Systemic lupus erythematosus presenting with eye squinting: A rare association

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ABSTRACT

Systemic lupus erythematosus (SLE) is an auto-immune systemic disorder with protean manifestations. It can involve any of the organs and systems of the body. Involvement of the nervous system and eye is not uncommon and is multifactorial. We herein present a case of an adolescent girl with SLE whose first presentation was with acute renal failure. Her renal functions improved and she made full recovery. Three months later, she presented with eye symptoms and was found to have right abducens nerve palsy and bilateral papilledema. Her intracranial pressure was raised. Drainage of cerebrospinal fluid during lumber tap improved her eye signs and symptoms. Nervous system involvement and its pathogenesis are discussed with reference to this case and the published literature.

Key words: Cerebritis, diplopia, lupus erythematosus, papilledema, squint

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INTRODUCTION

Although the term "lupus erythematosus" was introduced by the 19th century researchers to describe the cutaneous manifestations of the disease, it took almost a century to realize that the disease is systemic and spares no organ, and that it is caused by an aberrant immune response against self-antigens.[1] The prevalence ranges from 20 to 150 cases per 100,000, with the highest prevalence reported in South America, and appears to be increasing steadily as the disease is recognized more readily and the survival is increasing. In the USA, people of Hispanic, African or Asian ancestry, as compared with those of other ethnic or racial groups, tend to have an increased prevalence of systemic lupus erythematosus (SLE) and greater involvement of the key organs. The reported 10-year survival rate is about 70%.[2] The clinicopathological studies from around the world, although showing variable incidence and prevalence rates among different populations,[3-5] agree that the majority of patients with SLE are women of childbearing age; the female: Male ratio ranges between 6 and 14:1.[6-9]

The pathogenesis of SLE is still not completely known. Immune system aberrations, as well as hormonal, environmental and hereditary factors, contribute to the expression of the organ damage. Immune complexes, auto-reactive lymphocytes, auto-antibodies, dendritic cells and local factors are all involved in the manifestation of SLE.[10-13] Multiple mechanisms lead to a loss of self-tolerance and the emergence of auto-reactive clones and the production of auto-antibodies. As the immune response to self-antigens widens, the auto-antibody repertoire is enriched. These antibodies attack different tissues and organs. The diverse clinical manifestations of SLE present a challenge to the clinician.[14,15] The nervous system is also frequently involved in SLE, and the manifestations of nervous system involvement are protean. The pathogenesis of SLE neuritis or cerebritis is likely multifactorial.[11-13]

We herein report a case of an adolescent girl with known SLE who presented with eye signs and symptoms and was found to have raised intracranial pressure (ICP). Drainage of cerebrospinal fluid (CSF) during lumber tap improved her symptoms.

CASE REPORT

A 14-year-old female presented with complaints of diplopia, squint and severe generalized headache. The patient was diagnosed with SLE 3 months ago when she presented with acute renal failure and was found to have class IV lupus nephritis (LN) on renal biopsy and had anemia, butterfly rash and positive antinuclear antibody (ANA) and anti-double stranded DNA (anti-dsDNA). She gave a history of intermittent large joint pains for the last 1 year. The remainder of the medical and surgical history was unremarkable.

She received methyl prednisolone 1 g for 3 days followed by two cycles of monthly cyclophosphamide along with oral steroids, with complete recovery of renal functions. All other SLE-related symptoms also improved. Her course was complicated by bone marrow suppression and she was then treated with broad-spectrum antibiotics and antifungal agents. She also developed a large grade 4 decubitus ulcer on her sacral area that required debridement. She was discharged home on maintenance treatment of mycophenolate mofetil (MMF) on an outpatient basis.

Her current admission 3 months later was for acute-onset diplopia and squint [Figure 1]. She also complained of headache and subtle cognitive impairment, but no motor deficits were observed. No seizures were reported. Regarding extraocular movement, there was evidence of right abducens nerve involvement with restricted lateral movement in the right eye [Figure 2]. On eye examination, the visual acuity was normal. No findings of glaucoma and cataract were present. Cornea, lens, vitreous humour and macula were all clear and normal in both eyes. The right eye had positive squinting and was deviated inwards. Light brightness and red perception were sharper in the left eye compared with the right eye. On fundoscopy, she had bilateral papilledema [Figure 3]. Magnetic resonance arteriography/venography/imaging (MRA/MRV/MRI) showed abnormal signal intensity areas in the bilateral periventricular region, which provided evidence of vascular compromise and ischemic infarction.

The patient was given three more doses of methyl prednisolone suspecting lupus cerebritis, but her papilledema and squint did not improve.

One of the key findings during her workup was a raised ICP. It was raised significantly to 420 mmH_2O (normal: 50-180 mmH_2O), raising the suspicion of papilledema being secondary to raised ICP. The lumber puncture for diagnostic purpose relieved headache and improved her diplopia. The CSF examination showed normal glucose and protein content. Few neutrophils were, however, seen.

Azathioprine was stopped and the patient was discharged home on MMF and prednisolone and advised regular follow-up. At 2 months of follow-up, her squint and diplopia improved [Figure 4], headache disappeared and visual functions normalized.

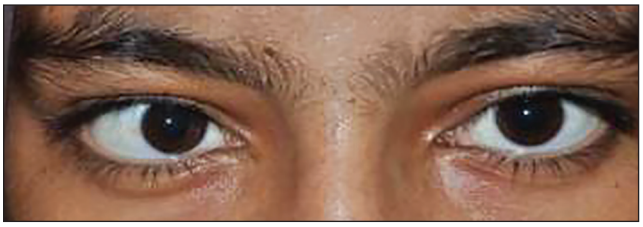

Figure 1: Right eye esotropia evident on primary position of the gaze

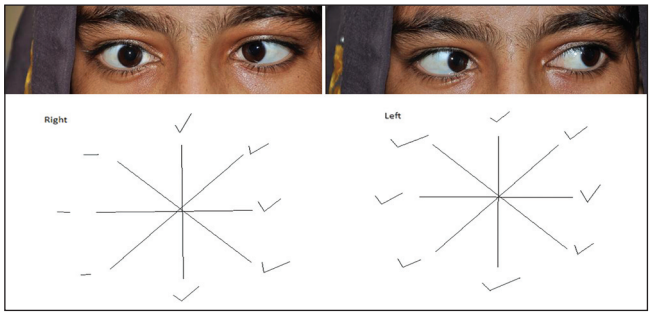

Figure 2: Right lateral rectus muscle palsy on extraocular movement testing of the patient

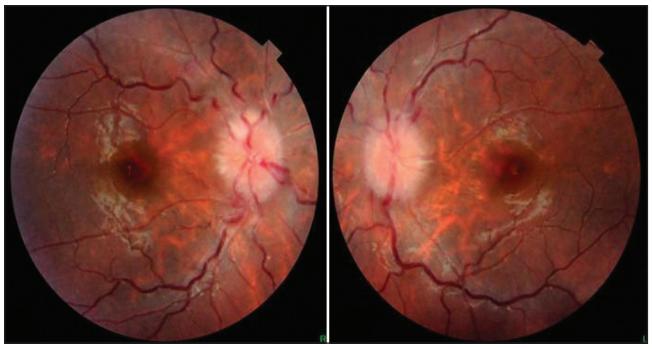

Figure 3: Bilateral papilledema observed on fundoscopy of the patient

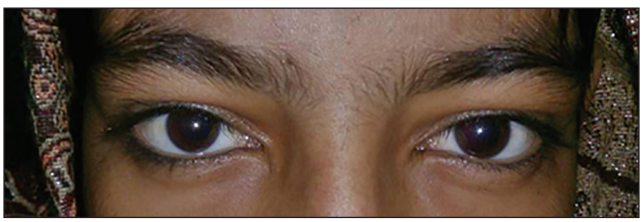

Figure 4: The primary position is orthophoric on 2 months of follow-up with no squint visible in the right eye

DISCUSSION

The initial clinical presentation, course and outcome of SLE are highly variable.[1-4] Typically, the disease course in most patients is characterized by periods of flare and remission. The duration and frequency of these flares, their severity and precise clinical picture differ significantly among patients. This makes SLE a challenging disease to diagnose and treat.[5-8]

In the most severe forms of SLE, the kidney and the central nervous system are affected.[9-15] According to the criteria set up by the American College of Rheumatology (ACR) in 1999, neuropsychiatric SLE (NPSLE) can be attributed to the disease (primary NPSLE) or be a complication of the disease or its treatment (secondary NPSLE) or be completely unrelated to SLE representing an accidentally co-occurring disorder.[13]

Current knowledge holds the ischemia as the main cause of central nervous system (CNS) manifestations in SLE. The mechanisms leading to ischemia are diverse and involve abnormalities of coagulation; the development of focal atherosclerotic plaques in large arteries, thickening of the vessel walls due to different causes and, in some cases, inflammatory processes. In a few patients, CNS syndromes are due to intracranial and intraspinal hemorrhages, but the factors that lead to the rupture of vessel walls have not yet been explored sufficiently. Lesions in the cerebral white matter are in general ischemic in origin and, in a few cases, they are due to reversible edema. Antibody-mediated neuronal dysfunction is still another possible precipitating factor. The white matter changes in the optic nerves and spinal cord are poorly understood.[13]

To the best of our knowledge, SLE involving the abducens nerve has not been reported previously. We have thoroughly worked up for all the possible causes of raised ICP and abducens nerve palsy. We do not have any plausible explanation for this patient's nervous system complications. Whether lupus cerebritis directly affects the abducens nerve remains undefined.[11-13] The raised ICP leading to isolated abducens nerve palsy is a possible explanation; however, there is no direct evidence supporting this postulated pathogenesis. In our case, even treatment with immunosuppression did not show any benefit. The dramatic improvement on drainage of the CSF might suggest that raised ICP was responsible for the symptoms of this patient.

To conclude, we have reported a case of an adolescent girl with SLE who developed raised ICP and abducens nerve palsy. Whether lupus activity or raised ICP can cause isolated abducens nerve palsy remains unknown.

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