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Case report

A rare case of reversible splenial lesion in third trimester ☆

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ABSTRACT

A 38-year-old female presented with sensory, motor and sphincter deficit in her third trimester. MRI brain demonstrated a focal lesion in the splenium of the corpus callosum which restricted to diffusion. Her symptoms subsequently improved following delivery. Repeat Imaging showed near complete resolution of lesion. It is important to be aware of this rare entity to avoid unnecessary investigations and interventions.

Background

The presence of reversible corpus callosum lesions have been reported in a wide range of conditions. These are referred to as reversible splenial lesion syndrome (RESLES). Although rare, acquired corpus callosum lesions have been reported in context of postpartum preeclampsia. To our knowledge, RESLES occurring in the prepartum period has not yet been reported in the literature.

RESLES is a clinicoradiological syndrome characterized by typical MRI changes comprising of non-enhancing lesions in the splenium of the corpus callosum that dissipate overtime. The clinical presentation is variable and is dependent on the etiology of syndrome. It has been associated with severe infections, seizures, metabolic derangement and antiepileptic drug withdrawals [1].

We report a case of a healthy 38-year-old female who presented with sensory, motor and sphincter deficit in the third trimester. She clinically and radiologically improved following delivery.

Case presentation

A 38-year-old primigravida, right-handed female, presented with left lower limb weakness and sensory loss with diffi-

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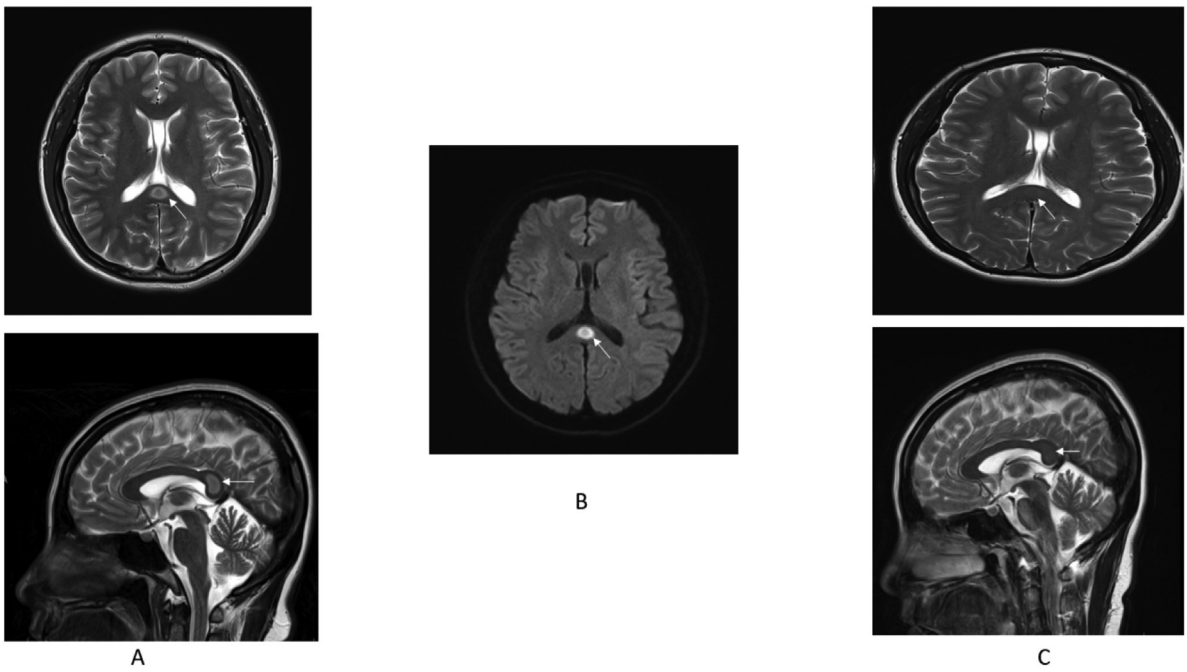

Fig. 1 – MRI of the brain of a 38 year old primigravida 2 weeks post delivery.
(A) Axial T2 weighted/ Sagittal sequence showing an isolated central area of intermediate signal and a halo of high signal in the splenium of the corpus callosum with an impression of mild mass effect.
(B) Diffusion weighted sequence showing the same lesion displaying restricted diffusion.
(C) Axial T2 weighted/ Sagittal sequence 1 month later showing resolution of signal change in keeping with a transient lesion of the splenium of the corpus callosum.

Table 1 – – Cytotoxic lesions of corpus callosum.

Cytotoxic lesions of the corpus callosum	
1	A round/oval small lesion in the center of the splenium of the corpus callosum
2	Lesion centered in the splenium of the corpus callosum, but extends outward through the corpus callosum fibers into the adjacent white matter
3	Lesion is centered on the back of the corpus callosum and extends to the front of it

culty passing urine in the third trimester (36 weeks' gestation). There were no past medical or obstetric history.

She was initially referred for a physiotherapy evaluation due to objective reduced sensory and mild motor deficit of the left foot. She underwent a spine lumbar and sacral MRI which showed degenerative disc disease at L5/S1 without nerve root compromise. However, it was felt this was not a satisfactory explanation of the patient's symptoms and subsequently referred for neurological assessment to exclude a central cause. The patient denied any other neurological, systemic or constitutional symptoms.

At her neurology review, the examination revealed reduced light touch sensation over the left lower limb without any specific nerve or radicular distribution. There was evidence of weakness in the left plantarflexion (4/5) and dorsiflexion (4/5), extensor halluces longus (4+/5), knee flexion (+4/5) and extension (+4/5). Right lower limb examination was unremarkable. Plantar response was downgoing bilaterally. Deep tendon reflexes symmetrically were globally elicited. The rest of the examination showed normal motor function, preserved sensory modalities. Cerebellar examination was unremarkable. Cranial nerves were normal without signs of hemispheric disconnection.

Routine blood tests, including full blood count, renal profile, bone profile and clotting profile were normal. MRI brain demonstrated a focal lesion in the splenium of the corpus callosum which restricted to diffusion. A watch and wait approach was taken. She had an uncomplicated vaginal delivery 4 weeks after initial presentation with no intrapartum or postpartum complications. Repeat MRI brain, 4 weeks after delivery, showed a near complete resolution of the splenial signal abnormality (Fig. 1). Full neurological examination was unremarkable at this point. A diagnosis of prepartum reversible splenial lesion was made. A telephone follow up, 2 years later, did not reveal any sensory, weakness or sphincter disturbance.

Discussion

We report a rare presentation of RESLES in 38-year-old female in her third trimester (36 weeks' gestation) who presented

with sensory, motor and sphincter deficit. Her symptoms resolved following delivery.

The clinical presentation of reversible splenial lesions are diverse and non-specific. There have been several documented cases associated with venous thrombosis, reversible cerebral vasoconstriction syndrome, metabolic abnormalities (hypoglycaemia and vitamin B12 deficiency), viral encephalitis, seizures, antiepileptic drug toxicity or withdrawal of antiepileptic drugs. Reversible splenial lesions have been reported in delayed postpartum preeclampsia occurring from 48 hours post-delivery up to 6 weeks postpartum. The mode of delivery does not appear to be a risk factor. To our knowledge, this is the first reported case demonstrating splenial lesions in the third trimester [2].

RESLES is a clinicoradiological syndrome characterized by reversible MRI changes in splenium of the corpus callosum. Radiologically, it is characterized by progressive reversible lesions with evidence of restricted diffusion in splenium (increased signal on diffusion weighted imaging with low apparent diffusion coefficient). Splenial lesions are well defined and appear as non-enhancing oval shaped lesions. They arise from the medial aspect of the corpus callosum. These lesions tend to disappear overtime [3].

The pathogenesis of this reversible process is not well understood. It is thought that the mechanism of cytotoxic lesions of the corpus callosum is based on excitotoxic action of glutmate on N-methyl-D-aspartate receptors and sodium–potassium pumps [4]. Consequently, this allows water flow into astrocytes and neurones. Since the density of fibres in corpus callosum is high, there is a propensity for cytotoxic oedema of splenium. Starkey et al classified cytotoxic lesions of the corpus callosum into 3 distinct categories (Table 1).

Additionally, it is thought hormonal and metabolic changes during the peripartum period can affect arterial tone regulation during delivery which leads to the development of transient splenial lesions. Inflammatory responses and genetic factors also contribute to the pathogenesis of RESLES. However, this is not fully understood [5].

The clinical presentation of reversible splenial lesions are diverse and non-specific. Repeat Imaging is usually required to ensure resolution. Reversible splenial lesion can occur during pregnancy and should be considered if they show reversibility to avoid unnecessary investigations and interventions. A systemic analysis of clinicoradiological characteristics of cases with reversible splenial lesions can clarify the relationship of heterogeneous disorders and the pathogenesis of RESLES.

Patient consent

Informed consent was obtained from the patient.

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