

# Bilateral acute blindness revealing a postoperative PRES syndrome after nephrectomy: A case report

Manal Ibrahim<sup>1</sup>; Mohammed Mrabti<sup>2\*</sup>; Mohammed Tetou<sup>2</sup>; Younes Boukhli<sup>2</sup>; Abdessamad El Bahri<sup>2</sup>; Mohammed Alami<sup>2</sup>; Ahmed Ameer<sup>2</sup>

<sup>1</sup>Department of Radiology, Mohammed V Military Hospital, Mohammed V University, Rabat, Morocco.

<sup>2</sup>Department of Urology, Mohammed V Military Hospital, Mohammed V University, Rabat, Morocco.

**\*Corresponding author: Mohammed Mrabti,**

Department of Urology, Mohammed V Military Teaching Hospital, Faculty of Medicine and Pharmacy, Mohammed V University in Rabat, Rabat, Morocco.

Email: dr.mohammedmrabti@gmail.com

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## Introduction

Posterior Reversible Encephalopathy Syndrome (PRES) is a rare neurological condition, both clinical and radiological, characterized by reversible brain abnormalities, primarily vasogenic edema involving the posterior regions of the brain. It typically presents with headaches, visual disturbances, seizures, and altered mental status. First described by Hinchey et al. in 1996 [1], it occurs in diverse contexts such as acute hypertension, renal failure, immunosuppressive therapy, and certain postoperative situations.

The underlying pathophysiology of PRES is related to impaired cerebral autoregulation and disruption of the blood-brain barrier, leading to vasogenic edema [2]. While extensively documented in obstetric and oncological settings, its occurrence in non-neurological, especially urological, surgery remains exceptional.

We report here the case of transient acute bilateral blindness in a patient who underwent nephrectomy for complicated xanthogranulomatous pyelonephritis, with postoperative brain MRI confirming PRES.

## Case report

A 54-year-old woman (H.B.) with a 12-year history of insulin-dependent diabetes was followed for longstanding right renal lithiasis disease, recently complicated by pyonephrosis. Her condition worsened with recurrent fever and impaired general health. Abdominal imaging revealed parenchymal destruction of the right kidney consistent with xanthogranulomatous pyelonephritis.

Given the irreversible renal damage and lack of response to medical therapy, a right nephrectomy via lumbotomy was performed. The surgery was uneventful. The patient received two units of packed red blood cells intraoperatively, followed by another unit postoperatively for moderate anemia correction.

On postoperative day 2, she suddenly developed acute bilateral blindness without other neurological symptoms. Blood pressure was moderately elevated (150/95 mmHg).

Emergency brain CT revealed no abnormalities. Ophthalmological examination, including funduscopy and visual fields, was unremarkable. Same-day brain MRI showed bilateral occipital FLAIR hyperintensities without diffusion restriction, typical of PRES (Figure 1).

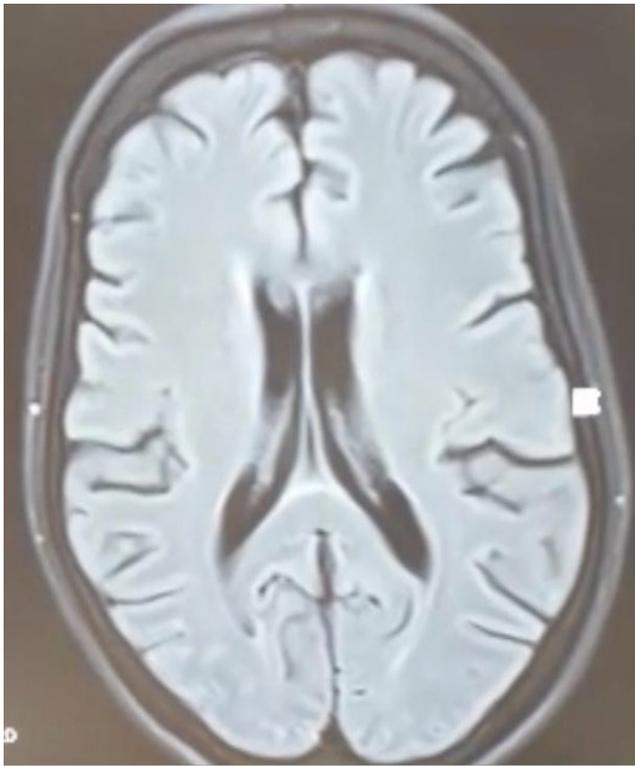
Management was conservative, with strict glycemic and blood pressure control. The course was favorable, with progressive visual recovery starting on day 4 and complete resolution by day 6 (ad integrum).

## Discussion

Our case represents the first report in the literature of PRES syndrome occurring after urological surgery.

PRES is increasingly recognized through brain MRI, yet often overlooked in postoperative contexts outside neurology and obstetrics [1]. This observation illustrates an atypical but documented form of PRES, presenting after complex urological surgery with acute isolated cortical blindness.

Two main pathophysiological mechanisms have been proposed [2]:

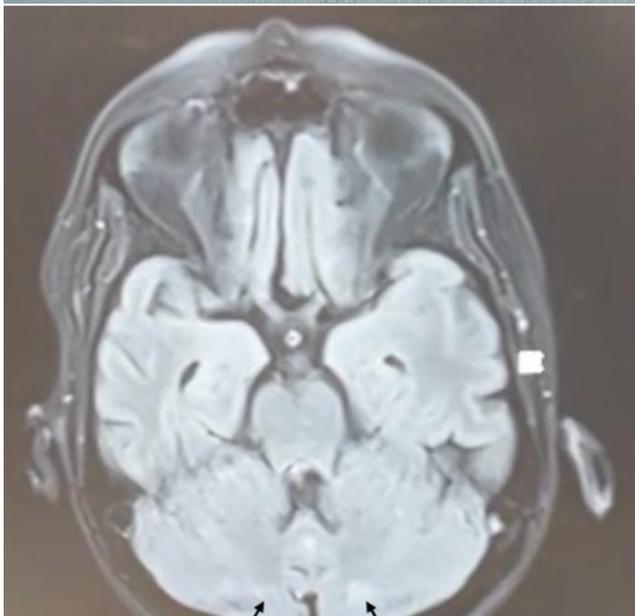


**Résultats:**

- Anomalies de signal cortico sous corticale occipital bilatérale symétrique en hypersignal T2 FLAIRE et Diffusion avec baisse de l'ADC.
- Respect de la convexité cérébrale.
- Respect du signal et de la morphologie du système ventriculaire.
- Structures médianes en place.
- Absence de lésion osseuse.

**Conclusion :**

↓ Aspect IRM en faveur d'une encéphalopathie postérieure réversible : PRES syndrome.



**Figure 1:** Symmetrical bilateral occipital cortico-subcortical signal abnormality.

1. Cerebral hyperperfusion due to autoregulatory dysfunction, commonly triggered by acute hypertension.
2. Endothelial dysfunction, favored by metabolic diseases (diabetes, renal failure), infections, or transfusions.

In this case, multiple contributing factors were identified: long-standing diabetes, chronic renal impairment from prolonged renal destruction, multiple blood transfusions [3,4], and postoperative systemic inflammation promoting cytokine release.

Bilateral cortical blindness is a rare presentation of PRES, reported in about 40% of cases [5,6]. Only MRI allows a definitive diagnosis, showing occipital FLAIR hyperintensities.

Similar cases have been reported following orthopedic surgery [7], cesarean section [8], tumor resection [9], and massive transfusions [3]. All highlight the importance of early diagnosis and conservative management.

To our knowledge, this is the first reported case of PRES following urological surgery for xanthogranulomatous pyelonephritis. Early recognition and multidisciplinary management are essential to avoid misdiagnosis.

Recent literature also implicates surgical stress-induced systemic inflammation, with cytokine release (TNF- $\alpha$ , IL-6) altering blood-brain barrier permeability, potentially leading to PRES even without severe hypertension [10]. Transfusion-related immune and vascular effects must also be considered, as PRES has been documented after massive transfusions in postoperative hemorrhagic contexts [11].

The preferential occipital involvement remains unexplained but may relate to reduced sympathetic innervation of posterior cerebral arteries, rendering them more vulnerable to hyperperfusion and endothelial dysfunction [12].

Differential diagnoses include ischemic stroke, metabolic encephalopathy, focal seizures, optic neuritis, and cortical degenerative disorders. However, the rapid recovery and typical MRI features support PRES. The swift visual recovery in this case reinforces its reversible nature when diagnosed early [13].

### Conclusion

PRES should be suspected in the postoperative setting in any case of acute unexplained bilateral blindness, particularly in high-risk patients (diabetes, renal failure, transfusions). This case emphasizes the crucial role of early MRI-based diagnosis and tailored conservative management, ensuring excellent prognosis.

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