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Case Report

Posterior Reversible Encephalopathy Syndrome (PRES) Secondary to an Eclampsia Episode: A Report of Case

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Abstract

Posterior reversible encephalopathy (PRE) is a clinico-radiologic syndrome that may be due to a variety of pathologies, combining reversible central nervous system damage with typical encephalic imaging. There is a great variability in the clinical presentation of this syndrome and imaging aspects are sometimes atypical. RPE is an unusual neurological complication occurring during pregnancy or postpartum, especially in the context of preeclampsia, in which vasogenic oedema due to rupture of the hemato-encephalic barrier seems to be the main actor. Magnetic resonance imaging frequently shows a distinctive parieto-occipital pattern with a symmetrical distribution of changes reflecting vasogenic edema.

We report the observation of a 24-year-old primiparous patient with generalized convulsions associated with a hypertensive episode at 33 weeks of amenorrhea. An adapted and early management usually allows to prevent the occurrence of irreversible sequelae.

Keywords: *Posterior Reversible Encephalopathy Syndrome; Eclampsia; Magnetic Resonance Imaging; Cerebral Vasoconstriction*

Introduction

Posterior reversible encephalopathy syndrome (PRES) refers to reversible vasogenic cerebral oedema accompanied by acute neurological symptoms such as epilepsy, disturbances of consciousness and visual disorders; brain imaging usually reveals vasogenic oedema mainly affecting bilateral parieto-occipital regions [1].

Sometimes the radiological abnormalities are atypical, involving other regions, defining this situation as “atypical PRES” [2].

Several causes may be responsible for this syndrome, dominated by hypertensive encephalopathy, pre-eclampsia, eclampsia [3], immunosuppressive therapy [4], systemic diseases and renal damage [5].

We report the case of a 24-year-old primiparous patient who presented with generalised tonic-clonic convulsions associated with a hypertensive peak at 33 weeks’ amenorrhoea, and whose MRI showed lesions consistent with PRES syndrome.

Case Presentation

Patient information: The patient was a 24-year-old woman, right-handed, primiparous, with no notable pathological history. The patient was admitted to the emergency department in the intensive care unit of the Mohammed V military training hospital in Rabat for management of a disorder of consciousness following generalised tonic-clonic convulsions at 33 weeks' amenorrhoea (SA) with high blood pressure of 180/100 mmHg.

Clinical results: During the examination the patient presented with a generalised tonic-clonic convulsion. The examination after resolution of the convulsion with 10 mg diazepam showed a blood pressure of 160/90 mmHg with no return to conscious state. Obstetric examination found a non-contracting patient with a uterine height of 29 cm and regular fetal heart sounds.

Diagnostic approach: The patient was treated with magnesium sulphate, and the urine dipstick showed positive proteinuria.

After the patient was stabilised, an obstetric ultrasound scan was carried out quickly on the patient's bed, which showed a progressive mono-fetal pregnancy with a femoral length corresponding to 34 weeks and a femoral ossification point of less than 4.1 mm.

Therapeutic intervention: The patient was admitted to the emergency department for fetal extraction under general anesthesia, subsequently complicated by delivery haemorrhage due to uterine atony, leading to a triple Tsirulnikov ligation with B-Lynch padding and transfusion of 2 packed red blood cells, which stopped the bleeding.

Follow-up and results of therapeutic interventions: The patient was admitted to the intensive care unit and started on magnesium sulphate and nicardipine. She then benefited from a cerebral MRI scan showing multiple bilateral cortico-subcortical T2 Flair hypersignal areas in the occipital region with no mass effect or perilesional oedema. In other words, an appearance compatible with PRES syndrome (Figure 1 and 2).

The biological examination, which included a haemogram, an ionogram, a liver and kidney function tests and a blood clot test, was unremarkable apart from a thrombocytopenia of 99,000.

The post-partum course was unremarkable. The patient was discharged and no recurrence was observed. She underwent a follow-up MRI 3 months later, which showed that all lesions had disappeared.

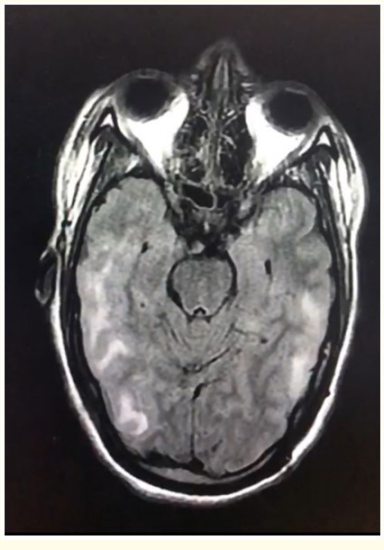

Figure 1: *Encephalic magnetic resonance imaging (MRI), axial section, T2 flair and diffusion sequence: bilateral, poorly systematized frontoparieto-occipital hypersignals.*

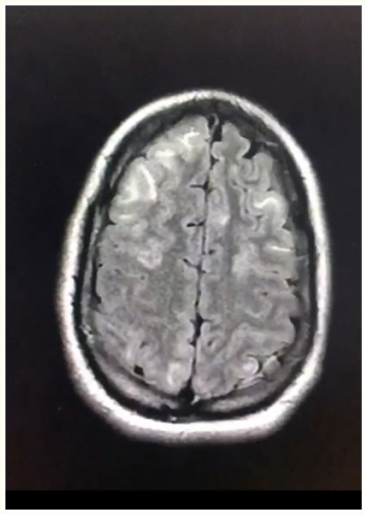

Figure 2: *Encephalic magnetic resonance imaging (MRI), axial section, T2 flair and diffusion sequence: poorly systematised frontal parietal hypersignals.*

Discussion

Posterior reversible encephalopathy is a rare condition, widely under-diagnosed and reported in almost all age groups, from children to older adults, with a preponderance of women, which could be attributable to etiological aspects [6].

From a pathophysiological point of view, two theories remain the most widely accepted. The first hypothesis proposes a rapid increase in arterial pressure leading to a hypertensive attack, with a rise in arterial pressure above the upper limit of autoregulation leading to cerebral hyperperfusion, which may cause vascular leakage and vasogenic oedema.

The second theory is in favour of cerebral vasoconstriction secondary to arterial hypertension or a systemic process with a drop in cerebral perfusion and cytotoxic oedema. This theory is supported by the absence of elevated blood pressure in some cases. It suggests a systemic process (infection, pre-eclampsia, transplantation, cancer chemotherapy) [7].

To date, there are no established diagnostic criteria, but Fugate., *et al*. have suggested the following criteria for the diagnosis of PRES: neurological symptoms of acute onset, neuro-radiological abnormalities of vasogenic (focal) oedema and reversibility of clinical and/or radiological findings [1].

Clinically, four neurological symptoms are often found: bilateral headaches with a posterior “thunderclap” onset, convulsive seizures, consciousness disorders and visual disorders (blurred vision, flickering scotoma, visual neglect, hemianopia, photophobia). These signs are often accompanied by an acute and sudden increase in blood pressure [3].

Neuroimaging, particularly MRI, is the most important diagnostic tool and shows hyperintense lesions in T2-weighted or inversion (FLAIR) sequences, Although usually subcortical bi-hemispheric, lesions may be asymmetrically distributed [8].

CT-Scan is frequently abnormal and usually shows vasogenic oedema with a bi-hemispheric distribution, but can be in 40% of cases, falsely reassuring by being normal.

Lumbar puncture is of major importance in ruling out encephalitis or leptomeningeal spread in patients with haemato-oncological disease.

Other biological tests do not contribute to the diagnosis.

The management of posterior reversible encephalopathy syndrome is symptomatic, as no specific therapeutic strategy is currently available. Treatment of the subjacent pathology is therefore essential.

Management of hypertensive episodes and maintenance of normal blood pressure is an essential component of treatment, using antihypertensive agents: calcium channel blockers (nicardipine or diltiazem), beta-blockers (labetolol in particular) and diuretics. The aim of the treatment is to maintain an average blood pressure of between 105 and 125 mmHg, without reducing this pressure by more than 25% in the first hour [9].

Corticosteroids are the drugs most commonly used for vasospasm. Combination with mannitol in this case must be discussed on a case-by-case basis and may only be beneficial in certain situations.

Anticonvulsant treatment is often necessary, although there are no precise recommendations for its use. Furthermore, the optimal duration of treatment with anti-epileptic drugs is unclear [7].

In addition, magnesium sulphate has a vasodilatory effect, which increases cerebral blood flow, thereby preventing the development of ischaemic lesions [3].

The prognosis of PRES is mainly determined by the underlying pathology, as neurological manifestations are reversible in the majority of patients. However, PRES is often accompanied by severe complications, and neurological sequelae may persist. In 81% of cases, neuroimaging findings were reversible [7].

Conclusion

Posterior reversible encephalopathy is a still little-known syndrome, an unusual neurological complication.

Its prognosis can be dramatic if it is not diagnosed and managed in time, with treatment of the underlying pathology, which can prevent the appearance of definitive neurological lesions and irreversible sequelae.

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All authors have contributed to this article.

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Ethics Approval

Our institution does not require ethical approval for reporting individual cases or case reports.

Informed Consent

Written informed consent was obtained from the patient(s) for their anonymized information to be published in this article.

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