

Detection of cryptococcosis in peripheral blood smear: A case report

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ABSTRACT

Disseminated cryptococcosis is usually detected by cytological examination of fluids and histopathological examination of tissues and confirmed by fungal cultures. Here we report a case of unusual presence of cryptococcal organism engulfed by neutrophils and monocytes in the peripheral smear.

Key words: Cryptococcosis, histopathological examination, monocytes, neutrophils

INTRODUCTION

Cryptococcus neoformans is an opportunistic fungal pathogen frequently present in patients with identifiable underlying predisposing factors or disorders such as sarcoidosis, advanced human immunodeficiency virus (HIV) disease, prolonged immunosuppressive treatment, or other disorders associated with cell-mediated immunity dysfunction. In rare cases, it has also been described in healthy individuals.^[1]

Systemic cryptococcosis is a life-threatening disease occurring in immuno-compromised patients. It is usually detected by cytological examination of fluids and histopathological examination of tissues and confirmed by fungal cultures. The isolation of these organisms in blood culture is not frequent, and very rarely these organisms are first detected on peripheral blood examination. This case highlights the importance of meticulous examination of peripheral blood smear for detection of these organisms.

CASE REPORT

A 22-year-old woman, a known case of retroviral illness,

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Access this article online	
Quick Response Code:	Website: www.ijabmr.org
	DOI: 10.4103/2229-516X.91158

presented to the hospital with fever and jaundice. After admission, she developed features of disseminated intravascular coagulation (DIC). Peripheral blood and bone marrow samples were sent for examination. The patient was empirically started on antibiotics and supportive treatment. Next day, she developed hypotension and respiratory failure. Laboratory investigations showed Hb 5.4 gm%, TC 17,700 cells/cumm, platelet count 7000 cells/cumm, RBS 115 mg/dL, urea 8 mg/dL, Na⁺ 136 meq/L, K⁺ 3.4 meq/L, AST 549 IU and ALT 38 IU. ABG analysis showed metabolic acidosis. Chest X-ray revealed bilateral pneumonia.

Peripheral blood smear examination showed schistocytes, toxic change in the neutrophils, and thrombocytopenias suggestive of DIC. On close examination neutrophils and monocytes also showed numerous refractile, encapsulated organisms that were morphologically consistent with cryptococcus neoformans. Buffy coat preparation also demonstrated cryptococcus within the neutrophils and monocytes [Figure 1]. Bone marrow aspirate showed HIV induced changes with cryptococcus infection. The organisms were found to be positive for periodic acid Schiff (PAS) stain [Figure 2]. The patient's clinical condition deteriorated rapidly and she finally succumbed to the disease on the 10th day of admission.

DISCUSSION

Systemic cryptococcosis is a life-threatening disease occurring in immunocompromised patients. Bone marrow cryptococcosis is an infrequent presentation in patients with acquired immunodeficiency syndrome. Peripheral blood cytopenias are frequently observed in such patients.^[2]

Diagnosis of cryptococcal infection depends upon

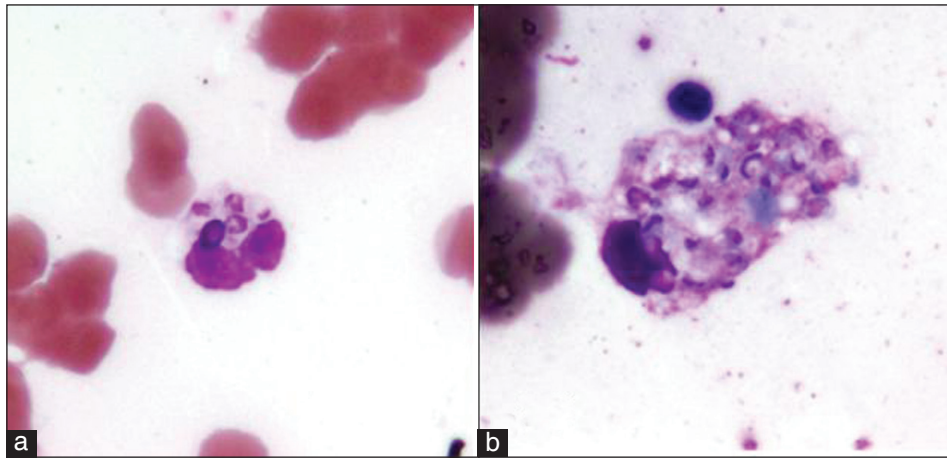


Figure 1: (a) Cryptococci engulfed by monocyte in peripheral blood (Leishman stain × 1000), (b) Cryptococci engulfed by macrophage in bone marrow aspirate (Leishman stain × 1000)

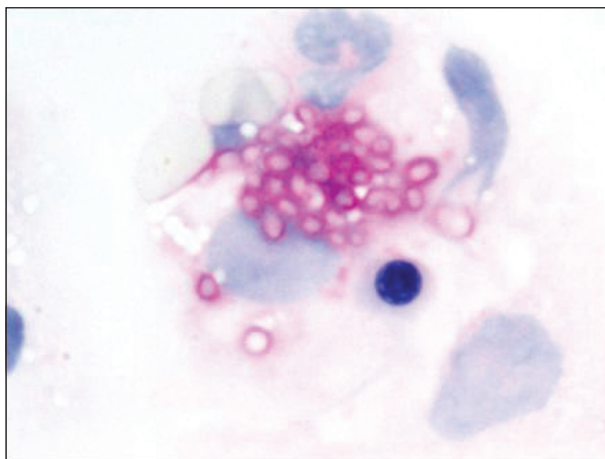


Figure 2: Periodic acid Schiff stain (×1000)

demonstration of encapsulated yeast like organisms on India ink, mucicarmine or PAS staining. Culture of the organisms on Saboraud's medium with characteristic biochemical reactions (urease, phenoloxidase) and of cryptococcal capsular polysaccharide antigen in titers more than 1:8 in serum or cerebro-spinal fluid add to the diagnosis.^[3]

Detection of the organism in peripheral smear is very rare.^[4] In our case we found the unusual presence of cryptococcal organism engulfed by neutrophils and monocytes in the peripheral smear. There are very few such cases reported in the literature. One of the common complications of disseminated cryptococcosis is DIC in both immune-competent

and immune-compromised patients.^[5] In conclusion, this case highlights the importance of a meticulous routine peripheral blood smear examination, for the detection of fungal infection.

ACKNOWLEDGMENT

All the authors would like to thank Dr. Raguveer C.V, Professor of Pathology and Dr. Annamma Kurien, Professor and Head of Department of Pathology MMMC, Manipal for their guidance and support.

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How to cite this article: Nayal B, V, Niveditha S, Chethan M. Detection of cryptococcosis in peripheral blood smear: A case report. *Int J App Basic Med Res* 2011;1:116-7.

Source of Support: Nil. **Conflict of Interest:** None declared.