ISSN: 2754-4745

Journal of Physical Medicine Rehabilitation Studies & Reports

SCIENTIFIC Research and Community

Research Article

Open Access

Transient Splenial Lesion in New Onset Severe Persistent Daily Headache: A Clinico-radiological dilemma

Kadam Nagpal[1]*, Swayam Prakash[2]

[1]Senior Consultant Neurology, Pushpawati Singhania Research Institute , New Delhi,India

[2]Senior Consultant Neurology & Director Cognitive Neurology and Neuro-immunology Divisions, Neotia Getwel Healthcare Center, Siliguri, West Bengal, India

ABSTRACT

Acute transient diffusion-weighted image (DWI) restriction of the splenium of corpus callosum is reported in various medical conditions (encephalopathy, hypoglycemia, in patients on antiepileptic drugs) and in various neuro-infections. We report case of a 27-year-old woman who presented with acute onset persistent severe headache for last 3 days. Her headaches were hemicranial, severe and throbbing in nature, associated with nausea and photophobia. Her symptomatology mimicked 'status migrainosus', however she had no history of migraine in past. She was investigated in details and her MRI brain revealed a splenial hyperintense lesion which showed spontaneous resolution on follow up. It is imperative in such cases to identify and explore the reversible causes and manage accordingly before it results in irreversible brain injury.

***Corresponding author**

Kadam Nagpal, Address of corresponding author: C-86 South Extension Part-II, New Delhi, India-110049. Tel: +919958085544; E-mail: kadamnagpal@gmail.com

Received: October 20, 2020; **Accepted:** October 27, 2020; **Published:** November 05, 2020

Keywords: New onset persistent daily headache, Transient splenial lesion, Status migrainosus

Short key messages

- Reversible or transient splenial lesion is a rare radiological finding seen in various neurological conditions.
- Acute onset severe persistent daily headache with transient splenial lesion is an extremely rare co-occurrence.
- The exact mechanism is unknown, however vulnerability of corpus callosum to cytotoxic damage and finally, intramyelinic edema is presumably the reason for predisposition of location and reversibility.

Background

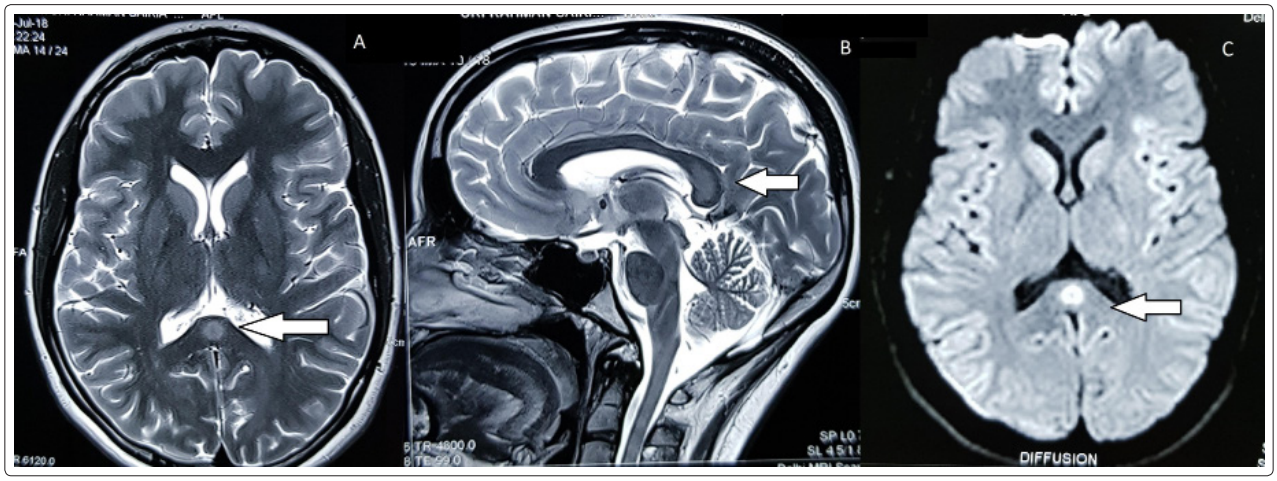
Acute transient diffusion-weighted image (DWI) restriction of the splenium of corpus callosum is reported in various medical conditions (encephalopathy, hypoglycemia, in patients on antiepileptic drugs) and in various neuro-infections. The neurological features reported are encephalitis/encephalopathy, short disturbances in consciousness, seizures and hemispheric disconnection syndromes. Headache was a common manifestation reported by Zhu et al [1]. and there had been reports where in migraine with aura and hemicrania continua was associated with reversible lesion in corpus callosum [2,3]. Acute severe headache mimicking 'status migrainosus' however has never been associated with a reversible splenial lesion, to the best of our knowledge. Primarily, identification of reversible splenial lesion in an unusual clinical scenario is essential and therafter detailed workup and early treatment for any reversible critical cause is deemed necessary in order to prevent irreversible neuronal injury.

Case

A 27 year old female presented with acute severe headache of 3 days duration. The headache was hemicranial, throbbing in nature, lasting entire day and associated with nausea and vomiting. Headache was also associated with photophobia and phonophobia. There was however no association with head trauma, fever, ear discharge, conjunctival redness and lacrimation. No visual blurring, headaches in the past, loss of consciousness or any numbness or weakness in any limb. There was neither any history of substance abuse nor ingestion of any medications. There was no history of chronic ailments in past or any relevant family history in past.

On examination, patient was hemodynamically stable, conscious but restless and oriented to time, place and person. Fundus examination was normal and all cranial nerves were intact. No motor or sensory weakness was seen and there were no cerebellar or meningeal signs. Her routine laboratory investigations were normal. Her MRI brain revealed hyperintense signal in the splenium of corpus callosum seen in T2-weighted and FLAIR images showing diffusion restriction (Figure 1A,B&C). Post-contrast MRI studies and MR venography were done which were unremarkable. Subsequently, lumbar puncture was done and cerebrospinal fluid was sent for routine studies and PCR based panels for neurotropic viruses, bacteria and fungal infections. The opening pressure of CSF was normal ,proteins and sugars were normal and there were no cells seen in the sample. CSF didn't show any crenated red blood cells either. The CSF- PCR based panels for neuroinfections also were negative. To rule out endemic viral infections, chikungunya PCR and Dengue NS1 antigen done in blood, were also negative. The clinical presentation of patient mimicked 'status migranosus' like but we refrained to administer any steroids as there was no past history of migraine

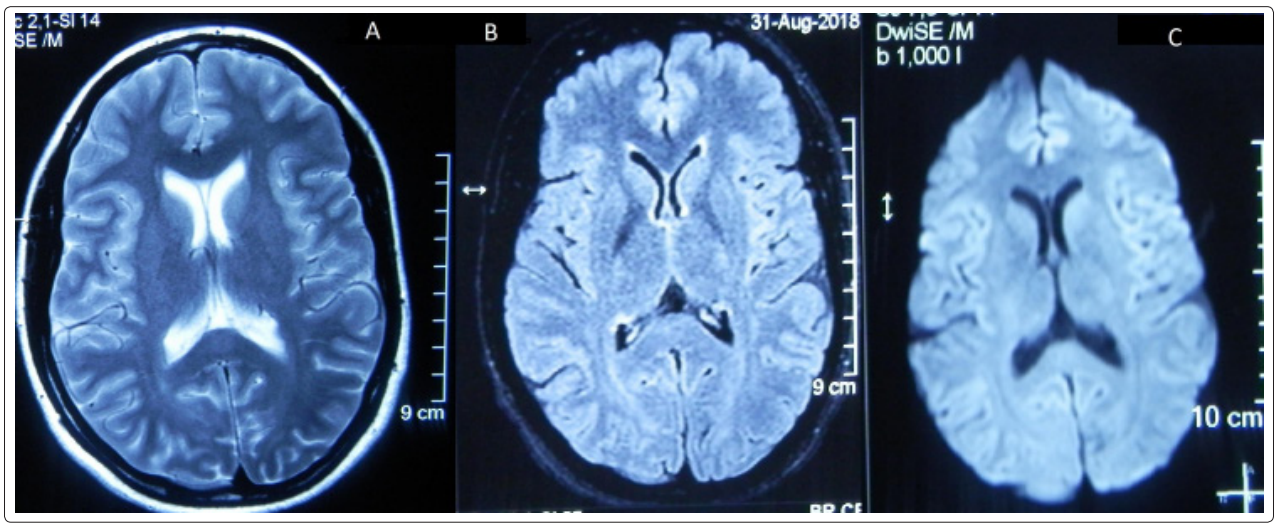
like headaches. Patient was put on supportive therapy, amitriptyline and Divalproex and NSAIDS. She had complete resolution of her symptoms in the next 5 days and was subsequently discharged on oral Amitriptyline and Divalproex sodium. Subsequently, her headaches gradually waned and she was completely asymptomatic. Her repeat MRI brain after 6 weeks showed that there was complete resolution of lesion in splenium of corpus callosum (Figure 2A,B&C) as compared to the previous MRI study.



(A) MRI brain T2 weighted axial image showing a homogenous hyperintense signal (arrow) in splenium of corpus callosum

(B) Sagittal T2 Weighted sequence showing hyperintense lesion(arrow) in splenium of corpus callosum.

(C) Diffusion weighted sequence showing a hyperintense lesion (arrow) in splenium of corpus callosum.



Discussion

Reversible splenial lesion or a transient splenial lesion is relatively rare radiological finding seen in many neurological conditions [4-7]. These lesions are usually oval and homogenous, non hemorrhagic and non enhancing, predominantly seen in the central part of splenium of corpus callosum [8,9]. Interestingly, these lesions frequently show diffusion restriction and such lesions are often reversible. The term cytotoxic lesions of the corpus callosum(CLOCCs) has been proposed nowadays, which incorporates all the terms like Transient lesions of splenium (TSL), mild encephalitis with reversible splenial lesion (MERS) or reversible splenial lesion syndrome (RESLES) [10].

The exact mechanism of transient or reversible splenial abnormality on DWI is not known, but intramyelinic edema can explain the reversibility of the lesion. It is very important to rule out metabolic abnormalities such as hypoglycemia or hyponatremia or any infectious cause as early detection can prompt treatment that can prevent irreversible brain damage. However, in our patient, metabolic parameters were within the reference range and there was no source of CNS or any systemic infection. Often, diffusion-weighted image restriction of splenium of corpus callosum usually makes the clinicians think of a possible infarct, but interestingly, an infarct of corpus callosum is relatively rare because corpus callosum receives rich blood supply from anterior communicating, pericallosal, and posterior pericallosal arteries. Thus, it is suggested that other causes of DWI restriction of splenium of corpus callosum should always be ruled out before diagnosing the patient as having infarct of splenium of corpus callosum.

Furthermore, in our case explanation of underlying mechanism resulting transient splenial lesion with acute severe headache is uncertain. But a mild clinical course and favorable prognosis can be expected in such cases, after ruling out metabolic and infectious causes.

Conclusion

We want to highlight that presence of transient splenial lesion suggests vulnerability of corpus callosum to cytotoxic damage, but acute onset severe persistent daily headache contributing to focal reversible injury in splenium is an extremely rare co-occurrence.

References

1. Zhu Y, Zheng J, Zhang L, Zeng Z, Zhu M, et al. (2016) Reversible splenial lesion syndrome associated with encephalitis/encephalopathy presenting with great clinical heterogeneity. BMC neurology. 16: 49.
2. Lin FY, Yang CY (2011) Reversible splenial lesion of the corpus callosum in migraine with aura. The neurologist. 17: 157-9.
3. Malhotra HS, Garg RK, Vidhate MR, Sharma PK (2012) Boomerang sign: clinical significance of transient lesion in splenium of corpus callosum. Annals of Indian Academy of Neurology. 15: 151.
4. Nagpal K, Agarwal P, Kumar A, Reddi R (2017) Chikungunya infection presenting as mild encephalitis with a reversible lesion in the splenium: a case report. Journal of neurovirology. 23: 501-3.
5. Sharma B, Handa R, Nagpal K, Prakash S, Panagariya A et al. (2014) Transient elevation of cerebrospinal fluid protein in a patient of mild encephalitis with reversible lesion in the splenium: a case report. The Malaysian journal of medical sciences: MJMS. 21: 94.
6. Bhawna S, Rahul H, Kadam N, Swayam P, Gupta PK, et al. (2014) Transient splenial diffusion-weighted image restriction mimicking stroke. The American journal of emergency medicine. 32: 1156-e1.
7. Kim SS, Chang KH, Kim ST, Suh DC, Cheon JE, et al. (1999) Focal lesion in the splenium of the corpus callosum in epileptic patients: antiepileptic drug toxicity?. American journal of neuroradiology. 20: 125-9.
8. Takanashi J, Barkovich AJ, Shiihara T, Tada H, Kawatani M, et al. (2006) Widening spectrum of a reversible splenial lesion with transiently reduced diffusion. American journal of neuroradiology. 27: 836-8.
9. Singh P, Gogoi D, Vyas S, Khandelwal N. (2010) Transient splenial lesion: Further experience with two cases. The Indian journal of radiology & imaging. 20: 254.
10. Starkey J, Kobayashi N, Numaguchi Y, Moritani T. (2017) Cytotoxic lesions of the corpus callosum that show restricted diffusion: Mechanisms, causes, and manifestations. Radiographics. 37: 562-76.