POSTTRAUMATIC MENTAL DISTURBANCES

Gerstenbrand F.[1),2),3)], Struhal W.[2),4)], Pichler G.[5)]

[1)] Karl Landsteiner Institute for Restorative Neurology, Vienna, Austria
[2)] Austrian Aerospace Medical Society, Vienna, Austria
[3)] Department of Neurology, Medical University Innsbruck, Austria
[4)] Neurological Department, Landeskrankenhaus Linz, Austria
[5)] Neurological Department, Medical University of Graz, Austria

To understand posttraumatic mental disturbances it is necessary to analyse the force acting on the skull. Traumatic impacts on the head are followed by physical change to the brain. According to Sellier and Unterharnscheidt (1963) in linear brain injury a pressure gradient develops leading to positive pressure on the coup pole and a negative pressure on the contre coup pole. In the very centre of brain no pressure changes occur. Depending on the direction and intensity of the impact on the head typical patterns of brain lesions may be observed. With the help of neuropathology and modern neuro-imaging methods especially cerebral MRI three types of traumatic brain damages are identified, the linear outer brain injury (lesions on the cortex), of a funnel-shaped type, the linear inner brain injury, divided in the linear inner upper brain injury (Grcevic – with lesions around the ventricle system), the linear inner lower brain injury (Lindenberg, Freytag – lesions in the midbrain and the surrounding regions) and the rotational brain trauma (Pudenz, Shelden – intracerebral lesions). The Innsbruck Impact Scale, modification of the Spatz scheme, helps to classify the different patho-anatomical lesion patterns.

In detailed analysis posttraumatic mental disturbances in the detailed analysis show the symptoms of a lesion in the frontal lobe mostly combined with a temporo-basal syndrome followed by linear outer brain injury caused by an impact type I or type II. In the acute state of a lesion of in the frontal and temporal lobe the symptoms are corresponding to the post-concussion syndrome; in its severe form combined with coma. In some of these cases a perifocal oedema develops producing an increase of intracranial pressure with tentorial herniation accompanied with an acute midbrain syndrome of the different phases (Gerstenbrand, Lücking), the diencephalic-upper pons syndrome (Plum, Posner), sometimes followed by an apallic syndrome (described as vegetative state of the Anglo-American literature).

Exact clinical investigations including cerebral MRI are necessary for the clear diagnosis of an existing brain damage and possible complications. In the post-acute state of the damage in the frontal lobe damage typical clinical signs are developing, after the so called linear outer brain injury with lesions in the cortical region extended to the subcortical area producing a funnel-shaped lesion. Clinically the fronto-convex syndrome and the fronto-basal syndrome have to be differentiated. The fronto-convex syndrome (Poeck – acinetic frontal lobe syndrome) shows apathy, diminishing of psycho-motoric activities and impulsive behaviour, diminishing of affectivity, in the frontal lobe signs the grasping reflex is more profiled. The fronto-basal syndrome (Kretschmer) is identified by its main disturbance which is diminishing of critics, euphoria, tendency to wisecrack, neglect of decency. In the frontal lobe symptoms the oral reflexes are pre-dominant. In Anglo-American literature detailed symptoms are not differentiated, there is used mostly the global expression "cognitive disturbances of different degree". Both frontal lobe syndromes can be combined with autonomic disturbances like bladder dysfunction and vegetative system irritations, which has to be clearly differentiated to the vegetative state. In both frontal syndromes depending on the lesion motoric dysfunction of different degree and in different forms are observed. The third frontal lobe syndrome, the fronto-polar syndrome, shows memory disturbance as a main symptom, bit this syndrome is not described in details. In the temporo-basal syndrome (U.H. Peters), mostly accompanied with a frontal lobe lesion and followed a linear outer brain injury by a impact type I, emotional disturbances are the main symptoms.

Together with the frontal lobe syndrome the somehow weak description of the so called 'minimally conscious state' has to be discussed. In a detailed analysis most clinical pictures show a high percentage the symptomatology of a fronto-convex syndrome or is a remission phase of an apallic syndrome (phase V, VI).

In neurorehabilitation a special neuro-psychological programme is necessary, in some cases combined with psycho-sedatives, in other cases with nootropic drugs depending to the detailed diagnosis. A special physiotherapy may be employed in addition.

Literature

Gerstenbrand, F., Lücking, C. H.: Die akuten traumatischen Hirnstammschäden. Arch Psychiatr. Nervenkr. 213, 264-281, 1970
Grcevic, N., Jacob, H.: Some observations on pathology and correlative neuro-anatomy of sequals of cerebral trauma. Proc 8th Int Neurol Congr, Neurol 1, 369-375, 1965
Kretschmer, E.: Die Orbitalhirn- und Zwischenhirnsyndrome nach Schädelbasisfrakturen. Arch Psychiat Zschr Neurol 182, 454-477, 1949
Lindenberg, R., Freytag, E.: The mechanism of cerebral contusions. Arch Path 69, 440-469, 1960
Peters, U.H.: Psychopathology of the Apallic syndrome. In: Dalle Ore G., Gerstenbrand, F., Lücking, C.H., Peters, G., Peters, U. (eds): The apallic syndrome. Srpinger Verlag, Berlin-Heidelberg-New York, 59-69, 1971
Plum, F., Posner, J.B.: The Diagnosis of Stupor and Coma. F.A. Davis Company, Philadelphia, 1980
Poeck, K: Neurologie. Springer Verlag, Berlin-Heidelberg-New York, 6. Auflage, 1982
Pudenz, R.H., Shelden, C.H.: The lucid calvarium – a method for direct observation of the brain. J Neurosurg 3, 487-505, 1946
Sellier, K., Unterharnscheidt, F.: Mechanik und Pathomorphologie der Hirnschäden nach stumpfer Gewalteinwirkung auf den Schädel. H Unfallhk 76, 1-118, 1963

THE BURDENKO NEUROSURGERY INSTITUTE

MOSCOW STATE UNIVERSITY NAMED AFTER M.V.LOMONOSOV

WORLD FEDERATION OF NEUROSURGICAL SOCIETIES

MENTAL RECOVERY AFTER TRAUMATIC BRAIN INJURY: A MULTIDISCIPLINARY APPROACH

CONFERENCE MATERIALS

2 – 4 JULY, 2008

MOSCOW

ИНСТИТУТ НЕЙРОХИРУРГИИ ИМ. Н.Н.БУРДЕНКО РАМН

МОСКОВСКИЙ ГОСУДАРСТВЕННЫЙ УНИВЕРСИТЕТ ИМ. М.В.ЛОМОНОСОВА

ВСЕМИРНАЯ ФЕДЕРАЦИЯ НЕЙРОХИРУРГИЧЕСКИХ ОБЩЕСТВ

ВОССТАНОВЛЕНИЕ СОЗНАНИЯ И ПСИХИЧЕСКОЙ ДЕЯТЕЛЬНОСТИ ПОСЛЕ ТРАВМЫ МОЗГА: МЕЖДИСЦИПЛИНАРНЫЙ ПОДХОД

МАТЕРИАЛЫ КОНФЕРЕНЦИИ

2 – 4 ИЮЛЯ 2008 Г.

МОСКВА

Friday - 4 July. Пятница. 4 июля

9:00-10:50 PLENARY SESSION No 4
ПЛЕНАРНОЕ ЗАСЕДАНИЕ № 4 (НАЧАЛО)

Psychiatric and neuropsychological aspects of mental recovery
Психиатрические и психологические аспекты восстановления психической деятельности

Chairmen: D. Arciniegas, G. Schekutiev, S. Seredenin, O. Zaitsev
Председатели: Д. Арсиниегас, О. Зайцев, С. Середенин, Г. Щекутьев

9:00-9:20 F. Gerstenbrand (Austria)
Posttraumatic mental disturbances
Ф. Герстенбранд (Германия)
Психические расстройства после ЧМТ

9:20-9:40 S. Seredenin (Russia)
New ways in psychopharmacotherapy
С. Середенин (Россия)
Новые направления в психофармакотерапии

9:40-10:00 D.Arciniegas (USA)
Pharmacotherapy of posttraumatic cognitive impairments
Д. Арсиниегас (США)
Фармакотерапия когнитивных расстройств после травмы мозга

10:00-10:20 J.-L. Truelle, P. North, C. Francois-Guinaud, M. Montreuil, E. Tazopoulou (France)
Mental recovery in TBI patients: French experience
Ж.-Л. Труэлль, П. Норт, С. Франсуа-Гино (Франция)
Восстановление психической деятельности у больных с травмой мозга: французский опыт

10:20-10:40 C. Perino, M. Mancuso, S. Calzoni (Italy)
Rivastigmine treatment in cognitive and behavioral deficits after TBI
К. Перино, М. Манкузо, С. Кальцони (Италия)
Применение Ривастигмина в лечении больных с травмой мозга с нарушением сознания и поведения

10:40-10:50 Discussion. Обсуждение

10:50-11:10 Coffee-break. Кофе

11:10- 13:20 PLENARY SESSION No 4 (continue)
ПЛЕНАРНОЕ ЗАСЕДАНИЕ № 4 (продолжение)

Chairmen: Y. Mikadze, D. O'Neill, C. Perino, J-L. Truelle
Председатели: Ю. Микадзе, Д. О'Нилл, К. Перино, Ж.-Л. Труэлль

11:10-11:30 A. D. Mendelow (UK)
Review of the effect of guidelines implementation on mental recovery after TBI
А. Д.Менделоу (Великобритания)
Анализ эффекта внедрения рекомендаций на восстановление психической деятельности после ЧМТ

11:30-11:50 H. M. Mehdorn (Germany)
Neurocognitve and neuroimaging correlates of pediatric traumatic brain injury
Х. М. Медорн (Германия)
Нейрокогнитивные и нейровизуализационные корреляты травмы мозга у детей

11:50-12:10 R. W. Hurt (USA)
The effect of age on restoration of function after traumatic brain injury
Р. В. Херт (США)
Влияние возраста на функциональное восстановление после травмы мозга