Localisation of War Craniocerebral Injury as Risk Factor for Posttraumatic Epilepsy

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Aim: To evaluate localization of certain zones of craniocerebral trauma and determine their importance for genesis of posttraumatic epilepsy.

Patients and Methods: Study encompassed 50 war veterans, with war craniocerebral trauma and posttraumatic epilepsy. Control group included 50 war veterans, with war craniocerebral injury who have not experienced epileptic seizures. The craniocerebral trauma zone in every patient was registered by computerized tomography (CT) of the brain at the Clinic for Radiology of the University Clinical Centre Tuzla. For statistical analysis it was used $x^2$ test.

Results: Average age in examinees’ group was 29.92 (± 8.91); while in control group was 29.98 (± 9.97) ($p$>0.05). Both, injury at several lobes and post-traumatic epilepsy were registered in 22 (44%) patients as well as in 8 (16%) patients in control group, which represents extra statistical significance ($p$<0.05). Frontal lobe trauma in examinees’ group had 7 (14%) patients and 15 (30%) patients in control group ($p$>0.05). Temporal lobe trauma in examinees group had equal number of patients 6 in each (12%); parietal lobe injury was found in 14 (28%) patients with epilepsy and 11 (22%) patients without posttraumatic epilepsy ($p$>0.05). Occipital lobe injury had one patient with posttraumatic epilepsy (2%) and 10 (20%) veterans in control group ($p$<0.05).

Conclusion: Trauma of several brain lobes at the same time increases the possibility of posttraumatic epilepsy. Trauma of certain brain lobes is not significant risk factor for posttraumatic epilepsy, but trauma of occipital lobe is significantly more represented in group of patients without posttraumatic epilepsy.

Key words: traumatic brain injury, posttraumatic epilepsy.

1. INTRODUCTION

Under the term “Posttraumatic Epilepsy (PTE)” we imply repetitive epileptic seizures caused by a brain damage. This injury can be manifested through trauma replications or a brain surgery. The term “Posttraumatic epilepsy” must be differentiated and distinguished from the term “posttraumatic seizures”, which characterizes any sort of seizure that develops as a consequence of a brain damage. Localization of traumatic brain injury was assessed in many studies, as a “risk-factor” for genesis of posttraumatic epilepsy (1, 2). Epilepsy as complication of head trauma was known from ancient times. Approximately 7% of civilian and 34% war head injuries caused the posttraumatic epilepsy as consequence. Risk-factors, beside than localization and extent of injury, include type, instrument of injury, as well as the presence of an intracranial foreign body (3, 4). According to numerous recent studies, for diagnosis of posttraumatic epilepsy should be sufficient only one seizure (5).

The aim of this study was to evaluate localization of certain zones of craniocerebral trauma and determine their importance for genesis of posttraumatic epilepsy.

2. PATIENTS AND METHODS

A group of 330 of military war disabled persons from Tuzla’s Canton have been included in prospective-retrospective studies; that first took place in 1992 and have run until the year 2010. These 330 military war victims out of entire 5 500 members of war veteran’s organization stationed in the city of Tuzla’s Canton have had a craniocerebral trauma. A group of 50 examinees with posttraumatic epilepsy has been formed. The period of time elapsed from the day of examinee was injured until the final examination was ranging from 14 to 18 years. Control group included 50 war veterans, with craniocerebral trauma but without posttraumatic epilepsy. The craniocerebral trauma zone in every patient was registered by computerized tomography (CT) of the brain at the Clinic for Radiology of the University Clinical Centre Tuzla. For statistical analysis it was used $x^2$ test. Value of $p$<0.05 was considered to be significant.

3. RESULTS

Average veterans’ age in examinees’ group was 29.92 (± 8.91); while in control group was 29.98 (± 9.97) ($p$>0.05) (Figure 1). Both, injury at several lobes and posttraumatic epilepsy were registered in 22 (44%) patients as well as in 8 (16%) patients in control group, which represents extra statistical sig-
represents an important risk factor. In study dealing with penetrating injuries, Russell and Whity emphasize importance of injury in parietal lobe (8). After induction of computerized tomography, it became much easier to determine exact geometrical and dynamic characteristics of the wound itself. Parietal lobe in these studies was often pointed as epileptogenic zone, temporal lobe in lower percentage, while the injuries in frontal and occipital lobe were not pointed as important prognostic factors (9, 10).

Study Aarabia (1996) does not emphasize the injury zone as important risk factor for genesis of posttraumatic epilepsy. Overtaking of several lobes might represent indirect indicator of total loss of cerebrum (11). Aarabia study (2000) indicates that overtaking of several lobes did not prove as important risk factor (12). According to Vietnam war veterans research 27.9% of injured had posttraumatic epilepsy after injury in one lobe, and 43.7% when several lobes were damaged by penetrating injury. Additionally a percentage of was pointed in 58.6% in injuries of several lobes (13). Weiss also pointed importance of injury in several lobes of brain at the same time, as indicator for genesis of posttraumatic epilepsy (14). In this study, injury of any lobe did not represent important risk factor for posttraumatic epilepsy; injury of occipital lobe was significantly more represented in group of patients with posttraumatic epilepsy. At the same time, injury in several lobes of brain showed as important risk factor.

5. CONCLUSION

Trauma of several brain lobes at the same time increases the possibility of posttraumatic epilepsy. Trauma of certain brain lobes is not significant risk factor for posttraumatic epilepsy, but trauma of occipital lobe is significantly more represented in group of patients without posttraumatic epilepsy.

REFERENCES