



ORIGINAL RESEARCH PAPER

Neurology

CASE SERIES ON VANISHING SPLENIAL LESIONS

KEY WORDS: Splenium, Corpus Callosum, RESLES.

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ABSTRACT

Reversible lesions are often found in the splenium of the corpus callosum in patients with a broad spectrum of diseases and conditions and is called as reversible splenial lesion syndrome (RESLES). We have attempted to describe the clinico-radiological features and the clinical presentation of this syndrome by retrospectively certain patients that are included in the study. Here we are going to report 5 patients with RESLES having different clinical profile.

INTRODUCTION:

Acquired lesions of the corpus callosum are present in a variety of disorders such as multiple sclerosis, ischemia, diffuse axonal injury, acute disseminated encephalomyelitis, chronic Alcoholism, tumors, trauma. Magnetic Resonance Imaging (MRI) have provided evidence of a reversible isolated lesion with transiently reduced diffusion in the splenium of the corpus callosum in patients with a wide spectrum of diseases and conditions (2, 4). This have led to a specific clinical and radiological entity which is referred to as reversible splenial lesion syndrome (RESLES). RESLES has been reported secondary to several disorders like acute/subacute encephalitis/encephalopathy, antiepileptic drug toxicity or withdrawal, high altitude cerebral edema, hyponatremia or hypoglycemia. RESLES also include specific diseases such as Marchiafava-Bignami disease, mild encephalitis with a reversible splenial lesion (MERS).

Case Series:

Here we reviewed the clinical and neuroimaging data of RESLES patients who were presented with symptoms of neurological disorders such as seizure, disturbance of consciousness, delirium and cognitive impairment in the form of memory disturbance. Here we discuss the clinical course of 5 patients who had lesions in the splenium of corpus callosum, evidenced through MRI, which disappeared during follow up.

Case Study And Discussion:

S. NO	Patient No, Age, Sex	Clinical presentation	Diagnosis	CSF findings	EEG
1	21/F	Seizures	PRES*	-	Normal
2	24/F	Acute confusional state	PRES*	-	Normal
3	30/M	Fever with altered sensorium	Viral Encephalitis	Increased proteins	Normal
4	26/F	Acute confusional state	ADEM*	Increased proteins	Normal
5	40/F	Headache with cognitive impairment	Multiple sclerosis	OCB - positive	normal

*PRES: Posterior Reversible Encephalopathy Syndrome, ADEM: Acute Disseminated Encephalomyelitis.

Case1: A 21 year old female, presented with generalized tonic clonic seizures and with elevated blood pressure (150/100 mmHg), in the first postpartum day. She was treated

with antiepileptic and antihypertensive. She recovered without any neurological deficit by the second day. MRI brain taken on the third post-partum day shows lesion in the splenium of corpus callosum, along with periventricular lesions. Follow-up MRI taken after 3 weeks, showed complete disappearance of the lesion.

Case 2: A 24 year old female presented with an acute confusional state and elevated blood pressure (160/110), immediately following a caesarian section. She was treated with antihypertensive and antibiotics. Her basic blood investigations like serum electrolytes and renal function tests were within normal limits. She recovered without any neurological deficit by the third day. The MRI taken on the third day shows lesion in the splenium of corpus callosum. Follow-up MRI taken after 3 weeks, showed complete disappearance of the lesion.

Case 3: A 30 year old male presented with fever for three days and altered sensorium followed by seizures, since the third day of fever. On examination, she was confused, irritable and febrile. No cranial nerve deficit and no focal neurological signs. Her blood investigation showed raised total count (15,800), thrombocytopenia (55,000). Her salmonella, malaria and dengue profiles were negative. Her C.S.F analysis shows raised protein (85mg/dL), globulin positive and nil cell count. Her MRI brain showed lesion in the splenium of corpus callosum. The MRI also showed T2 hyperintense lesions in the basal ganglia region. She was provisionally diagnosed as viral encephalitis and treated with Inj Acyclovir and meningeal dose of IV antibiotics for two weeks. She recovered completely without any neurological deficits over the period of 2 weeks. Follow-up MRI taken after 4 weeks, showed complete disappearance of the lesion.

Case 4: 19 years old female, presented with acute confusional state and history of one episode of seizure. On examination, she had spastic weakness (power 4) of all 4 limbs with truncal and appendicular ataxia and cerebellar dysarthria. She had a history of fever 2 weeks prior all this, which lasted for 2 days. Her blood routine examinations were within Normal limits. Her CSF analysis showed raised protein-88mg/dL, positive globulin and nil cells. Her MRI brain shows lesion in the splenium of corpus callosum She was provisionally diagnosed as acute disseminated encephalomyelitis and was treated with Inj. Methyl Prednisolone -1g I.V OD for 5 days, followed by oral prednisolone. She recovered completely without any neurological deficit over a period of four weeks. Follow-up MRI taken after 4weeks, showed complete disappearance of the lesion.

Case 5: 40 years old female presented with headache, and

memory disturbance with cognitive impairment, unsteadiness for 6 months duration. On examination she had left hemiparesis with impaired higher mental function and right cerebellar signs. She had two abortion and nulliparous. Her blood routine examinations were within Normal limits. Her MRI brain showed well defined irregular margin lesion in right frontotemporoparietal region extending across splenium of corpus callosum. Her CSF oligoclonal band was positive. Provisionally diagnosed as multiple sclerosis. Treated with intravenous methylprednisolone and follow up done with disease modifying agent- Dimethyl fumarate. She had recovery without any morbidity. Her follow-up MRI taken after 4 months showed complete resolution of corpus callosum region with right parieto-occipital gliosis.

MRI findings: The details are summarized in table: 2

S. NO	Age/s ex	Diagnosis	Callosal lesion	Shape	T2 WI*	T1 WI*	DWI*	Other lesions
1	21/F	PRES	Splenium	Extended	H	I	H	Periventricular
2	24/F	PRES	Splenium	Extended	H	I	H	Nil
3	30/M	Viral Encephalitis	Splenium	Extended	H	I	H	Basal ganglia
4	26/F	ADEM	Splenium	Ovoid	H	I	H	Nil
5	50/F	Multiple sclerosis	splenium	extended	H	I	H	Right parietal lobe

*H: High signal; I: iso-signal; DWI: Diffusion Weighted Imaging; T2WI: T2 weighted imaging; T1WI: T1 weighed imaging.

The first MRI was taken in almost all cases within the 3rd to 4th day of the onset of symptoms. These MRI findings indicated a consistent pattern of neuroimaging abnormalities which were characterized by circumscribed, oval or extended lesions, high Signal intensity on FLAIR, T2 weighted sequences and DWI with minimal or no signal reduction in T1 weighted sequences, primarily located in the central region in the splenium of corpus callosum. No cystic or necrotic lesion in the splenium of corpus callosum were identified. The cases 1 and 4 shows ovoid shaped lesion in the selenium of the corpus callosum. Cases 2, 3 and 5 showed extended pattern of lesion in the splenium. Case 3 also had T2 hyperintense lesions in bilateral basal ganglia. The follow-up MRI which were performed at 3rd to 4th week of the clinical course, indicated the complete disappearance or clear reduction in the lesion size and signal intensity.

Pathophysiological Mechanisms of RESLES

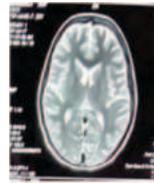
The potential mechanisms for transient diffusion restriction include intramyelinic edema, the breakdown of the blood brain barrier, reversible demyelination, arginine vasopressin release and inflammatory cell related cytotoxic edema. The specific affinity of viral antigens or induced antibodies to the splenial axonal receptors is responsible for the splenial involvement in viral encephalitis. It is also postulated that, the splenium has a specific vulnerability to excitotoxic injury in metabolic diseases. In spite of these theories, because of the heterogeneous nature of these diseases a common pathophysiological mechanism that explains the predilection of splenial involvement has not been suggested

CONCLUSION.

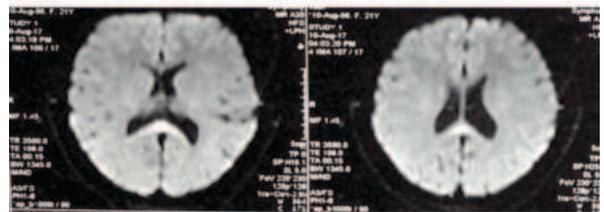
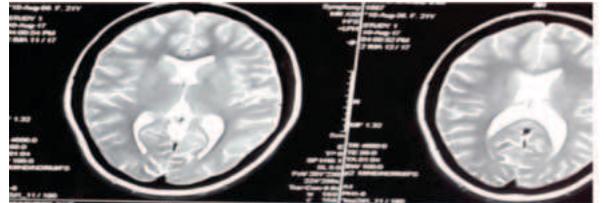
As we have seen in this series of five cases, RESLES had various etiological factors. There were two cases of PRES, one case of Viral Encephalitis and one case of ADEM, one case with multiple sclerosis. In all these cases the patients were diagnosed appropriately and the adequate treatment was

given. All of them recovered in due course of time without any residual neurological deficit. We may conclude that the presence of this finding may not have any predictive value in prognosis. The evidence also suggests that this entity is thus non-specific.

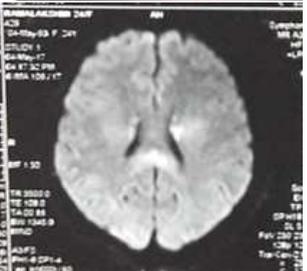
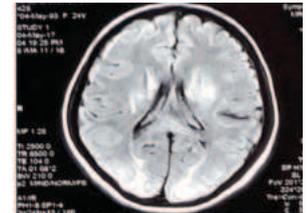
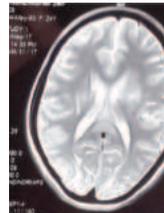
Case 1:



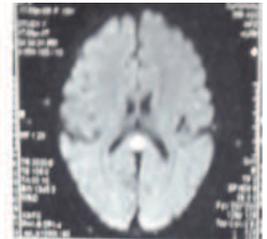
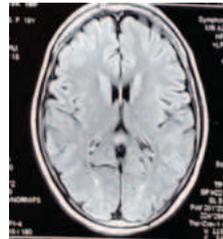
Case:2



Case:3



Case 4:



Case 5:



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