

Case Report

A Rare Case of CNS Vasculitis Presenting as Cerebral Ischaemia in Systemic Lupus Erythematosus

Sabarish Mahalingam¹, P. Z. Wadia², Mithram Wadia³¹Resident Doctor, ²Additional Professor, ³Intern Doctor
Department of Internal Medicine, Government Medical College, Surat.

Corresponding Author: Sabarish Mahalingam

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ABSTRACT

Systemic lupus erythematosus is an autoimmune disease characterized by multisystemic involvement which may affect every organ in the body without any specificity. Neuropsychiatric Systemic Lupus involvement [NPSLE] is a complex neurological disorder characterized by neuropsychological dysfunction may range from mild diffuse to acute life threatening events. In the pathology of Neuropsychiatric lupus, vasculopathy due to infarcts and hemorrhages are often observed, whereas vasculitis is rare. Neuropsychiatric symptoms often occur in the first year, but are rarely the presenting symptoms of the disease. We reported a case of Neuropsychiatric Lupus in a twenty years aged female presenting with convulsion and blurring of vision which is primarily due to vasculitis.

Keywords: Systemic lupus erythematosus, Neuropsychiatric lupus, CNS vasculitis.

INTRODUCTION

An autoimmune disorder is a disorder in which immune system reacts against host antigens. SLE results in non-inflammatory vasculitis of small arterioles and capillaries and its prevalence is reported to be between 11% and 36%. Cutaneous lesion is more frequent, representing small vessel involvement. Cerebral vasculitis in SLE manifesting as NPSLE is very rare and its incidence did not reached 10%. [1] Neuropsychiatric lupus (NPL) is the term for the presenting manifestations of Psychiatric, Central nervous system (CNS) or Peripheral nervous system abnormality arising out of SLE. The Neuropsychiatric SLE occurs in 14% to 75% of patients with SLE and is associated with high mortality and morbidity rate of 7%-40%. [2] The etiology of NPL is likely to be multifactorial, and includes microangiopathy, autoantibody production

and intrathecal production of pro-inflammatory cytokines. [3]

CASE REPORT

A twenty years old female born of non consanguineous marriage, second child of her parents presented with one episode of generalized tonic clonic convulsion at home. Patient also had complaining of blurring of vision for past 20 days. Oral ulcer, generalized weakness, difficulty in swallowing, increased hair fall and skin lesion for past 5 days.

On examination patient was drowsy not obeying verbal commands but vitally stable. Malar rash was present with typical butterfly pattern sparing the nasolabial folds. Rash was also present on her forehead and anterior aspects of both legs. Rash was erythematous and scaly in nature. On neurological examination patient had hemiplegia on right side. Other systemic

examination was clinically Normal. Patient was investigated further [Table No.1]. On Fundus examination-bilateral cherry red spot seen suggestive of Central Retinal Artery Occlusion [CRAO]. MRI Brain was suggestive of multiple recent ischaemic area in bilateral periventricular white matter, ganglio-capsular region.

Rheumatologist and retinal surgeon opinion were obtained. We treated with Methyl Prednisolone Intravenously, Cyclophosphamide Intravenously, Injection Enoxaparin Subcutaneously along with Hydrxychloroquine and Aspirin orally. Patient was deteriorated and was supported with mechanical ventilation. MRI Brain with ANGIO was done which showed

multiple recent ischaemic areas in bilateral periventricular white matter, gangliocapsular region and both cerebellum, Severe narrowing of the Cavernous and Supraclinoid segment of Right Internal Carotid Artery [ICA]. Moderate narrowing of M1 and M2 segment of Left Middle cerebral artery [MCA]. Mild narrowing of P2 and P3 segment of both Posterior cerebral artery [Image 1 and 2]. The Diagnosis of Neuropsychiatric lupus due to cerebral vasculitis was made. As per Rheumatologist opinion 5 cycles of plasmapheresis was given on alternative days. Her general condition started improving.

Table No.1: Investigations

Haemoglobin	10 gm%	USG Abdomen	Normal
WBC count	4500 /cmm	CXR	Normal
Platelet	2,25,000 /cmm	2D Echo	Normal
Random blood sugar	156 mg/dl	CSF Analysis	Normal
Creatinine	0.9 mg/dl	ANA Profile	
Sodium	138 mmol/l	RNP/sm	Positive
Pottasium	4.4 mmol/l	Sm	Positive
Calcium	8.5 mmol/l	Nucleosome	Positive
Total Protein	6 gm/dl	Ribosomal P Protein	Positive
Albumin	4.1 gm/dl	Anti Cardiolipin	Negative
Coombs test	Negative	Lupus anticoagulant	Negative
Peripheral Smear	Normal	Anti nuclear Cytoplasmic antibody	Negative

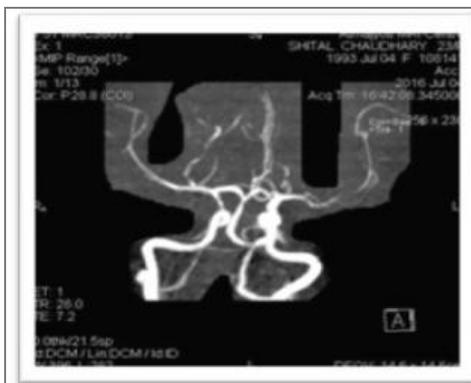


Image 1: MRI Angio brain Showing Severe Narrowing of Right ICA and Left MCA

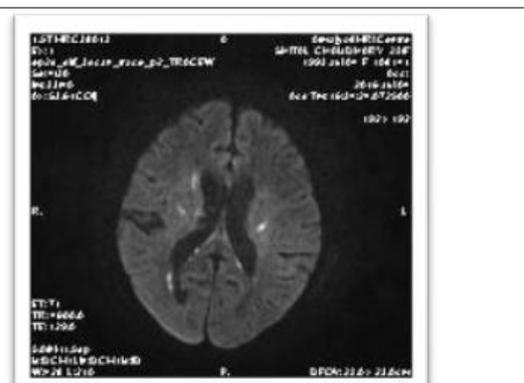


Image 2: MRI Angio brain showing multiple ischaemia in Bilateral Periventricular White matter and Capsulo Ganglionic region

DISCUSSION

This patient had cerebral vasculitis as primary manifestation of NPSLE based on the history of convulsion, sudden onset of blurring of vision, positive ANA profile and MRI Angio of Brain.

In 1999, the American college of Rheumatology [ACR] Nomenclature Committee has identified 19 different NPL conditions those are part of lupus complex of which 12 are CNS-related and 7 are PNS-related. As per the definition,

Cerebrovascular Disease is one among the 19 different NPL condition. [4] In NPSLE, cognitive impairment is one of the most common manifestation (15%-66%). [5]

It is presumed that the vascular damage to the CNS in NPSLE is due to anti-phospholipid syndrome-related vasculopathy or penetration of other autoantibodies through a damaged blood brain barrier (BBB), immune complex and complement activation, cardiac emboli caused by Libman-Zachs endocarditis, and other valvular abnormalities, vasculitis, or accelerated atherosclerosis. [6,7] Patients can present with either focal symptoms, consisting of stroke and/or transient ischemic attacks, or with central non focal symptoms of cognitive dysfunction, acute confusional state, seizures, or psychosis.

Vasculopathy due to thrombotic events in the presence of aPL is a well known cause of ischemic cerebral disease. [8] While only a minority of NPSLE patients has evidence of frank vasculitis on imaging or histopathology and is usually limited to small vessel alone. Small vessel thrombotic-vasculopathy has been the predominant histopathological abnormality in brains of NPSLE patients at autopsy. The retinopathy may present as cotton wool spots (cytoid bodies) is also due to vasculitis. Medium and large vessel vasculitis in SLE is distinctly uncommon. [9]

Neuroimaging:

Imaging tools may aid in the diagnosis of CNS lupus. The MRI with angio has been shown to be superior to CT scanning in detecting lesions in CNS lupus. Cerebral white matter lesion is the most common findings [60%-86% of patients]. Small focal areas of hyperintensity are seen in sub cortical and peri ventricular white matter at FLAIR and T2 weighted imaging. Cerebral Atrophy is seen in 43% of patients. Intra cranial haemorrhage may manifest as parenchymal or subarachnoid haemorrhage, sub dural haematoma or haemorrhagic infarct. MR Angiography shows reduced Diameter or occlusion of intracranial carotid arteries. [2,10] Other

imaging techniques include perfusion and diffusion weighted imaging, MR spectroscopy, Single Photon Emission Tomography [SPECT] and Positron emission tomography [PET].

Management

As a life threatening condition, NPL needs aggressive immunosuppression with high-dose glucocorticoids and cyclophosphamide, but vascular occlusive CNS insults are steroid-nonresponsive. Different treatment regimens include nonsteroidal anti-inflammatory drugs, anticoagulation, and immunosuppressives such as cyclophosphamide, azathioprine, mycophenolate mofetil, and methotrexate. For refractory NPSLE, intravenous immunoglobulin (IVIG), Plasmapheresis, and Rituximab have been used. [11] Seizures require anticonvulsants. Antipsychotic drugs are instituted in behavioral disorders and psychosis. Mild cognitive disorder requires a low to moderate dose of steroids.

Intravenous immunoglobulin (IVIG), Plasmapheresis, and Rituximab have been used in central nervous system manifestations unresponsive to glucocorticoid therapy and/or cytotoxic therapy. IVIG has been given as 2 gm/kg with divided doses over two to five days to treat thrombocytopenia, renal disease, central nervous system manifestations, and pregnancy loss associated with the presence of antiphospholipid antibodies. Plasmapheresis, administered four to six sessions over one to two weeks, may be another option for the treatment of NPSLE manifestations. The rationale of plasma exchange is based on the rapid removal of circulating pathogenic autoantibodies, immunoglobulins, immune complexes, and toxins. Experience has shown that plasma exchange in patients' refractory to conventional therapy induced complete remission. Rituximab, chimeric anti-CD20 monoclonal antibodies that deplete CD20+ B cell, has shown to be efficacious in treatment of refractory SLE in case reports including those with transverse myelitis and CNS vasculitis. [12,13]

Several new biological agents are being tested including Belimumab, a human monoclonal antibody that targets B lymphocyte stimulator. Gene therapy and stem cell transplantation are also being investigated as novel therapies for SLE. [14]

CONCLUSION

Cerebral vasculitis is an infrequent complication in SLE which is associated with high morbidity and in some cases can be life threatening. The present case was unusual as there was an odd distribution of lesion and it involved blood vessel of variable size, mainly posterior cerebral circulation. After managing the life-threatening condition, maintenance therapy should be done with oral steroid and immunosuppressants with careful attention to their side effects. Early assessment and a high index of suspicion to recognize such complications are essentials in managing these patients.

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