

Severe head injury – the place for regional centers

A. Iordache¹, C. Caldare², N. Ianovici¹

¹University of Medicine and Pharmacy “Gr.T. Popa” Iași

²Hospital no. 3 Iași

Abstract

We are discussing the administrative aspect of solving the severe head trauma and the new modern aspects for pre and post operatory survey, using as a point of departure the case of a patient explored and sent to our department. The aim is not always to improve patient prognosis but to be more precise in depicting patient future evolution especially with patient with isolated, severe head injury who are most prone to be subjects for organ transplantation.

Keywords: administrative management, severe head injury, transcranial Doppler

Introduction

Severe head injury remains an important problem of public health despite the evolution of the intensive care treatment and the radical improvement in neurosurgical care availability. The severe head injury represents a major source of mortality and posttraumatic disability. Nowadays we have a neurosurgical unit in most of the emergency hospital in every county. Nevertheless the access to emergency imagery (computer tomography – C.T.) is more difficult especially at night. Another problem are the centers where there is a neurosurgical unit but without enough specialists in order to cover the all the on calls for emergencies. Most of the severe head injuries sent from tertiary

centers to our hospital are already exceeded cases. We present one of this cases that have been diagnosed to late and maybe operated on too late, but who can also provide valuable information about the actual state of the medical system.

Case presentation

Adult patient, 47 years old, received in Emergency Unit in Focsani, with Glasgow Coma Scale score 4, intermediate nonreactive pupils, and epicranial hematoma located in parietal area. The patient was found nearby the road. He was known to have epilepsy and being a heavy drinker. He was examined by a emergency doctor, by general surgeon and by neurologist. Shortly after admittance he was examined at C.T. The radiologist described a subdural hematoma located on the right side covering the frontal and the parietal lobe, with a width of around 24 mm and midline shift 25 mm; multiple lacerations located superficially in the parietal lobe, traumatic subarachnoid hemorrhage, intraventricular hemorrhage(lateral ventricles, 3-rd ventricle, 4-th ventricle).

The patient was operated for the subdural hematoma but intra operatively we asses firstly a parietal fracture with an acute extradural hematoma and opening the dura we found also the acute subdural hematoma with multiple cerebral concussion.

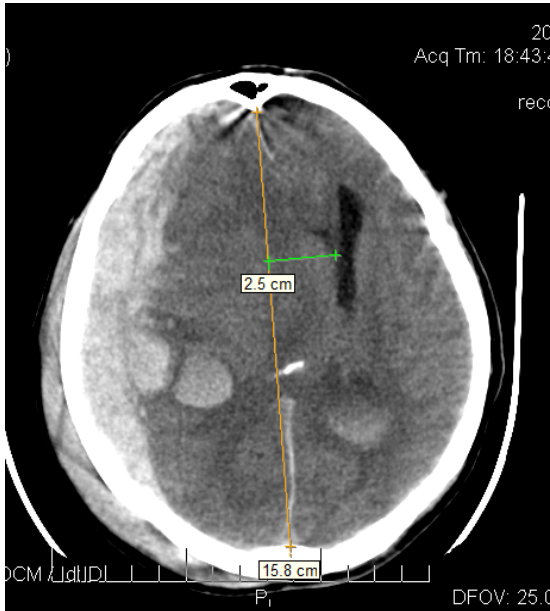
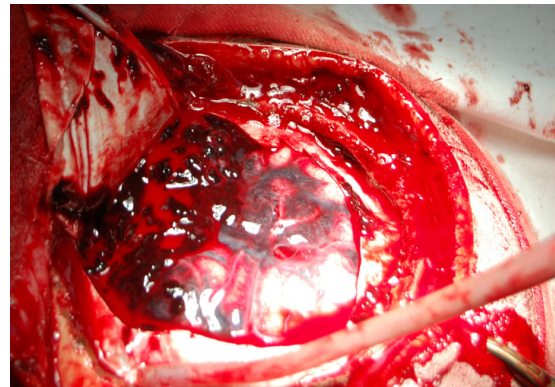


Figure 1 Acute subdural haematoma



A

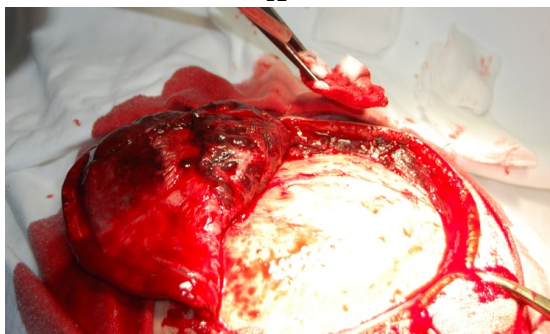


B

Figure 3 **A** extradural haematoma; **B** acute subdural haematoma with temporo-parietal lacerations



A



B

Figure 2 **A** Trauma flap type incision with **B** linear parietal fracture

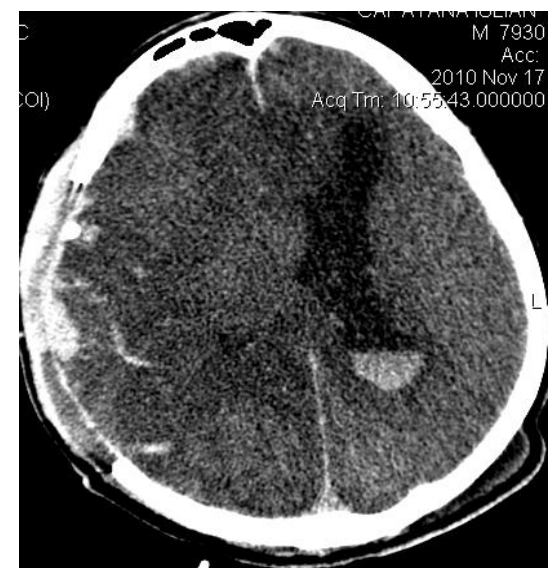


Figure 4 Posttraumatic hemispheric ischemia

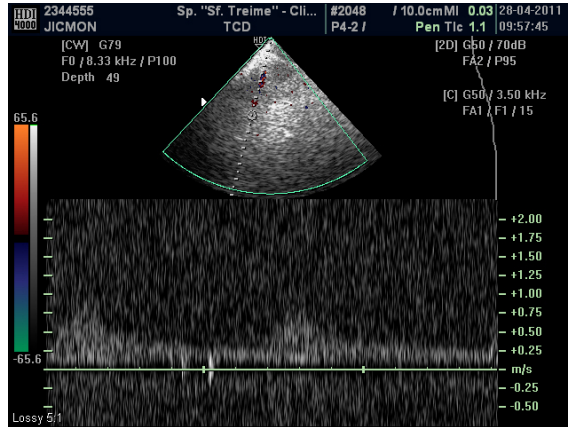


Figure 5 Transcranial Doppler (transtemporal window) of the left sylvian artery, the right sylvian artery was not visible

Evolution of the case was unfavorable with exitus 48 hours after the intervention. During the evolution we assessed the cerebral circulation with transcranial Doppler. We have noticed the absence of the flow in the sylvian artery on the right side and diminished flow on the left side. The assessment of the blood flow was made preoperatively and postoperatively after 24 hours and the aspects were the same, fact confirmed by the hemispheric ischemia at CT scan.

Discussion

We are discussing the case of a severe head injury with GCS of 4 at presentation. The main question in this case is if earlier intervention would improve the prognosis of the patient. Statistics are showing a mortality of more than 80% such severe head injury (GCS 3 and 4). Of course we have performed a decompressive craniectomy, expecting for vigorous brain edema, trying to give all the chances to the patient. The decompressive craniectomy was made according to the criteria proposed by the Brain Trauma Foundation and we

have performed autologous dural graft with pericranium.

Transcranial doppler was a valuable tool in assessing earlier the diagnosis of cerebral ischemia. We can predict the usefulness of the transcranial doppler in diagnosis of cerebral death especially for the patient candidate for transplantation. In the case reviewed because of the medico-legal problems the patient was not a candidate for transplantation. This method will be useful in cases with coma grade 4 but who still keeps electrical activity on the EEG.

The problem of the early intervention is supposed to be already solved with the many neurosurgical departments opened in the latest years. The original aim for opening those regional centers is to solve swiftly and with better results mostly the neurotraumatic cases. The absence of neurotrauma centers can lead to such unfortunate endings. Also a problem is the lack of means of explorations in smaller centers so many cases are referred may be too late or are not at all diagnosed. This kind of cases can be prevented in our opinion with better organization of the resources. Every county hospital should have an computer tomography imagery available all the time with a radiologist eventually available on call in order to diagnose the lesion. Another aspect is the transportation. People involved in emergency medical transportation should know that the degree of importance of swift transfer for an extradural hematoma is the same as for myocardial infarction and so on. In the same direction we should propose and adopt protocols in order to avoid such cases of surgical intervention in order to avoid medico-legal problems.

Conclusion

In our opinion transcranial Doppler a in severe head injury should be performed preoperatively and postoperatively in order to assess the functional and vital prognosis especially for the patients with GCS 3 or 4.

The existence of the neurotrauma centers in each county hospital has been a subject well discussed but unsolved until yet. Theoretically most of the county hospitals +have this kind of centers but in many cases they don't have enough personnel and there is actually no possibility to explore the patient in emergency.

Creation and implementation of standard protocols for diagnosing the patient and for emergency transfer would create a more efficient medical system.

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