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Case Report

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Early Decompressive Craniectomy in Subdural Hematoma and Good Outcome – Case Report

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ABSTRACT

A 20-year-old man presented to our Hospital with severe brain trauma, hit by a car while he was riding a bike. On the arrival at the emergency room (ER) his Glasgow Coma Scale (GCS) was 4 (eyes 1; verbal 1 and motor 2) with fixed midriatic pupils and submitted to mechanical ventilation. A CT scan was performed and revealed a subdural hematoma, midline shift greater than 5mm and a swelling, Marshall V (surgically evacuated). The patient was submitted to a decompressive craniectomy and hematoma evacuation two hours after the accident and sent to ICU with ICP monitoring. About 48 hours after surgery a new CT scan was performed and revealed a good outcome with regression of the edema, no midline shift and then we suspended the sedation and 7 days after the trauma the patient woke up without neurological deficits. Some authors did not see benefits in early surgery although the average time of surgical approach was 5 hours after the accident and in many cases the worse patients that underwent to early surgery had a poor outcome. We did not find a specific paper describing the outcome in patients with a very poor GCS (less than 5) and fixed pupils, although the pupils abnormalities remains a critical feature for surgical indication. We believe that even in patient with severe brain trauma, poor GCS and non-reactive pupils, early surgery especially if it is performed before 4 hours can probable improves the outcome, considering other clinical features such as blood pressure and oxygen saturation.

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Introduction

Acute, traumatic subdural hematoma (SDH) is one of the most devastating form of traumatic brain injury (TBI), with mortality rates estimated between 40–60% [1]. In most situations, especially in patients with profound neurological deficits, SDH is considered a neurosurgical emergency requiring immediate evacuation of the hematoma. Factors such as GCS in admission and timming of surgery have an important role in the outcome of the patients with acute SDH [2]. We reported a case of a young male that was hit by a car when he was going to work.

Case Report

A 20-year-old man presented to our Hospital with severe brain trauma, hit by a car while he was riding a bike. On the arrival at the emergency room (ER) his Glasgow Coma Scale (GCS) was 4 (eyes 1; verbal 1 and motor 2) with fixed midriatic pupils and submitted to mechanical ventilation. Blood pressure stable. A CT scan was performed (Figure 1) and revealed a subdural hematoma, midline shift greater than 5mm and a brain swelling, Marshall V (surgically evacuated). The patient was submitted to a decompressive craniectomy and hematoma evacuation only two hours after the accident and sent to ICU with ICP monitoring. About 48 hours after surgery a new CT scan was performed (Figure 2) and revealed a regression of the edema and no midline shift. We suspended the sedation and 7 days after the trauma the patient was discharged from the hospital. Currently the patient returned to his normal life, working and no deficits.

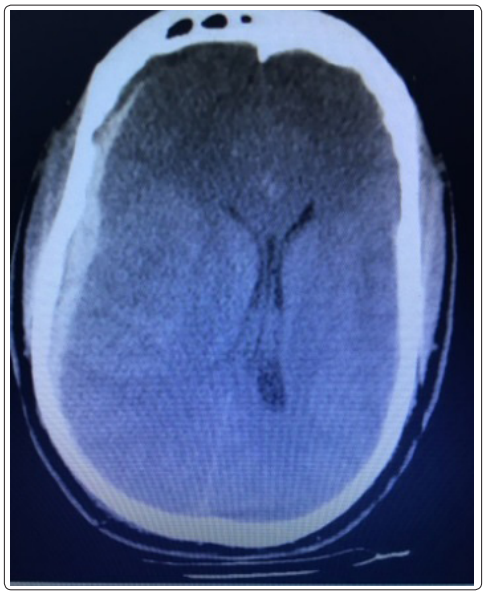

Figure 1: Admission CT Scan

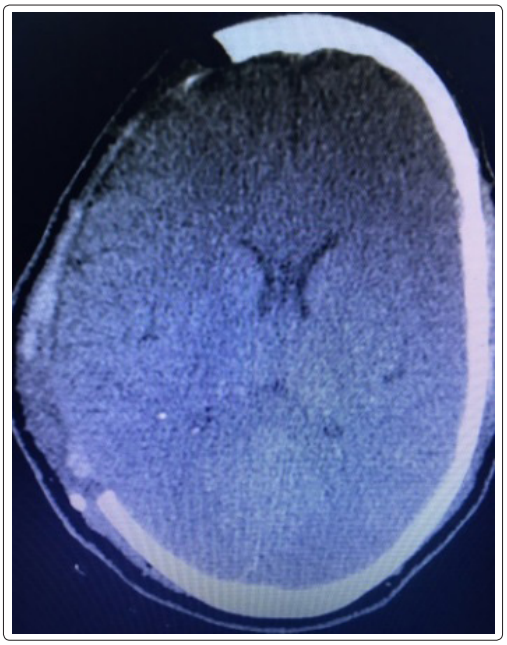

Figure 2: CT scan 48 hours after surgery

Discussion

We reported a case of a patient that was admitted to our hospital in a very severe brain injury (GCS 5 or less), fixed pupils and operated quickly (2 hours). In general, initial surgical indication may be based on the patients GCS score, pupillary examination, and CT findings. Patients with a midline shift greater than 5 mm, thickness > 1 cm should undergo surgical evacuation regardless of GCS. Time from injury to surgery is historically considered to be a major predictive factor of survival. Seelig et al [3]. reported an important decrease in mortality in cases of surgical evacuation before 4 hours from the injury. Prompt intervention aims to limit intracranial hemorrhage and secondary brain ischemia. Nonetheless, this correlation remains tenuous, and most studies did not find a convincing association.

A study by Dent et al [4]. that reported earlier surgery was associated with worse outcomes, patients who had surgery within 4 hours tended to have lower GCS scores, more severe intracranial injuries, and greater incidence of brain herniation than patients who had later surgery. Another explanation is that pre-surgical stabilization and resuscitation, which may cause a delay to surgery, could contribute to improved survival. Ritter et al [5]. suggested that patients presenting with compressed brainstem signs such as fixed pupils and/or obliterated basal cistern should receive prompt surgical evacuation as soon as possible. Our patient was hemodynamical stable and maybe this factor optimized the time to take him to the OR. We did not find specific studies describing the the benefits in patients with a very poor GCS (less than 5) and both fixed pupils with a hematoma surgically evacuated within 2 hours from the trauma

Conclusion

We believe that even in patient with severe brain trauma, poor GCS and non-reactive pupils, early surgery especially if it is performed before 4 hours and average of 2 hours can probable improves the outcome, considering other clinical features such as blood pressure, oxygen saturation.

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