Received: 19.04.2009 / **Accepted:** 17.10.2009

Traumatic Intraventricular Hemorrhage with a Good Prognosis

İyi Prognozlu Travmatik İntraventriküler Kanama

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ABSTRACT

We report a 10-year-old girl with an isolated traumatic intraventricular hemorrhage following a traffic accident, who had a good prognosis. Her neurological examination upon arrival was normal and she had no complaint other than headache and vomiting. Computed tomography on admission showed a hemorrhage in the lateral and fourth ventricles. She had a Glasgow Coma Score of 15, and she was thus given only antiepileptic drugs for prophylaxis and followed. Computed tomography that was repeated 5 days after admission showed no blood and all ventricles were of normal size. There was no vascular pathology on magnetic resonance imaging and magnetic resonance angiography. The patient remains well 5 months after her accident. Intraventricular hemorrhage does not always have a poor prognosis.

KEYWORDS: Computed tomography, Intraventricular hemorrhage, Hemorrhage, Head injury

ÖZ

İyi prognozlu travmatik intraventriküler kanama: Bu olgu sunumunda trafik kazası sonrası travmatik intraventiküler kanama gelişen ve sonrasında prognozu iyi olan 10 yaşında bir kız çocuğu sunulmaktadır. Başvuru sırasındaki nörolojik muayenesi normal olan hastanın başağrısı ve kusma dışında herhangi bir yakınması yoktu. Bilgisayarlı tomografide lateral ventrikül ve dördüncü ventrikülde kanama izlendi. Glasgow Koma Skoru 15 olan hasta sadece antiepileptik verilerek izlendi. Yatışından beş gün sonra tekrarlanan bilgisayarlı tomografide tüm ventriküllerin normal boyutta olduğu ve ventriküllerde kanama olmadığı görüldü. Manyetik rezonans görüntüleme ve manyetik rezonans anjiyografide vasküler patoloji saptanmadı. Hasta kazadan sonraki beşinci ayda halen iyi durumdadır. İntraventriküler kanama her zaman kötü prognozlu olmayabilir.

ANAHTAR SÖZCÜKLER: Bilgisayarlı tomografi, İntraventriküler kanama, Kanama, Kafa travması

INTRODUCTION

Traumatic intraventricular hemorrhage (TIVH) is usually associated with other lesions such as intracerebral contusion or hemorrhage, subarachnoid hemorrhage, and diffuse brain edema and has a poor prognosis (1). The majority of patients with TIVH have a GCS less than 8 due to associated lesions and severity of injury. The prevalence of TIVH ranges from 0.4 to 4% in all head trauma patients who undergo CT scanning (1). These percentages cover both group of patients who have isolated TIVH and TIVH associated with other lesions. Here, we report an isolated TIVH with a good prognosis.

CASE REPORT

A 10-year-old right-handed girl was admitted to the emergency department after a traffic accident. She had mild headache and vomiting. Her systemic examination was normal. Her pupils were miotic and reacted to light bilaterally. There was no neurological deficit. Her Glasgow Coma Score (GCS) was 15 (E5; M6; V5). Cranial and spinal radiograms were obtained to clarify suspected clinical findings and to exclude SCIWORA. Her cranial, cervical, thoracic, lumbosacral, and chest radiographs were normal. Computed tomography (CT) on admission showed an isolated hemorrhage in the lateral ventricles and fourth ventricle (Figure 1A,B). As the patient had a GCS of 15, she was given antiepileptic drugs (Phenytoin-Na 5 mg/kg bid – Pfizer - Turkey) and followed. She had no seizures neither at that moment nor later. CT was repeated 5 days after admission. All ventricles were cleared from blood and all ventricles were of normal size (Figure 2).

Magnetic resonance imaging (MRI) and magnetic resonance angiography (MRA) were performed in order to rule out any vascular pathology. There were no vascular or tumoral lesions, such as cerebral aneurysms, arteriovenous malformations, or ependymal tumors on cranial MRI or MRA (Figure 3).

She was discharged at 7th day in a healthy state and the antiepileptic drugs were discontinued 10 days after the trauma because of the seizure-free period of time. She was healthy without any complaint at the 5-month follow-up.

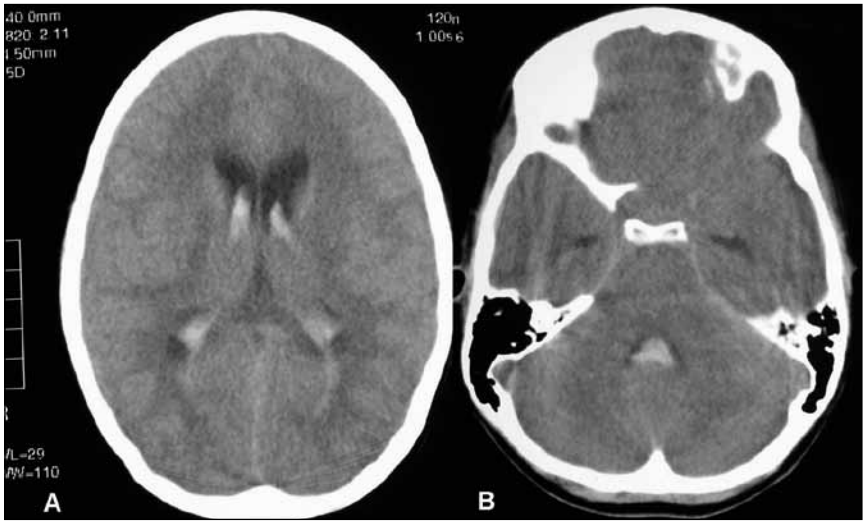

Figure 1: Computed tomography after trauma shows hemorrhage in all ventricles.

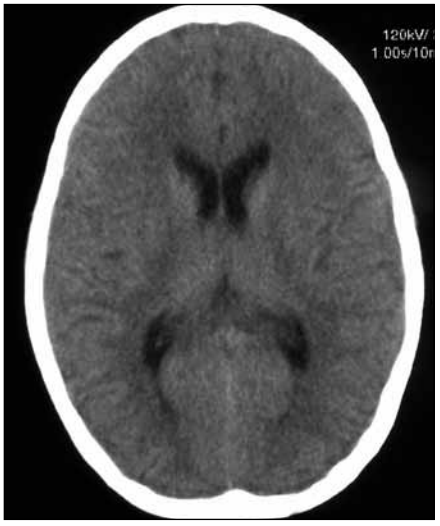

Figure 2: Computed tomography 5 days after trauma shows no blood in the ventricles.

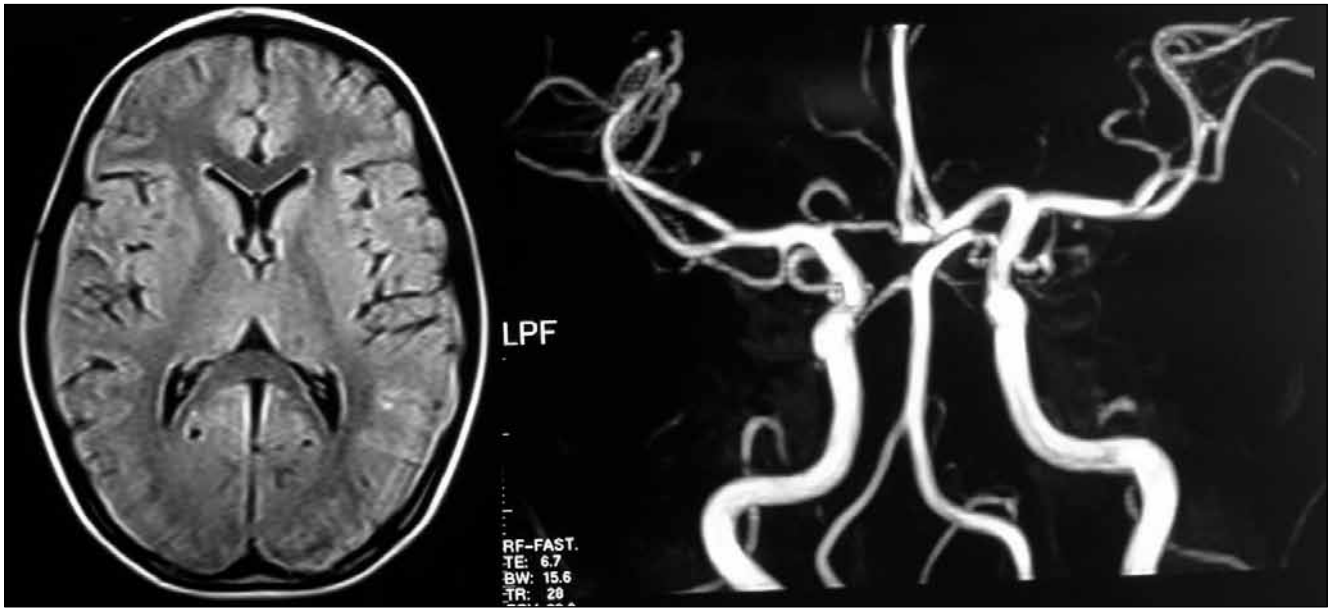

Figure 3: Cranial magnetic resonance imaging and magnetic resonance angiography show no vascular lesion.

DISCUSSION

Isolated TIVH is extremely rare, and its outcome is unclear. Nevertheless, it has been claimed that otherwise normal CT and a normal clinical examination predict good outcomes in the presence of isolated TIVH (1,2). One of the largest series in the current medical literature which sampled 5000 head-injured patients who received a head CT included only six cases with isolated TIVH (2). Atzema et al. (1) reviewed 8,374 patients with blunt head trauma and the prevalence of TIVH was 1.41% among all trauma patients who received a head CT. In the above-mentioned author's cohort there were only eight patients with isolated TIVH; the prevalence of isolated TIVH was reported as 11.4% within all TIVH patients. Seven (88%) of the patients with isolated TIVH had functional outcomes as defined by the Glasgow outcome score. The authors concluded that the prognosis of TIVH was determined by associated brain injuries, rather than by the TIVH itself.

Although hemorrhage in the third or fourth ventricles predicts a poor outcome in the literature (1,3), our patient did well in spite of the hemorrhage in the fourth ventricle. The poor outcomes following hemorrhage in fourth or third ventricles were all reported for patients with TIVH and none of the reviews in the literature mentions statistical data on the outcome of patients with isolated TIVH. The number of patients with isolated TIVH is extremely rare (only six in one and eight in another series) and the site of hemorrhage is

also not mentioned within these subjects. Thus, the idea that "hemorrhage in the fourth or third ventricle is predictive of a poor outcome" may not be clear for patients with isolated TIVH. Our patient experienced neither intracerebral hematoma nor vascular lesions. In this case, a shearing strain injury might have damaged the subependymal structures containing the subependymal veins or arterioles. Widespread hemorrhage covering all ventricles might be from an arteriolar traumatic rupture. On the contrary, venous bleeding has to be seen in limited ventricular or parenchymal spaces.

Epileptic fits are well known complications of any kind of intracranial lesions including TIVH. Antiepileptic medications are preferred by the majority of the neurosurgeons because an epileptic fit might cause the deterioration of the patient, especially with a hemorrhagic process. Prophylaxis is also used in trauma patients who have hemorrhagic lesions because of the irritating effect of the blood (4). Antiepileptic medication was therefore used in this presented case for a short time.

This case supports the contention that patients with an isolated TIVH who have a normal neurologic examination will likely have good outcomes and do not require further treatment other than observation. The motto of treatment in such patients is "one should treat the patient not the radiological investigations".

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