

I. HEAD INJURY

ABSTRACTS

Morphological correlates of "inner cerebral trauma". N. Grčević, D. Jadro-Santel, N. Bešenki (Departments of Neuropathology and Radiology, Medical Faculty, University of Zagreb, Yugoslavia).

As explained in detail in a previous paper (see: N. Grčević, The Concept of Inner Cerebral Trauma), under condition of severe closed cranio-cerebral injury of the acceleration-type, the brain sustains what we defined as "Total Cerebral Trauma". The forces of acceleration produce widespread lesions which follow definite patterns of distribution. The most frequent is the pattern of "Inner Cerebral Trauma" (Grčević & Jacob 1965, Grčević 1982). Within the pattern of the lesion, which occurs when the forces of linear translation of acceleration act along the longest diameter of the skull, the most frequent lesions are situated in the corpus callosum, septum pellucidum, fornix, the periventricular zone, the parasagittal zone, the area of the cingulate gyrus, the tela chorioidea, the hippocampal complex, and the dorsal and dorso-ventral portion of the midbrain. There are correlations between the CT-image of the lesions and the actual findings on the sections of the autopsied brain. By applying the concept of "Inner Cerebral Trauma" on CT-recording, one can draw important conclusions upon the whole scope of the "Traumatic Cerebral Disease" by detecting only some of its visible constituents. In addition to the topographic conclusions, or presumptions, by analyzing the structure or texture of the CT-image, one may with very high reliability presume the actual character of the present stage of the development of the traumatic damage, and anticipate the further development of such lesions. Thus, the hypodense areas within a complex of lesions as seen in the immediate posttraumatic period, may turn into quite hemorrhagic and necrotic lesions if correlated with the pathological findings several days later. In other words, the "process" of progressive "Traumatic Cerebral Disease" is continuous and has to be considered dynamically. Within this process the transformation of "invisible" into "visible", as well as "reversible" into "irreversible" lesions is the most important and constant feature.

Key-words: head injury, cerebral lesion, topical distribution.

Address: Dr N. Grčević, Neuropathological Institute, Medical Faculty, Clinical Centre Rebro, 41000 Zagreb, Yugoslavia

One approach to the cognitive rehabilitation of the head injured. S. H. Curry, R. Cooper and B. H. Cummins (Burden Neurological Institute and Department of Neurosurgery, Frenchay Hospital, Bristol, England).

A brief description is given of the background, rationale and implementation of a microcomputer-based 'cognitive' rehabilitation program for patients recovering from serious closed head injury. The way in which the computers are actually employed in the 'cognitive' rehabilitation setting is

described. The telephone-based 'network' system is reported that allows the patients to work on the microcomputers at home or from other distant locations while still under supervision by trained staff. The emphasis is placed on electrophysiological techniques as 'tools' both for assessing the present functional state of an individual's brain and for evaluating changes in this state as a function of a therapeutic regime (e.g. change of medication, cognitive rehabilitation etc.).

Key words: head injury, rehabilitation, cognitive function.

Address: Dr S. H. Curry, Burden Neurological Institute, Frenchay Hospital, Stoke Lane, Stapleton, Bristol BS16 1 QT, England

Factors affecting recovery of aphasia. L. Roić and M. Bajc (Neurological Clinic Rebro, Zagreb and Institute for Nuclear Medicine, KBC, Rebro, Zagreb, Yugoslavia).

We have followed up 64 patients with dysphasia which was assessed by using the method of Ducarne de Ribaucourt and Barbizet. In all our patients CT scanning and gamma-scintigraphy were performed, the regional cerebral flow examination with xenon in 16 of them. 28 of our patients had good spontaneous recovery in the first 10 days. There was no correlation between spontaneous improvement and age, sex, size and localisation of the lesion and ischaemic lesions. The results of dynamic scintigraphy performed with Tc 99 correlated to some extent with the rate of spontaneous recovery. In 36 patients with no spontaneous improvement during the first 10 days speech treatment began at the hospital and continued later in the rehabilitation centers. The patients with more education, and better social status improved from long term speech treatment. The family situation seems to be a very important factor in recovery from aphasia. We observed 3 patients followed for more than 18 months, who, despite intensive speech treatment, showed no improvement.

Key words: aphasia, rehabilitation, family therapy.

Address: Dr L. Roić, Neurological Clinic Rebro, Zagreb, Yugoslavia

Some aspects on the rehabilitation of severe brain injured patients (traumatic apallic syndrome). F. Gerstenbrand and E. Ruml (Department of Neurology, University Clinic, Innsbruck, Austria).

Long-term survival after severe head-brain injury is no longer uncommon when intensive care prevents patients from dying within the first days. Initially it is difficult or impossible to identify the future state of a patient and the development of an apallic syndrome cannot be excluded. The explanation of these difficulties lies in the pathological

basis of the posttraumatic comatose state, which usually consists of badly damaged cerebral hemispheres combined with brainstem lesions of different degree, that are clinically well determined by the different stages of the acute traumatic secondary midbrain syndrome. Some of these patients develop the apallic syndrome. The transition stage to the apallic syndrome and the full stage of the apallic syndrome are characterized by the onset and persistence of an overactivity of the sympathetic nervous system leading to marasm and severe tertiary peripheral and central nervous lesions despite high caloric nutrition. The suppression of this catabolic drive by treatment with bupranolol and debrisoquine is one of the most important therapeutic steps at this stage. There is certainly an impact of beta blocking agents on the lipid and carbohydrate metabolism, but the influence on proteins is doubtful. As human growth hormone (HGH) was of the high costs and limited amount of HGH was available, HGH should only be given in patients, when arginin stimulation fails to show an increase of HGH. Besides this treatment with medicaments early physiotherapy should be started to complete the first step of early rehabilitation.

Key words: head injury, apallic syndrome, human growth hormone, rehabilitation, medication, arginin, bupranolol, debrisoquine.

Address: Prof. F. Gerstenbrand, Department of Neurology, University Clinic Innsbruck, A-6020 Innsbruck, Austria

Long-lasting intensive care and early rehabilitation for the severely head injured patients. F. Procaccio, A. Selenati, M. L. Farina, L. Martiani, F. Dreossi, C. Minella and L. Boselli (Neurosurgical Intensive Care Unit, Ospedale Niguarda-Ca'Grande, Milano and Istituto di Ricerche Farmacologiche "M. Negri", Milano, Italy).

46 out of 169 International Data Bank compatible head injured patients spent more than 15 days in the Neurosurgical Intensive Care Unit (NSICU). Two groups are considered: (A) 30 patients who recovered consciousness within a month, (B) 16 patients who were awake but not oriented at a month follow-up. At a follow-up after 1 year 50% showed a good recovery in group A; in group B 25% showed a moderate, 19% had severe disability and 3 patients were in a vegetative state. The main causes of prolonged stay in the NSICU were: prolonged coma and/or extracranial lesions and complications (group A), transient or persistent vegetative state (group B). Intensive care prevented the major causes of death but some peculiar complications hampered the recovery from prolonged unconsciousness and the patients suffered a real "ICU trauma" in their most delicate period: a postacute intensive care and intensive rehabilitation unit (RICU) should be planned. A multicentric prospective study will be focused on the patients with prolonged coma with the aim of collecting clinical data and assessing the real need of organization and therapy.

Key words: head injury, intensive care, rehabilitation, prolonged coma.

Address: Francesco Procaccio, M.D., Reparto di Neuro-rianimazione, Ospedale Niguarda-Ca'Grande, pz. Ospedale Maggiore, 3, 20162 Milano, Italy

Patients with brain injury: A statistical survey from the Belgrade region. Petar Arežina (Institute for Rehabilitation, Belgrade, Yugoslavia).

A statistical survey of 429 patients with brain injury is presented. All patients have been examined at the Neurosurgical Clinic in Belgrade during 1984. All patients were admitted from the Belgrade region—with a population of 1 500 000 inhabitants. The following parameters have been analyzed: sex, age, mode of accident, type of injury, degree of impairment, duration of coma and achieved results of treatment.

Key words: brain injury, coma, rehabilitation.

Address: Dr P. Arežina, Center for Rehabilitation, Sokobanjska 13, Belgrade, Yugoslavia

Rehabilitation model of patients recovering from a craniocerebral trauma. R. Aćimović-Janežič, D. Bac, B. Pirnat, V. Radonjić-Miholič, D. Rugelj and N. Vovk (University Rehabilitation Institute, Ljubljana, Yugoslavia).

A model for rehabilitation of patients with head injury is presented. The necessity of team work is underlined.

Key words: brain injury, rehabilitation, team approach.

Address: Dr Ruža Aćimović-Janežič, Rehabilitation Institute Ljubljana, 61000 Ljubljana, Linhartova 51, Yugoslavia

Intensive therapy of comatose children suffering blunt craniocerebral trauma and their physical development. A. Gostisa, D. Butinar and P. Kornhauser (Intensive Care Unit, Paediatric Department, Surgical Service, University Medical Centre Ljubljana, Institute of Clinical Neurophysiology, University Medical Centre, Ljubljana, Yugoslavia).

The paper presents a group of children, aged 1 to 12 years, following severe blunt cerebral trauma treated in the paediatric Intensive Care Unit, Ljubljana in the period 1981–1984. The severity of trauma was determined by a modified Glasgow coma scale, including estimation of ocular movements (following the recommendation of the Frankfurt paediatric school). The intensive therapy given to comatose children in this Unit, consisted of artificial hyperventilation, administration of mannitol and dexamethasone, reduction of daily fluid intake to 2/3, continuous infusion of thiopental and/or phenobarbitone, maintenance of normal body temperature, blood pressure and acid-base, electrolyte and colloid and osmolality balance. Control of posture: supine position with the head rest elevated and the head in a medium position. The patients were examined by a team consisting of a paediatrician, neurologist, paediatric

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Editors

Olle Höök, Uppsala, Sweden
and
Milan R. Dimitrijević, Houston, Texas, USA

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