Posterior reversible encephalopathy syndrome (PRES) and systemic lupus erythematosus: report of two cases

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ABSTRACT

The posterior reversible encephalopathy syndrome (PRES) is a novel entity clinically manifested by headache, changes of sensorium, seizures, and visual loss. PRES pathogenesis has not been fully clarified. The entity can be associated to a variety of clinical conditions, mainly hypertension, renal insufficiency and immunosuppressive therapy. A possible link of autoimmune disorders with PRES has been recently hypothesized. We herein describe two cases of systemic lupus erythematosus whereby PRES was triggered by different factors.

Keywords: systemic lupus erythematosus, neuropsychiatric manifestations, posterior encephalopathy syndrome.

A posterior leukoencephalopathy characterized by transient headache, changes of mental status, seizures, and visual loss was originally described in 1996; white-matter vasogenic edema of occipital, and parietal lobes was a remarkable feature of those 15 patients then reported.[1] In 2000, Casey et al.[2] proposed the term posterior reversible encephalopathy syndrome (PRES) for this entity.

The pathogenesis of PRES is not yet fully understood. Auto-regulatory failure with resultant vasodilatation, as seen in hypertensive encephalopathy, is often cited as the underlying mechanism. Vasospasm with ischemic abnormalities are also postulated.[3] On magnetic resonance imaging (MRI), parieto-occipital subcortical T2 hyperintensity without enhancement is typical. Other structures such as the brain stem, cerebellum, and frontal and temporal lobes may also be involved. Abnormalities of the subcortical white-matter are the rule, but the cortex and the basal ganglia are eventually affected.[4]

PRES could result from a number of associated morbidities, including autoimmune disorders. To date, the issue has been rarely addressed in the Rheumatology scenario. We herein describe two cases of PRES in patients with systemic lupus erythematosus (SLE).

Case 1: A 30-year-old Caucasian woman diagnosed with SLE at the age 19 was on methylprednisolone (MP) pulse therapy 1 g/daily due to an anti-DNA positive nephritis. On day four of the treatment the patient suddenly presented severe headache and right hemianopsia. Mental status was normal. At that time, her blood pressure was 160/80 mmHg and her creatinine was 1.31 mg/dL (six months before the creatinine was 0.72 mg/dL). Sodium and potassium levels were normal. A cranial computed tomography (CT) was unremarkable. A brain MRI with T2 and fluid-attenuated inversion recovery sequences (MRI-T2/FLAIR) showed a subcortical T2 hyperintensity without enhancement on both

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occipital lobes (Figure 1). MP pulse therapy was interrupted, and analgesics were prescribed. The vision abnormalities improved after 72 hours and resolved within five days. After ten days, the patient was asymptomatic. Three weeks later a new brain MRI-T2/FLAIR showed no subcortical or cortical T2 hyperintensity in the occipital region.

Case 2: A 39-year old Caucasian woman with SLE diagnosed two years before was on low-dose prednisone and therapy with azathioprine due to thrombocytopenia. Owing to a recent episode of severe hemolytic anemia (hemoglobin 1.7 g/L), the patient was submitted to MP pulse therapy and intravenous immunoglobulin infusion. Subsequently, a bacterial pneumonitis and a catheter infection required intensive care and a long in-patient stay. After recovery, the patient was discharged from Hospital in a good general state. A week later, the patient returned to Hospital due to an acute cholangitis, which demanded endoscopic treatment followed by cholecystectomy. Subsequently, the patient evolved with multiple intra-hepatic abscesses. After two weeks in the infirmary receiving antibiotics, the patient, who had concomitant autoimmune hemolysis, showed elevation of blood pressure, headache, seizure, and mental confusion. A cranial CT was normal, as well as the cerebrospinal fluid exam. The cerebral MRI-T2/FLAIR revealed typical features of PRES in the subcortex of occipital and parietal lobes (Figure 2). Neurological improvement was obtained by adjusting blood pressure levels. A brain MRI carried out two weeks later showed impressive regression of findings attributable to PRES (Figure 3). After one month, the patient died due to a refractory sepsis.

PRES is an enigmatic disorder potentially triggered by a variety of conditions, most commonly hypertensive crisis, renal insufficiency, and immunosuppressive therapy.[5] Other possible etiologies include eclampsia,[6] transplantation,[7] and systemic infections.[8] A 58-year-old woman receiving gemcitabine and cisplatin chemotherapy for a gallbladder tumor developed PRES, according to a 2009 report.[9] Our group recently described a case of a 74-year-old woman with pancreatic tumor who also developed PRES after gemcitabine therapy.[10] Of

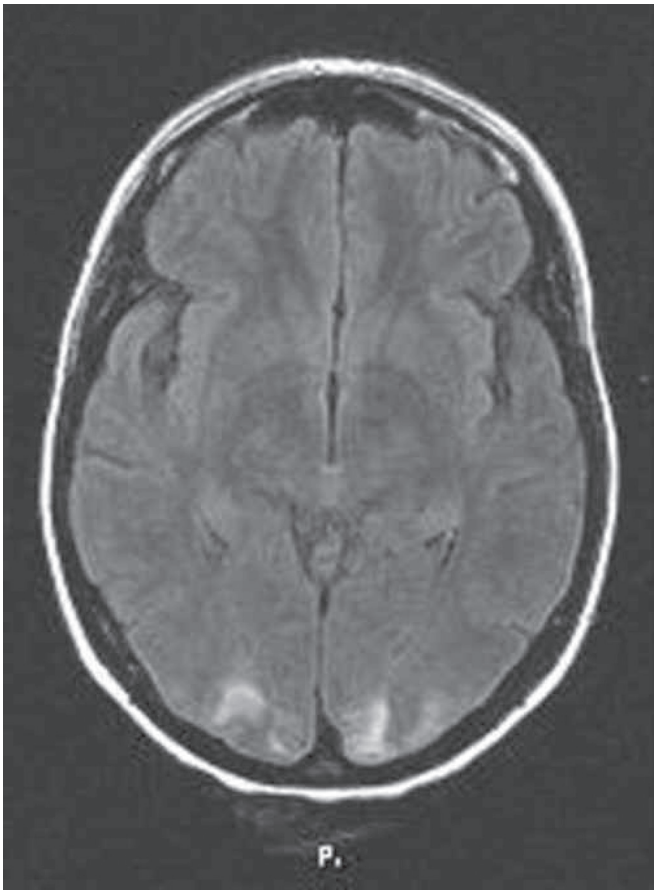

Figure 1
Brain MRI-T2/FLAIR showing subcortical T2 hyperintensity without enhancement in occipital lobes.

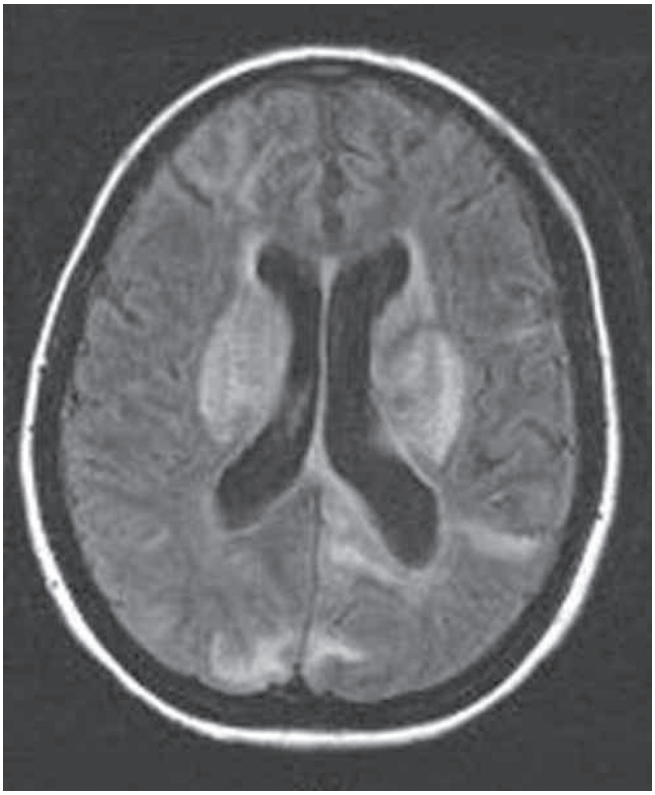

Figure 2
Brain MRI-T2/FLAIR showing T2 subcortical hyperintensity without enhancement in parieto-occipital lobes before treatment.

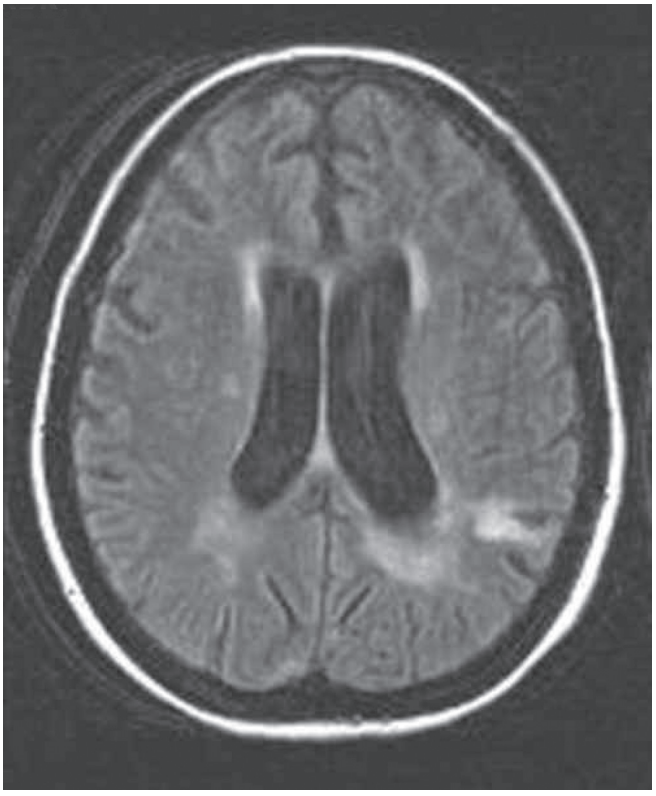

Figure 3
Brain MRI-T2/FLAIR after two weeks of treatment.

interest, in a series of 120 cases of PRES, autoimmune disorders were identified in 45% of the patients.[11]

The first description of PRES in SLE patients is as recent as 2006. The pathogenesis of PRES in patients with SLE is probably multifactorial: hypertension, nephritis, disease activity and immunosuppressive drugs have all been implicated. The distinctive role of immune mechanisms in the physiopathology of PRES can be clouded by these concurrent conditions.[12]

In the first case herein reported, PRES was diagnosed in a patient with active lupus nephritis undergoing MP pulse therapy. Both renal disease and MP infusion could be triggered PRES in this case, but the rapid neurological improvement after withdrawal of MP favored the last hypothesis. In the second patient, PRES appeared to be associated to active disease (hemolysis), infection (hepatic abscesses), and a hypertensive crisis, probably the latter being more relevant given the clinical response to anti-hypertensive drugs. Of interest, visual changes were present only in the first case. In the second case, differently from the first, parietal lesions were seen in addition to occipital changes.

Looking at the recent literature, PRES manifested by seizures and loss of vision was reported in a case of SLE in 2007.[13] In 2008, four new cases of PRES were described in adults with SLE.[14] A woman with lupus nephritis and PRES developed intraparenchymal and subarachnoid hemorrhage, according to a 2010 report.[15] Recently, Balint syndrome (a disorder of inaccurate visually guided saccades, optic ataxia, and simultanagnosia) presented as PRES in a SLE patient.[16] Of note, two reports accounted for the occurrence of PRES in juvenile SLE.[17,18]

Varaprasad et al.[19] reviewed the features of 13 patients with SLE and PRES from 2006–2010: all had active disease and hypertension. Six patients had PRES as part of their initial presentation of SLE, and nine had nephritis. Four patients were on cyclophosphamide therapy when they developed PRES.[19] Of interest, an association of PRES with lupus activity had already been postulated.[11,20]

Even though the classical neurolupus includes seizures and psychosis, a number of other features such as myelopathy, optic neuropathy, meningitis, cognitive dysfunction, and antiphospholipid-related cerebral infarction could been seen in SLE.[21] PRES has been claimed as a particular form of neurological manifestation of SLE with characteristic MRI findings and a usual good outcome. Antihypertensive, antiepileptic, and supportive care are the mainstay of treatment.[12,22]

In summary, we herein report the first two cases of PRES in Brazilian patients with SLE. MP pulse therapy, disease activity, hypertension, and infection were possible triggers. In practical terms, patients with SLE presenting headache, altered sensorium, seizures and visual loss should be suspected of PRES. Whether the intrinsic mechanisms leading to PRES in SLE patients are associated to comorbidities or to the disease itself, it should be solved in the future.

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