$ of necrotic tissue. In the HBO group tissue necrosis was significantly smaller than in controls (187 ± 67 mm³, $p < 0.05$) while the volume of ATP loss was markedly increased to $208.6 \pm 38.4\%$ of necrosis ($p < 0.05$).

Conclusion Normobaric oxygenation during an 8 hour period of permanent MCAO in rats does not salvage tissue from necrotic death. In contrast an intermittent period of HBO protects from early ischemic death paralleled by an increased volume of ATP loss. The pathophysiological meaning of this dissociation may reflect either increased energy consumption resulting in neuroprotection or delay of ischemic cell death with ATP degradation heralding growth of ischemic damage.

Title Morfological analysis of CT images in the differential diagnosis of normotensive hydrocephalus and cerebral atrophy.

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(2)Department of Neurosurgery, 2nd Faculty of Medicine, Medical University of Warsaw, Poland
Ceglowska 80 str., 01-809 Warsaw, Poland

presenting author Zbigniew Czernicki

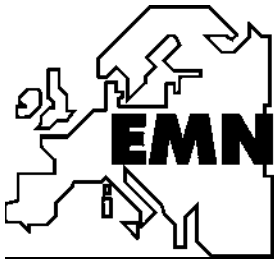
keywords: Computed Tomography, Normal Pressure Hydrocephalus, Cerebral Atrophy

The aim of the paper was a comparative analysis of a new method for CT morphological evaluation in differential diagnosis of normotensive hydrocephalus and cerebral atrophy.

Based on the previously described and published mathematical formula the hydrocephalus index was introduced. The proposed index allows to compare CSF amount in ventricular system and subarachnoid spaces. Qualification of patients to the group of normotensive hydrocephalus or cerebral atrophy was based on the CSF distribution on three following CT scans..

76 patients were investigated.. Results of the new method / hydrocephalus index / versus infusive test / CSF resorbtion resistance /, neurological examination / Hakim triad / and neuropsychological examination were compared.

Statistical correlation between results of infusion test and hydrocephalus index was found in 92% of the material.



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Title Carbon Dioxide cerebrovascular reactivity in patients after aneurysmal subarachnoid hemorrhage treated with microsurgical clipping or endovascular coiling technique

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presenting author Mariusz Głowacki

keywords: TCD, SAH, Vasospasm, Cerebrovascular reactivity

Objective

The aim of this study was:

- 1) To examine cerebrovascular reactivity in patients after SAH during long-term follow-up using Acetazolamide test and TCD monitoring of blood flow velocities to evaluate whether disturbance of the CO₂ reactivity are detectable,
- 2) To compare of CO₂ reactivity between patients divided into three groups: surgically treated (clipping) and endovascularly treated (coiling) due to aneurysmal SAH and patients with non aneurysmal SAH.

Additionally in the present study we have investigated that occurrence of vasospasm after SAH is connected with disturbances of cerebrovascular reactivity in a long –term follow-up after SAH

Material and Methods

Measurements of cerebral blood flow velocity (CBFv) were performed using Transcranial Doppler Sonography (TCD) in average of 14 month after subarachnoid hemorrhage (SAH). Patients were divided into three groups: group I (n=10) treated with clipping, group II (n=8) treated with coiling and group III (n=6) after SAH with negative angiography.

Cerebrovascular reactivity (CVR) has been evaluated with TCD bilaterally in the middle (MCA), anterior (ACA), and posterior (PCA) cerebral arteries and in the internal carotid artery (ICA) after administration intravenously 1000mg of Acetazolamid.

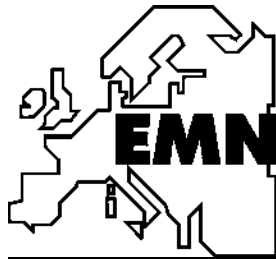
Results

Results of this study has shown that:

1. CBFV were normal in cerebral arteries and did not differ with right and left side.
2. CVR was normal in each of investigated patient.
3. Method of the treatment of ruptured cerebral aneurysm as well as its localization has no influence on CBFv and CVR.

Conclusion

Occurrence of vasospasm in early days after SAH did not developed permanent disturbances of CO₂ reactivity.



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Title Skin enlargement as a treatment of compartment sy. after decompressive craniectomy

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keywords: skin enlargement, decompressive craniectomy, brain swelling

There are lot of controversy connection with decompressive craniectomy. According to literature in last 5 years it seems to be a revival of procedure. Vascular tunnel method which could help to eliminate the problem of veins occlusion at the dural edge improved the effect of procedure. The problem of rising ICP after skin closure remained often unsolved. The problem may originate from the small space brain swelling especially if the skin had been contused during the trauma an became thick. In these cases it is impossible to make skin closure without tension. We suggest paying attention during the decompressive operation to the streching the skin. Before the skin closure the scarification of the skin also prove some further space for the contused brain. These simple skin enlargement can take a part as a further space winning method at the end of decompressive craniectomy. 10 patients were operated with skin enlargement method and the problem of recompression after the decompressive procedure reduced significantly. We propose this simple method originate from plastic surgery as a creative option.

Title Open skin method as a treatment of compartment sy. of the brain after decompressive craniectomy

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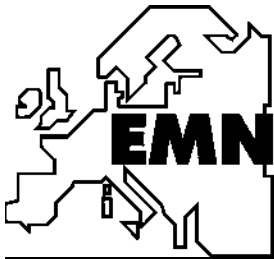
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keywords: brain swelling, decompressive craniectomy, vascular tunnel, open skin method

Objective: Decompressive craniectomy with vascular tunnel method, is possible as a last resort therapy for severe traumatic brain swelling. Although the method successfully diminishes the ICP, and helps to avoid vascular insufficiency occurs in the herniated part of the brain due to the compression of the cortical veins and arteries by the dural edge, the problem of the small space for the brain swelling often remained unsolve. The problem especially exists if the skin had been contused and became thick. The skin closure under tension may lead to the elevation of the ICP above critical level.

Methods: The open skin method has a role as a further space winning surgical technique consists of making skin enlargement by skin graft at the top of the skull. It has to be applied if the skin closure is impossible without tension after the decompressive procedure.

Results: Two young boys were operated with open skin method after decompressive craniectomy with



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vascular tunnel method. Both of them had severe traumatic brain swelling characterized more than 40mmHg ICP and GCS4 on admission. In spite of hopeless initial status good recovery (GOS5) was experienced after the surgical procedure.

Conclusion: Decompressive craniectomy can diminishes the ICP and further edema and vascular insufficiency can be prevented by the formation of a vascular tunnel. Open skin method helps to avoid the problem of recompression and further increase of ICP after decompressive craniectomy.

Title **The importance of compartment syndrome after cervical spinal cord injury. (Spinal shock or irreversible damage?)**

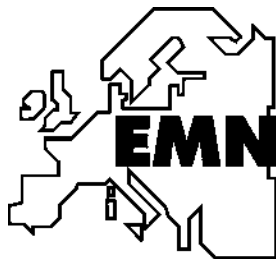
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The compartment sy. is a secondary damaging process after trauma, but the concept not in use after spinal cord injury. If we consider the anatomical characteristics of cervical spinal cord on part of cervical intumescence, the possibility of compartment sy. after severe spinal cord injury not rare. The spinal shock could cover the reversible process as a definitive damage. For this reason very important to perform MRI and estimate the degree of cervical spinal cord swelling if the patient tetraplegic after admission. Radical durotomy must be done if the cervical compartment sy. exists on cervical MRI. The theory of radical durotomy disappeared from the neurosurgical guidelines. The main reason probably was the simple fact that the neurosurgeons didn't consider the ascending and descending edema of spinal cord after spinal cord injury. If a thin cross segment remain under compression the whole surgical procedure will be abortive as in extremities, if we don't make large enough fasciotomy from the origin until the adhesion point of fascia. Measuring of intradural pressure after injury like the intracranial pressure after head injury could be important. The results seems to be better after severe cervical spinal cord injury, at those patients who underwent radical durotomy. Proposal of bioethics: "In lifethreatening illness the scientific rationale for the treatment must be sufficiently strong that a positive result would be widely accepted.



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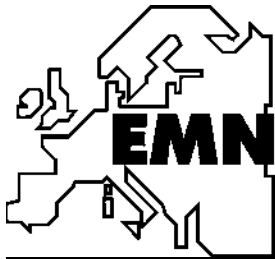
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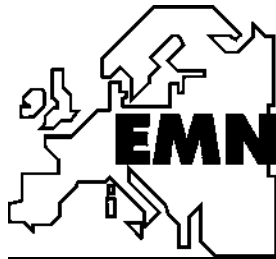
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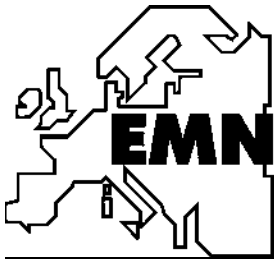
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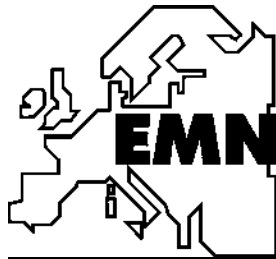
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