

**BOOMERANG SIGN - A CASE REPORT**C. Justin<sup>1</sup>, B. Sritharan<sup>2</sup>, F. Jason Ambrose<sup>3</sup><sup>1</sup>Senior Assistant Professor, Department of Neurology, Madurai Medical College, Madurai.<sup>2</sup>Professor, Department of Neurology, Madurai Medical College, Madurai.<sup>3</sup>Post Graduate, Department of Neurology, Madurai Medical College, Madurai.**ABSTRACT****INTRODUCTION**

Boomerang sign is a transient abnormality at the level of splenium of corpus callosum in MRI seen in various conditions.<sup>[1-2]</sup> We do here report a case of malaria, which presented with the above findings. The transient appearance of such findings need not need any aggressive management, other than managing the underlying cause.

**KEYWORDS**

Boomerang sign, Corpus callosum, Diffusion weighted imaging.

**HOW TO CITE THIS ARTICLE:** Justin C, Sritharan B, Ambrose FJ. Boomerang sign - a case report. J Evid Based Med Healthc 2016; 3(4), 142-143. DOI: 10.18410/jebmh/2016/33

**INTRODUCTION:** Transient alteration in the splenium of corpus callosum on magnetic resonance imaging has been reported in a variety of neurologic and non-neurologic conditions such as ADEM, Hypoglycemia, hyponatremia and in certain infections such as malaria.<sup>[1,2]</sup> The boomerang sign refers to boomerang shaped splenial lesion (splenium of corpus callosum) which is seen as hyperintense lesion on T2WI, FLAIR and DWI. We hereby presenting a case of cerebral malaria presenting with boomerang sign.

**CASE REPORT:** A 32-year-old patient presented with high grade fever, chills and rigor for the past 4 days. On the day of admission, patient had recurrent episodes of GTCS. Clinical examination revealed patient unconscious, PERRLA, DEM+, moves all four limbs to painful stimuli, DTR present and plantar bilateral extensor. No meningeal signs were present.

Laboratory investigations done-RFT and LET were normal. Complete haemogram was normal. Peripheral smear for malarial parasite was positive for vivax. MRI brain done, which showed hyperintense lesion in the splenium of corpus callosum. Patient was treated with antimalarials and other supportive measures. Patient improved clinically. Repeat MRI done after a week of admission showed normal study.

**DISCUSSION:** Cerebral malaria is a life-threatening complication of malaria. MRI findings in cerebral malaria reported includes the following- cortical infarcts, hyperintense area of white matter on T2 and FLAIR sequences. These have been described in bilateral periventricular white matter, corpus callosum, occipital subcortex and bilateral thalamic regions, acute hemorrhages adjacent to the areas of infarction.

Major portion of the corpus callosum receives its arterial supply from the carotid system except for splenium, which is supplied by the vertebrobasilar system.<sup>[3]</sup> Several pathologic conditions such as multiple sclerosis, Marchiafava-Bignami disease, tumors, ischemia, leukodystrophy and HIV-related encephalopathy may affect the corpus callosum producing permanent changes.<sup>[2]</sup> After the first observation in patients with epilepsy by Chason et al.<sup>[4]</sup> the involvement of the splenium has been described by many authors in neurologic conditions of varied etiologies.<sup>[5,6,7,8,9]</sup>

Boomerang sign is reported in the following conditions:

- 1) Epilepsy-seizures, AED overdose, abrupt drug withdrawal.
- 2) Infections-encephalitis, salmonella, malaria, rotavirus infection.
- 3) Demyelinating-ADEM, SLE.
- 4) Metabolic-hypoglycaemia, hyponatremia, hypernatremia, renal failure.
- 5) Vascular-cerebrovascular disease, post-cardiac arrest, hypertensive encephalopathy, pre-eclampsia, posterior reversible encephalopathy syndrome, migraine with aura.
- 6) Miscellaneous-malnutrition-vit b12 deficiency, drug toxicity (cyclosporine, 5FU, Metronidazole).

It is a self-limiting phenomenon, which subsides over a period once the underlying disease gets controlled. It may sometimes pose problems in the diagnosis and management of patients. Our case of cerebral malaria has presented with transient splenial hyperintensity which disappeared following therapy.

Submission 04-12-2015, Peer Review 05-12-2015,

Acceptance 09-01-2016, Published 14-01-2016.

Corresponding Author:

Dr. C Justin,

#6, Lourdhu Nagar, 7<sup>th</sup> Street,

IInd Cross, K. Pudur, Madurai-625007.

E-mail: drjustin2001@yahoo.com

DOI: 10.18410/jebmh/2016/33

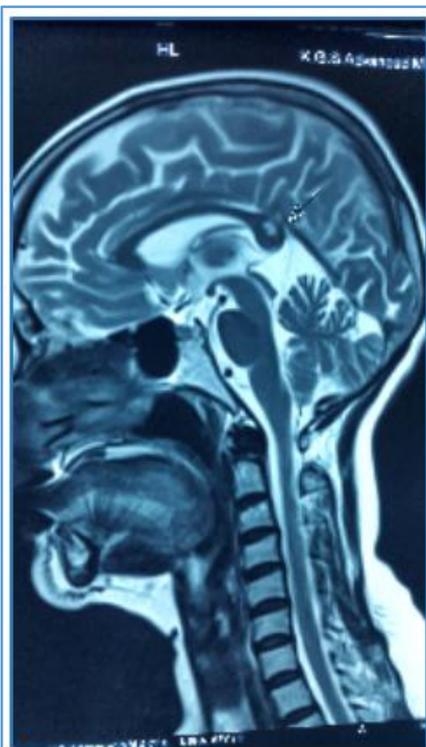


Fig. 1



Fig. 2

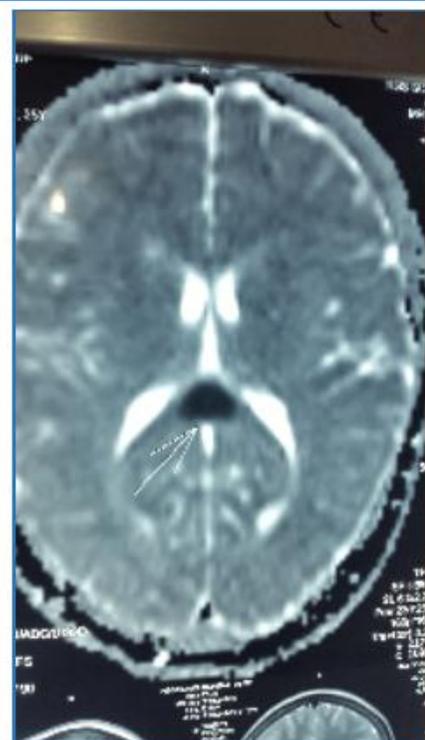


Fig. 3

**CONCLUSION:** Transient signal changes in the splenium of corpus callosum appear to be the nonspecific end result of different disease processes of various etiologies. These lesions are most often incidental. The predilection for only the splenial part of corpus callosum with sparing of other parts needs to be looked into in detail. These lesions of splenium carry a good prognosis due to their reversibility.<sup>[10]</sup>

#### REFERENCES:

1. Hardeep Singh Malhotra, Ravindra Kumar Garg, Mukund R. Vidhate, et al. Boomerang sign: clinical significance of transient lesion in splenium of corpus callosum. *Ann Indian Acad Neurol* 2012 Apr-Jun 15(2): 151–157.
2. Conti M, Salis A, Urigo C, et al. Transient focal lesion in the splenium of the corpus callosum: MR imaging with an attempt to clinical-physiopathological explanation and review of the literature. *Radiol Med* 2007;112(6):921–35.
3. Tada H, Takanashi J, Barkovich AJ, et al. Clinically mild encephalitis/encephalopathy with a reversible splenial lesion. *Neurology*. 2004;63(10):1854–8.
4. Chason DP, Fleckenstein JL, Ginsburg MI. Proceedings of the 34th annual meeting of the American Society of Neuroradiology. Transient Splenial Edema in Epilepsy: MR Imaging Evaluation. Seattle, WA, USA. Chicago: Old Smith Printers. 1996 Jun 21-27.
5. Doherty MJ, Jayadev S, Konchada R, et al. Clinical implications of splenium magnetic resonance imaging signal changes. *Arch Neurol* 2005;62(3):433–7.
6. Kato Z, Kozawa R, Hashimoto K, et al. Transient lesion in the splenium of the corpus callosum in acute cerebellitis. *J Child Neurol*. 2003;18(4):291–2.
7. Polster T, Hoppe M, Ebner A. Transient lesion in the splenium of the corpus callosum: three further cases in epileptic patients and a pathophysiological hypothesis. *J Neurol Neurosurg Psychiatry* 2001;70(4):459–63.
8. Ogura H, Takaoka M, Kishi M, et al. Reversible MR findings of hemolytic uremic syndrome with mild encephalopathy. *AJNR Am J Neuroradiol*. 1998;19(6):1144–5.
9. Hackett PH, Yarnell PR, Hill R, et al. High-altitude cerebral edema evaluated with magnetic resonance imaging. *JAMA* 1998;280(22):1920–5.
10. Fitsiori A, Nguyen D, Karentzos A, et al. The corpus callosum: White matter or terra incognita. *Br J Radiol*. 2011;84(997):5–18.