ACG CASE REPORTS JOURNAL

IMAGE | LIVER

Maltese Cross Birefringence in Histoplasmosis

Nalini Bansal, MD, DNB, PDCC (Hepatopathology), MNAMS[1]

[1]*SRL Ltd, Fortis Escorts Heart Institute, Okhla, New Delhi, India*

CASE REPORT

A 38-year-old woman with a history of renal transplant in 2005, on tacrolimus, mycophenolate, and prednisolone, presented with a low-grade fever for 2–3 months. She underwent a bone marrow biopsy that was suggestive of *Histoplasma capsulatum* and was started on liposomal amphotericin B. Blood cultures were positive for *Histoplasma*. Her laboratory investigations revealed hemoglobin 7.9 g/dL, total leucocyte count 3,240/mm^3, and platelet count 40,000/mm^3. The liver function test showed total bilirubin 14.77 mg/dL, aspartate aminotransferase 202 IU/L, alanine aminotransferase 112 U/L, serum alkaline phosphatase 1,332 U/L, gamma-glutamyl transferase 1819 U/L, total protein 5 g/dL, and serum albumin 2.2 g/dL. She underwent a liver biopsy for deranged liver function tests. Liver biopsy showed proliferation of Kupffer cells with many parasitized intracellular yeasts positive on periodic acid-Schiff and Gomori Methenamine Silver stains (Figure 1). The polarizing microscope revealed Maltese cross birefringence within these organisms (Figure 2). She was started on itraconazole. Her condition gradually improved, and she became hemodynamically stable with adequate urine output. Liver function test improved and bilirubin decreased to 5 mg/dL from a peak of 14 mg/dL. She later developed septic shock and finally died of cardiorespiratory arrest.

Histoplasma are histologically seen as small intracellular uninucleate yeast cells that may show narrow-based budding. An artifactual halo is usually seen around them. These yeast forms are positive on Gomori Methenamine Silver and periodic acid-Schiff stains.

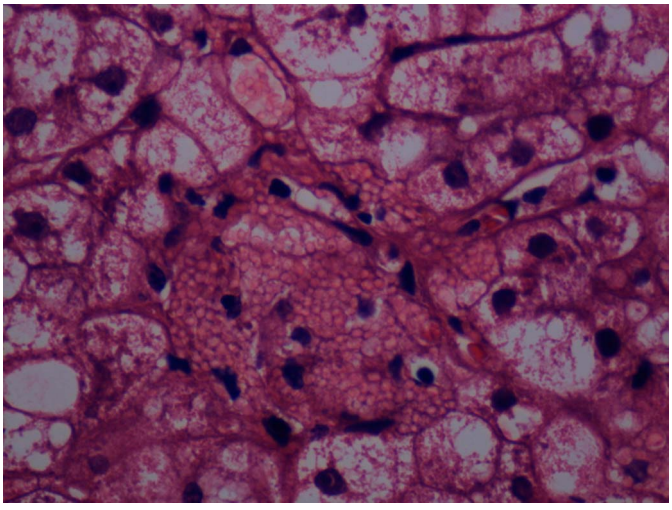

Figure 1. Liver biopsy showing parasitized *Histoplasma* within kupffer cells.

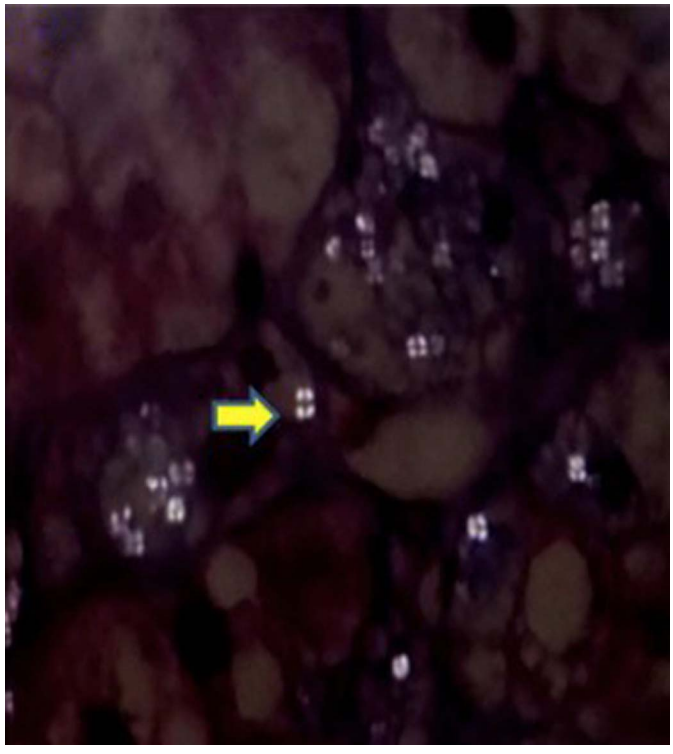

Figure 2. Polarizing microscope showing Maltese cross birefringence within these organisms (arrow).

Maltese cross birefringence has been described in *Cryptococcus neoformans*, cholesterol ester storage disease, babesiosis, and in urine sediments of a patient with nephrotic syndrome and erythropoietic protoporphyria, but have never been reported in histoplasmosis.[1–4] Maltese cross birefringence is caused by a radially birefringent substance such as a lipid droplet. Although the cause of Maltese cross birefringence in the index

ACG Case Rep J 2019;6:1–2. doi:10.14309/crj.0000000000000030. Published online: April 3, 2019

Correspondence: Nalini Bansal, MD, DNB, PDCC (Hepatopathology), MNAMS, SRL Ltd, Fortis Escort Heart Institute, Okhla, New Delhi, India (drnalinibansal@yahoo.com).

case is not definite, fungal remnants that are formed on treatment by amphotericin B may have resulted in such an appearance.

DISCLOSURES

Author contributions: N. Bansal wrote the article, and is the article guarantor.

Financial disclosure: None to report.

Informed consent was obtained for this case report.

Received May 22, 2018; Accepted December 21, 2018

REFERENCES

1. Bhatia A, Singh N, Gupta K, Arora VK. Maltese crosses in *Cryptococcus neoformans*. *Acta Cytol*. 1995;39(6):1259–60.
2. Philips CA, Bihari C. Liver involvement in erythropoietic protoporphyria. *ACG Case Rep J*. 2016;3(2):86–7.
3. Hůlková H, Elleder M. Distinctive histopathological features that support a diagnosis of cholesterol ester storage disease in liver biopsy specimens. *Histopathology*. 2012;60(7):1107–13.
4. Sedlacek M, Schoolwerth AC. "Maltese crosses" in the nephrotic syndrome. *N Engl J Med*. 2007;357:806.

Copyright: © 2019 The Author(s). Published by Wolters Kluwer Health, Inc. on behalf of The American College of Gastroenterology. This is an open-access article distributed under the terms of the Creative Commons Attribution-Non Commercial-No Derivatives License 4.0 (CCBY-NC-ND), where it is permissible to download and share the work provided it is properly cited. The work cannot be changed in any way or used commercially without permission from the journal.