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Case report/Kazuistyka

"Talk and deteriorate" syndrome and the role of an immediate follow-up computed tomography of the head in children

Zespół "talk and deteriorate" – rola wczesnej kontrolnej tomografii komputerowej w urazach głowy u dzieci

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ABSTRACT

Traumatic brain injury (TBI) is one of the leading causes of morbidity and mortality among children and young adults. Computed tomography (CT) constitutes a gold standard in the evaluation of patients after TBI. None of the available guidelines address the role of a repeat CT scan as a follow-up procedure after head injury in pediatric patients. We present the case of a patient with complicated brain injury, to illustrate potentially fatal consequences of a delay in a repeat CT scan.

A 16-year-old patient after a road accident was admitted with a severe injury of the head. Massive cerebral contusions and depressed skull fracture of the right temporal, parietal and occipital bones were documented on an initial CT scan. The patient was subjected to craniectomy at the right parieto-occipital area. A repeated CT scan, obtained 12 h post-surgery, revealed a previously undetected acute epidural hematoma in the right fronto-parietal region with mass effect moving contiguous brain tissue on the contralateral side. The hematoma was evacuated and the bleeding from the ruptured middle meningeal artery was stopped without any intraoperative complications.

A small fraction of patients with sustained minor head injuries unexpectedly deteriorate due to intracranial complications, such as hematoma or herniation. This phenomenon is referred to as "talk and deteriorate" syndrome. Our experiences suggest that

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a repeat CT scan should constitute a routine component of postoperative management, especially in pediatric patients after a neurosurgery or in a barbiturate coma.

Introduction

Up to 75% of children hospitalized due to trauma present with head injuries. Traumatic brain injury (TBI) is one of the leading causes of severe morbidity and mortality among children and young adults, contributing to nearly a half of the trauma-related deaths in this group [1]. The overall mortality of pediatric patients from head injuries is estimated at 10–13% [2]. According to the National Health Injury Foundation, TBI is a "silent epidemic" of the developing world [3].

Single-phase computed tomography (CT) constitutes a gold standard in the evaluation of patients after TBI [4]. Approximately 22% of pediatric patients, including those after mild TBIs with more than a 5-min loss of consciousness, present with brain injuries. Therefore, CT scan of the head should be considered in all individuals with neurologic/cognitive dysfunction or suspicion of depressed skull fracture/skull base fracture [5]. Surprisingly, none of the available guidelines address the role of a repeat CT scan as a follow-up procedure after head injury, especially in pediatric patients. According to various authors, patients with severe head injuries need to be subjected to a repeat CT scan 24 h or 3–5 days following the TBI, or immediately after neurological deterioration. In the case of individuals with mild to moderate head injuries, a repeat CT scan should be obtained shortly before the discharge. Although specific Polish guidelines for the medical management of mild TBIs in infants, children and adolescents have been updated quite recently, they still do not include any recommendations regarding the timing of a repeat CT scan in patients operated on due to TBI, especially in comatose individuals [6].

We present the case of a patient with complicated brain injury resulting from car accident, to illustrate potentially fatal consequences of a delay in a repeat CT scan.

Case report

A 16-year-old patient after a road accident (pedestrian hit by a car) was admitted to the Pediatric Surgery Department with a severe injury of the head. On admission the boy was confused, with Glasgow Coma Score (GCS) equal to 13, retrograde amnesia, normal cardiovascular and respiratory functions (blood pressure 125/80 mmHg, heart rate 90 beats/min, oxygen saturation 98%). His pupils were equal and reactive to light. The patient presented with an intense bilateral nasal bleeding, massive local hematoma and injury of the right temporo-parieto-occipital area, and comminuted fracture with depression of the right parietal and occipital bones.

Cerebral contusions and depressed skull fracture of the right temporal, parietal and occipital bones were documented on a CT scan obtained 40 min after the injury. Additionally, a skull base fracture, involving posterior part of the pyramid and petrous part of the temporal bone, up to the lambdoid suture, was visualized, along with the right frontal bone fracture, reaching up to the right frontal sinus. Finally, a brain edema, most evident in the parietal lobe, and compression of the right lateral ventricle, especially its occipital horn, were seen, as well as a 6-mm intussusception of the right hemisphere under the cerebral falx. Midline shift amounted to 5 mm. Other CT findings included subarachnoid hemorrhage and a large, extracranial hematoma in the right temporal, parietal and occipital areas. Neither subdural nor epidural intracranial hematomas were detected (Fig. 1).

The patient was immediately transferred to the operating room, intubated and subjected to craniectomy at the right parieto-occipital area. Intraoperative examination revealed a massive comminuted fracture of the right temporal, parietal and occipital bones with depression of bone fragments into the brain, large cerebral edema, damaged, bleeding brain tissue protruding from the skull, and laceration of the dura mater. The fragments of bone were removed from the cerebral tissue and the swollen brain tissue was resected. The removal of a depressed fragment of the parietal bone resulted in a massive bleeding from the right transverse sinus, which was eventually stopped with a hemostatic material and Tahosil®. The dura mater was cut off in the frontal area to exclude the presence of

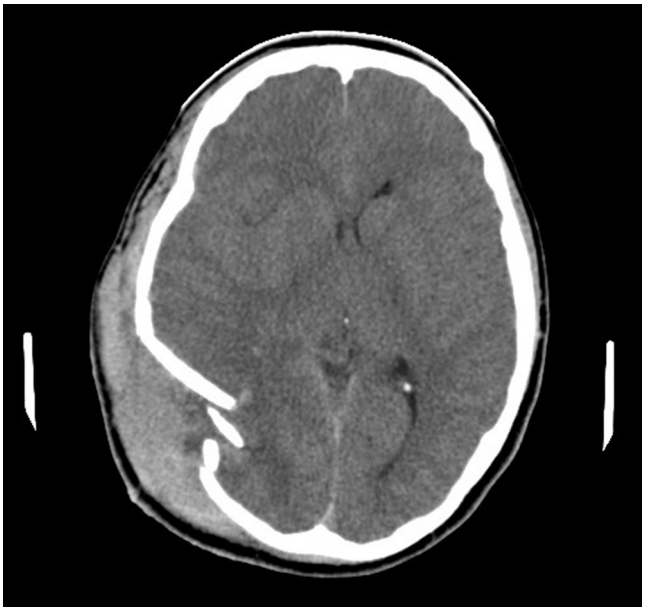

Fig. 1 – Single phase CT scan obtained 40 min after the injury. Cerebral contusions and depressed skull fracture of the right temporal, parietal and occipital bones were not accompanied by the signs of epidural and/or subdural hematoma