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CLINICAL AND PATHOMORPHOLOGICAL ANALYSIS OF ACUTE HEAD INJURY IN ADULT AND OLD AGE

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The authors performed a clinico-morphological comparison in 377 patients aged over 60 years who deceased after acute head injury. Patients' histories and findings from medico-legal expert examinations were examined. The specific etiopathogenetic features determining the peculiar dynamics and the number of patients according to the kind and nature of the injury were emphasized. The authors established a higher incidence rate of the open acute head injury, subperiostal haematomas and calvaria and skull base fractures not seldomly accompanied by intracranial haematomas some of which remained undiagnosed while still living. The clinical course of the trauma and the structure of macroscopic and microscopic morphological alterations were analyzed. Their multiple appearance was outlined. The kind and severity of the accompanying diseases and traumatic lesions as well as the main reasons for death in this patients' contingent were studied.

Key-words: Acute head injury, diagnosis, symptoms, histomorphology, elderly, senile age

Pathomorphological features of acute head injury (AHI) are rather variable. Mechanical trauma-induced injuries of cranial bones and brain depends both on the place of action and the strength of traumatic agent applied as well as on biological and age peculiarities of the individual (3,4). AHIs are comparatively frequent objects of medico-legal expert evaluations of living people and cadavers when the injury has lead to death (1,2).

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The aim of the present investigation is to analyze the pathomorphological changes in subjects older than 60 years who died from AHI and to parallel them to clinical characteristics.

MATERIAL AND METHODS

Clinical, paraclinical, and postmortem examinations of 163 lethal AHI patients, who were admitted in the Department of Neurosurgery were performed. Data delivered from 214 medico-legal expert evaluations of non-hospitalized AHI cases were also analyzed.

RESULTS AND DISCUSSION

The distribution of the contingent according to sex and age reveals strong preponderance of males (79 % and 61 %) and adult age (74 % and 62 %) in the two groups. According to the severity of trauma, the most frequent clinical form is the high-grade cerebral contusion (69 % and 71 %) followed by intracranial haematoma (61 patients – 37 % of the first group and 105 - 49 % of the second). Traumatic injuries in the age group below 74 years are mainly due to traffic accidents (67 % in the first group and 60 % in the second) while in those above 75 years domestic injuries dominate. According to the character of the traumatic lesion in the hospitalized patients open AHI are more common in the adult age group while closed AHI are more typical of the old age group. Similar distribution was found also in the medico-legal records' group.

The analysis of local surgical status shows that the most frequent location of trauma is in the frontal region (34 %) followed by that in the temporal (28 %), occipital (13 %) and parietal region (12 %). The medico-lecal patterns of the cranial fractures in 96 autopsies of hospitalized patients reveal as most common the fractures of complex type (involving both the roof and the base of the scull) in 54 % of the cases. The analysis of the main cause for the death in the hospitalized 163 patients indicates a predominance of the extra-cerebral factors (75 %). Similar data come from the group of non-hospitalized patients – 69 % for the extra-cerebral factors.

The topographic analysis of the contusion foci in the group of hospitalized patients compared to the local surgical status reveals that brain lesions are most often located in the fronto-temporal areas in both groups (hospitalized - 79 % and non-hospitalized – 56 %). This peculiarity of the morphological changes in adult and old age is due to the typical mechanism of injury in falling and the common fractures of the cranial base as well. In this contingent we establish domination of multiple primary and secondary contusion foci, which in 1/3 of the cases are also available on the opposite site of the blow. A single focus is found just in six cases. Disruption of the meninges and dura mater is the dominant finding in the second adult and old age group very often accompanied by conquasation of brain parenchyma. The multiple character of the lesions in patients above 60, even after light mechanical trauma may be explained with the increased vulnerability of brain vessels because of physiologic and pathologic changes in them.

The analysis of clinical manifestations in patients of adult and old age hospitalized at the Department of Neurosurgery exposes a dominance of general cerebral symptoms. Focal cerebral symptoms may be masked by early quantitative changes in consciousness due to accompanying co-morbidity (78 %), numerous complex injuries involving other organs and systems (79 %) and their early

complications as well as to the development of intra-cranial haematomas mainly multiple in 1/3 of adult and old age patients. This circumstance is responsible for the prevalencee of extra-cerebral causes of death in this contingent.

Summarizing the parallel of clinical and morphological data of AHI patients above 60 years of age we can suppose the following conclusions:

1. The specific etiopathogenetic circumstances in AHI patients above 60 bring for a peculiar dynamics in the number of the injured according to the type and the character of the trauma: as the age increases, there is decrease of traffic and open injuries but an increase of domestic and closed ones.

2. This group is characterized by a high portion of accompanying diseases (78 %) which directly interfere in thanatogenesis and a specific part (78 %) of complex traumas which worsen the course of the disease.

3. The hardly distinguishable focal symptomatics does not express the character and the stage of the morphological changes in the brain.

4. The signs of the increased intracranial pressure are less manifested both in clinical and morphological aspects.

5. Fractures of the skull predominantly of a "mixed" type involving the skull roof and base are more common along with the development of intra-cranial haematomas.

6. Extra-cerebral reasons for death (up to 76 %) dominate in AHI patients of adult and old age.

7. The morphological changes in the brain are usually multiple and located in the fronto-temporal region.

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Клинико-патоморфологична характеристика на острата черепно-мозъчна травма в напреднала и старческа възраст

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Резюме: Авторите правят клинико-морфологично съпоставяне при 377 наблюдения на болни над 60-годишна възраст, починали след остра черепно-мозъчна травма. Проучени са данните от историята на заболяването и находките от съдебно-медицинските експертизи. Подчертават се специфичните етиопатогенетични моменти, обуславящи своеобразната динамика и броя на пострадалите според вида и характера на травмата. Установена е по-голяма честота на откритата черепно-мозъчна травма, субпериосталните хематоми, фрактурите на свода и основата на черепа, нерядко съчетани с интракраниални хематоми, някои от които остават неразпознати приживе. Анализира се клиничният ход на травмата, структурата на макроскопските и микроскопски морфологични изменения, като се подчертава тяхната множественост. Изследват се видът и тежестта на съпътстващите заболявания и травмени увреждания, както и основните причини за смърт при този контингент пострадали.