

Case Report

Case Report: A Rare Case of Marchiafava Bignami Disease

Nishchay Tekulwar^{1*}, Kalaichezhian Mariaappan²

¹MDRD Resident, Sree Balaji Medical College, 7 Work Road, Chromepet, Chennai, Tamil Nadu, India

²Professor, Sree Balaji Medical College, 7 Work Road, Chromepet, Chennai, Tamil Nadu, India

Article History

Received: 17.12.2022

Accepted: 25.01.2023

Published: 09.06.2023

Journal homepage:

<https://www.easpublisher.com>

Quick Response Code



Abstract: Marchiafava-Bignami illness is a rare toxic disease that mostly affects chronic alcoholics and causes progressive demyelination and necrosis of the corpus callosum. The process may spread laterally into surrounding white matter and, on rare occasions, into the subcortical areas. We describe the MR imaging findings in two individuals who presented with acute alcohol-related disorders and discuss the hallmarks of the disease and other acute alcohol-related diseases.

Key words: Marchiafava-Bignami Disease (MBD), corpus callosum, MR imaging, chronic alcoholics.

Copyright © 2023 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution **4.0 International License (CC BY-NC 4.0)** which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

INTRODUCTION

A relatively uncommon consequence of persistent alcoholism known as Marchiafava-Bignami Disease (MBD) is characterised by primary demyelination with CC necrosis [1]. Despite reports of MBD in non-alcoholic patients, MBD occurs more commonly in alcoholic males [2]. The pathophysiological mechanism for ethanol-induced neurotoxicity is hypothesised to involve a synergism between malnutrition with hypovitaminosis B and oxidative stress [3]. Another reason is alcoholic ketoacidosis or a sudden change in serum osmolality ("callosal myelinolysis") as a side effect of diabetes mellitus [4].

The clinical presentation includes a wide range of generalised symptoms. Patients with MBD typically have changed mental states, difficulty walking, dysarthria, memory loss, pyramidal symptoms, mutism, hemiparesis or tetraparesis, and facial palsy [5]. Two clinicoradiologic subgroups were established by

Heinrich *et al.*, [6]. Major impairment of awareness, CC attachment, and poor outcome are all features of type A [7]. The symptoms of type B MBD include a little impairment of consciousness, partial callosal lesions, and a good prognosis [8].

CASE REPORT

A 54 year-old alcoholic male patient admitted at the emergency department with symptoms of dysarthria and right limb hemiparesis.

INVESTIGATION

A cerebral Magnetic Resonance Imaging (MRI) scan performed next day after symptom onset showed significant cerebral atrophy, small vessel ischemic changes and a hyperintense signal on fluid-attenuated inversion recovery (FLAIR) weighted sequences of the entire corpus callosum more involving body and splenium (Figure 1 and 2).

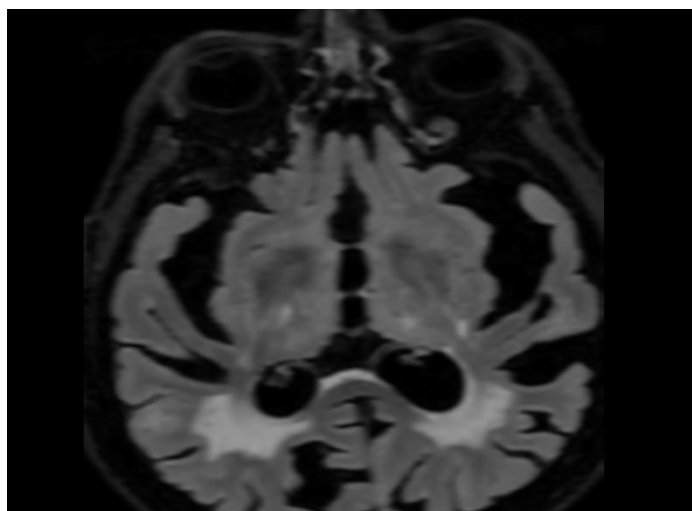


Figure 1: MRI image FLAIR sequence axial section shows hyperintense signal and atrophy of splenium of corpus callosum

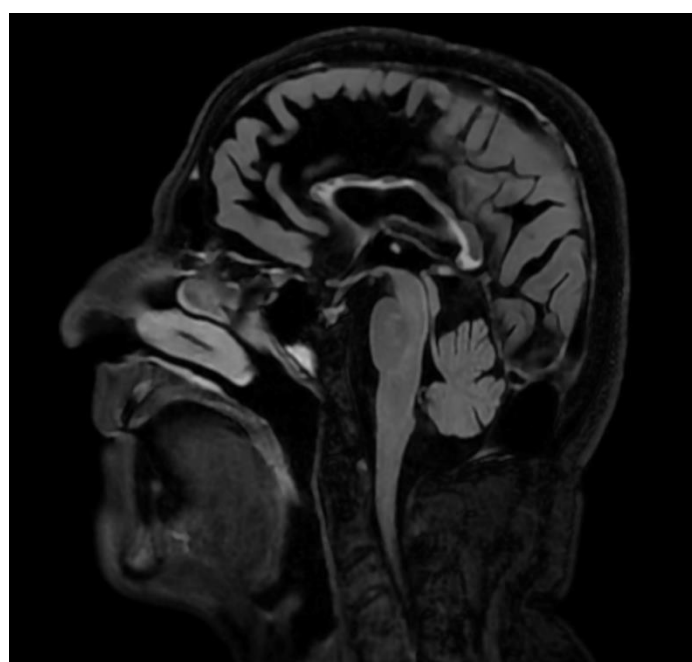


Figure 2: MRI image FLAIR sequence sagittal section shows hyperintense signal and atrophy of corpus callosum

DISCUSSION

A pathological examination of the corpus callosum in patients with Marchiafava Bignami disease often reveals deterioration ranging from demyelination to outright necrosis [9]. Clinically, several disorders in alcoholics, such as Wernicke's encephalopathy, delirium tremens, osmotic demyelination, or encephalitis, may appear in quite similar ways and share symptoms [10]. Therefore, neuroimaging is essential for making a precise diagnosis of Marchiafava Bignami disease and for early [11, 12].

CONCLUSION

Marchifava Bignami disease is rare but serious problem seen in case of chronic alcoholism. Early diagnosis and management can prevent serious complication.

REFERENCE

1. Heinrich, A., Runge, U., & Khaw, A. V. (2004). Clinicoradiologic subtypes of Marchiafava-Bignami disease. *Journal of neurology*, 251, 1050-1059.
2. Marchiafava, E. (1903). Sopra un alterzione del corpo calloso osservata in soggetti alcoolisti. *Riv. Patol. Nerv. Ment.*, 8, 544-549.
3. Mallant, M. P. J. H., Engelen, M., & Sanchez, E. (2006). Marchiafava-Bignami disease and Wernicke's encephalopathy. {Online} URL: <http://www.eurorad.org/case.php?id=4664>
4. Rossi Espagnet, M. C., Coppola, V., & Fantozzi, L. M. (2009) A case of Marchiafava-Bignami Disease. {Online} URL: <http://www.eurorad.org/case.php?id=8049>
5. Helenius, J., Tatlisumak, T., Soenne, L., Valanne, L., & Kaste, M. (2001). Marchiafava-Bignami

- disease: two cases with favourable outcome. *European Journal of Neurology*, 8(3), 269-272.
6. Hillbom, M., Saloheimo, P., Fujioka, S., Wszolek, Z. K., Juvela, S., & Leone, M. A. (2014). Diagnosis and management of Marchiafava–Bignami disease: a review of CT/MRI confirmed cases. *Journal of Neurology, Neurosurgery & Psychiatry*, 85(2), 168-173.
 7. Fernandes, L. M. P., Bezerra, F. R., Monteiro, M. C., Silva, M. L., De Oliveira, F. R., Lima, R. R., ... & Maia, C. S. F. (2017). Thiamine deficiency, oxidative metabolic pathways and ethanol-induced neurotoxicity: how poor nutrition contributes to the alcoholic syndrome, as Marchiafava–Bignami disease. *European journal of clinical nutrition*, 71(5), 580-586.
 8. Suzuki, Y., Oishi, M., Ogawa, K., & Kamei, S. (2012). A patient with Marchiafava–Bignami disease as a complication of diabetes mellitus treated effectively with cortico steroid. *Journal of Clinical Neuroscience*, 19(5), 761-762.
 9. Bourekas, E. C., Varakis, K., Bruns, D., Christoforidis, G. A., Baujan, M., Slone, H. W., & Kehagias, D. (2002). Lesions of the corpus callosum: MR imaging and differential considerations in adults and children. *American Journal of Roentgenology*, 179(1), 251-257.
 10. Johkura, K., Naito, M., & Naka, T. (2005). Cortical involvement in Marchiafava-Bignami disease. *American journal of neuroradiology*, 26(3), 670-673.
 11. Tung, C. S., Wu, S. L., Tsou, J. C., Hsu, S. P., Kuo, H. C., & Tsui, H. W. (2010). Marchiafava-Bignami disease with widespread lesions and complete recovery. *American journal of neuroradiology*, 31(8), 1506-1507.
 12. Arbelaez, A., Pajon, A., & Castillo, M. (2003). Acute Marchiafava-Bignami disease: MR findings in two patients. *American journal of neuroradiology*, 24(10), 1955-1957.

Cite This Article: Nishchay Tekulwar & Kalaichezhian Mariaappan (2023). Case Report: A Rare Case of Marchiafava Bignami Disease. *EAS J Radiol Imaging Technol*, 5(3), 64-66.
