Radiology Case Reports 17 (2022) 4818–4820

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Case Report

The white cerebellum sign with good prognosis: A case report ☆

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ARTICLE INFO

Article history:
Received 2 August 2022
Revised 30 August 2022
Accepted 4 September 2022

Keywords:
White cerebellum sign
Good prognoses
Head trauma

ABSTRACT

The white cerebellum sign is a radiologic sign rarely described resulting from diffuse cerebral edema, reported especially in children with hypoxic brain lesions, it is usually associated with poor prognosis leading to irreversible brain damage. We report the case of a child who presented this sign after a severe head injury and differently from most of previous cases, our patient has recovered very successfully. The white cerebellum sign is a radiologic sign that is not frequently described, which when present carries a poor prognosis, one third of the patients die and the others have severe deficits, its identification is necessary for a better patient management.

Introduction

White cerebellum sign is a radiologic sign rarely described resulting from diffuse cerebral oedema, reported especially in children with hypoxic brain lesions, it is usually associated with poor prognosis leading to irreversible brain damage, we report the case of a child who presented this sign after a severe head injury and differently from most of previous cases, our patient has recovered very successfully.

Case presentation

We report a case of a 12-year-old child, the cadet of 3 children from a non-consanguineous marriage, with no historical medical or surgical background, who was admitted to the operating room for the treatment of a head trauma caused by a motorcycle accident with a cranial impact point. The child was driving alone and was not wearing a helmet, he was managed by the emergency services after placing a cervical

☆ Competing Interests: The author declares he has no conflicts of interest.

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https://doi.org/10.1016/j.radcr.2022.09.007

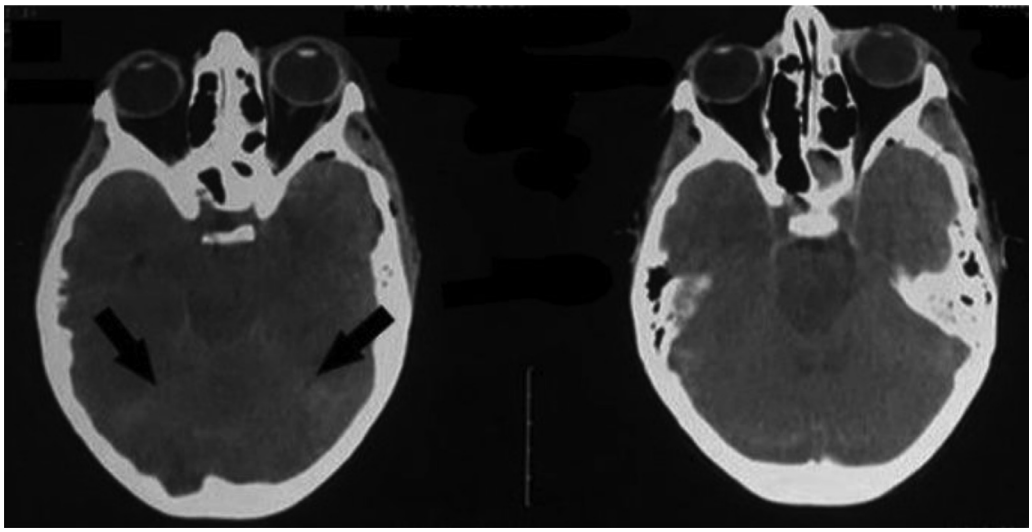

Fig. 1 – Cerebral CT scan, axial section parenchymal window without contrast injection showing spontaneous hyper density of cerebellum related to a white cerebellum sign.

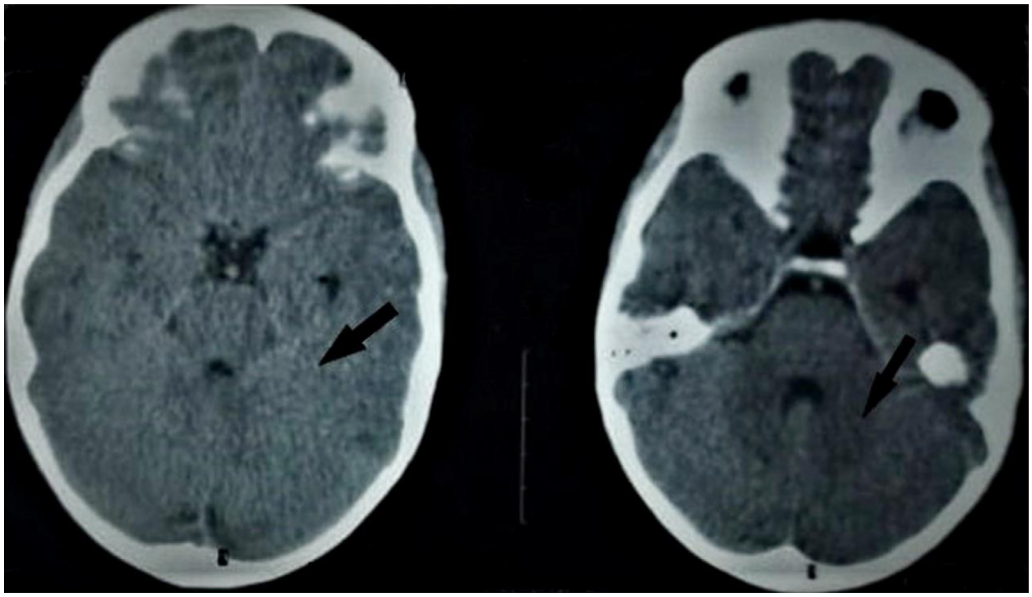

Fig. 2 – Cerebral CT scan, axial section parenchymal window without contrast injection showing a net disappearance of a white cerebellum sign.

support neck collar, the time between the accident and his arrival at the hospital was three hours, at admission he arrived intubated, ventilated, and sedated with a Glasgow score at 4 out of 15, his pupils were in reactive semi-mydriasis, and was hemodynamically and respiratorily stable.

The lesion evaluation revealed subdural hematoma with significant mass effect and white cerebellum sign (Fig. 1), the other lesion evaluation was in favor of pulmonary contusion, and left ulna fracture being treated orthopedically then the patient was transported to the operating room after 2 hours, and proceeded to a decompressive craniectomy, evacuation of extra and subdural hematomas, and dural plastie, following this the patient was admitted to the intensive care unit for a period of 3 weeks, where he recovered consciousness with considerable progress, but still had a left hemiparesis (Fig. 2).

Discussion

The white cerebellum sign, also known as the “inversion sign” is a radiological sign most often described in children with hypoxic ischemic brain injury, but it has also been described in patients with severe head trauma, status epilepticus, drown-

ing, meningoencephalitis, neonatal asphyxia, smoke inhalation, hypothermia, postpartum, Wernicke's encephalopathy, and other causes of global hypoperfusion, and is rare in adults compared to children [1–4].

The white cerebellum sign results from a diffuse cerebral edema leading to a loss of the normal differentiation of the gray-white substance of the cerebral parenchyma, in CT as in MRI, it presents itself by a relative hypodensity of the cerebral hemisphere and a hyperdensity of the cerebellum, the basal ganglia and the thalamus.

The pathogenesis remains unknown and several theories have been proposed; it could be due to high intracranial pressure with partial venous obstruction leading to deep distension of the medullary vein, to preferential preservation of blood flow in the posterior circulation compared to the anterior circulation partial relief of elevated intracranial pressure by transtentorial herniation, other explanations include preserved brain tissue, petechial hemorrhage, and mineralized neurons for high-density areas on CT, and severe edema and/or tissue destruction for low-density areas on CT. Although the white sign may be discrete on imaging its recognition is essential because lumbar punctures may result in downward herniation due to a pressure gradient between the supra- and subtentorial compartments [2–6].

Conclusion

The white cerebellum sign is a radiologic sign that is not frequently described, which when present carries a poor prognosis, one third of the patients die and the others have severe deficits, reported especially in children with hypoxic brain lesions. Its identification is necessary for a better patient management.

Patient consent

Data collection was made after written parental consent for child. We carried out this case report with respect for patient anonymity and confidentiality of information.

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