FRONTO-BASAL AND LATERO-BASAL TRAUMATIC SKULL FRACTURES (Preliminary communication)

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The study covered 48 patients with acute craniocerebral injury hospitalized as emergency cases in the Department of Neurosurgery during the period from 1997 till 1998. They presented with both clinical and roentgenological data about fronto-basal or latero-basal traumatic skull fracture. It was established that the direct trauma was a typical etiopathogenetic mechanism with these fractures. Brain contusion was found out in all the patients and verified by computer-assisted tomography in 12 of them. A sharp predominance of the male gender was established (35:13 cases) Liquorrhoea was the most indicative and primary clinical symptom proved in 34 patients. Otoliquorrhoea was found in 25 patients, rhinoliquorrhoea - in 8, and combination of both - in one patient only. There were fronto-basal skull fractures in 10 patients but latero-basal ones - in 38 patients. A traumatic lesion of craniocerebral nerves was observed in 12 cases. Conservative treatment was applied in all the patients supplemented by a neurosurgical intervention in 11 of them.

Key words: Traumatic skull fractures, diagnosis, etiopathogenesis, liquorrhoe, treatment

Fronto-basal traumatic skull fractures (FBTSF) and latero-basal traumatic skull fractures (LBTSF) occupy a borderline position in the classification of the cranial fractures. Their importance is determined by the localization of the injury, the complexity of the anatomic region, and the existing danger of infectious complications. This boundary region is the object of intervention by specialists from different medical disciplines. There exist varying opinions concerning the treatment of these traumatic lesions in the literature sources available (1-6) and in the broad clinical practice.

Taking into consideration the abovementioned circumstances and the practical needs, we decided to study our own clinical material and to attempt to read the mechanism of injury in both FBTSF and LBTSF, the diagnostic-therapeutic achievements, the scope of symptoms in the acute and subacute traumatic period, the diagnostic visibility, and the possible prognostic forecast capacity. Besides we aimed at interpreting the complex nature and complications of these injuries.

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MATERIAL AND METHODS

During the recent two years (1997-1998), a total of 48 patients hospitalized as emergency cases in the Department of Neurosurgery, Medical University of Varna, on the occasion of acute cranio-cerebral trauma (CCT) with both clinical and roentgenological evidence of FBTSF and LBTSF were studied. Anamnestic data demonstrated a direct injury of the head causing these fractures in all the patients under examination. We assumed a priori that there was a brain contusion in all the patients. In 12 cases, the brain contusion was proved by computer-assisted tomography, too. There was a sharp predominance of the male gender in this patients’ contingent. Male:female ratio was of 35:13. Reliable clinical data about liquorhoea were established in 34 patients. Undoubtedly, a nasoliquorhoea was proved in 8 patients while an otoliquorhoea was seen in 25 cases. A combination of nasoliquorhoea and otoliquorhoea was present in one patient only. Survey craniographs were performed under emergency conditions in all the patients while computer-tomographic examinations were carried out in 27 patients.

Based on the clinical and roentgenological examinations, FBTSF was diagnosed in 10 patients but LBTSF - in the rest 38 ones, i.e., the ratio between these two diagnoses was almost 1:4. Otoscopy was performed in 27 patients and rhinoscopy - in 15 ones. Along with the typical clinical manifestations such as Buttle’s symptom (retroauricular haematoma), tympanic membrane perforation, and otorrhage, there were also clinical data about brain contusion in LBTSF patients. “Eye-glasses haematoma” and rhinorhoea with rhinorhage both were typical of FBTSF patients. A true cerebrospinal-fluid hypotension was established in one case. A hydrocephaly was diagnosed and computer-tomographically proved in two cases. Computer-tomographic evidence of pneumocephaly was provided in one patient which description was presented below.

A 46-year-old male patient (P.Z.P., Record No 15396/1998) was admitted as emergency case in the Department of Neurosurgery, Medical University of Varna, after an injury at home. He presented with clinical and roentgenological data about a fracture of frontal bone, left orbit, left maxilla, and rhinorhoea. The pneumocephaly was proved by computer-assisted tomography. The objective status showed amaurosis of the left eye and paresis of the left sixth cranio-cerebral nerve. The choice of the proper treatment was an object of a serious clinical discussion. The cessation of the rhinorhoea, the cerebrospinal fluid formula, the computer-tomographic following-up of the resorbed air located in the subdural space and the disappearance of the subjective complaints supported the usage of the conservative therapeutic method in this case.

A syndrome of meningeal-radicu lar irritation was established in 9 patients. Lumbar puncture proved a secondary
purulent meningitis in three of them only. Clinical data about lesions of the cranio-cerebral nerves were observed in 12 cases. Paresis of the facial musculature was most common in LBTSF patients. The second, third, and sixth cranio-cerebral nerves were most frequently affected in FBTSF patients. All the emergency cases underwent a systemic conservative treatment. Operative interventions were required in 11 of them. Dehydration therapy and antibiotics were obligatorily administered in traumatic liquorhoea. Frequent lumbar punctures or cerebrospinal fluid drainage were also applied. The application of a valvular drainage (ventriculo-peritoneal shunt) was required in two cases with proved and advancing internal hydrocephaly. Besides trepanation in order to avoid traumatic liquorhoea, a hermetization of dura mater was undertaken in 11 operatively treated patients.

DISCUSSION

Our investigation demonstrates that both FBTSF and LBTSF are mainly due to the direct local skull injury. Taking into consideration the evolution of the symptoms the authors establish that the liquorhoea is of the highest informative value that has been undoubtedly proved. In authors' opinion, traumatic liquorhoea represents a serious complication of skull-base fractures as it enables the ascending penetration of the bacterial flora from primarily contaminated perinasal sinusi and the medial ear as well. This is in agreement with the view of several other authors (1-6). There are two primary aspects of the therapeutic tactics concerning the liquorhoea: i) prophylactic administration of antibiotics and ii) releasing punctures or cerebrospinal-fluid drainage (2). In our opinion, one should be particularly careful with FBTSF because of the real danger of infectious complications. Timely and adequate conservative management provides satisfactory results (2).

The treatment of traumatic liquorhoea rises a series of disputable questions. Some authors operate almost all the fractures of the anterior skull fossa (1,5). According to other authors (4), however, the indications for operation remain incompletely defined yet. Because of the new diagnostic opportunities and the clinical follow-up, the problem of both FBTSF and LBTSF should be considered a potentially neurosurgical issue. The radical treatment of cerebrospinal-fluid fistulae could be only neurosurgical and especially only microneurosurgical, indeed.

REFERENCES

Фронтобазални и латеробазални травмени фрактури на черепа
(предварително съобщение)

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Резюме: Проучването и изградено върху анализ на 48 болни, постъпили по спешност в Катедрата по неврохирургия, по повод на остра ЧМТ с клинични и рентгенови данни за фронтобазални (ФБФ) и латеробазални фрактури (ЛБФ) на черепа през последните две години. Установи се, че директната травма е типичен механизъм за получаване на тези фрактури. Приемаме, че при всички случаи е налице контузия на мозъка, като при 12 от тях тя е доказана и с КТ. Налице е рязко преобладаване на мъжкия пол (мъже към жени = 35:13). Най-показателен и водещ клиничен симптом е лихвореята, установена при 34 болни (при 8 е ринорея, при 25 - оторея, при 1 - съчетана). ФБФ са установени при 10 болни. ЛБФ са почти четирикратно повече - при 38. Травмена увреда на ЧМН е установена при 12 болни. При всички болни е приложено консервативно, а при 11 - и оперативно лечение.