An Unusual Presentation of Candidaemia Primarily Detected on Peripheral Blood Smear

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Abstract

Nosocomial bloodstream infections (BSIs) are important causes of morbidity and mortality. Fungal pathogens are responsible for a significant number of these nosocomial infections. Our report describes the detection of a disseminated. Candida albicans in a peripheral blood smear of a 24 year alcoholic and ganja addict, admitted with metabolic encephalopathy. Candida species was isolated from the blood culture and the speciation of isolate as Candida albicans was done by biochemical tests.

Introduction

Surveillance and Control of Pathogens of Epidemiological Importance (SCOPE) project, largest surveillance project indicates that nosocomial bloodstream infections (BSIs) are important causes of morbidity and mortality. The Candida species comprises 9% of the organisms causing BSIs.[1] An epidemiological study conducted in four Swiss university hospitals showed that Candida spp were the fourth most common microorganisms isolated from patients on medical, surgical, and intensive care wards.[2]

Predisposing factors for disseminated candidiasis include immunosuppressive chemotherapy, indwelling catheters, multiple antibiotic treatment, and heart or abdominal surgery. Mortality rates for systemic candidiasis are high, ranging from 50% to 80%, despite appropriate treatment.[3]

Case reports have described detection of candidaemia by examination of peripheral blood smears.[4] Detection of candidaemia by peripheral blood smear examination requires a yeast concentration of 1 to 5 x 10 CFU/mL or greater. This degree of fungaemia is unusual; therefore, detection of candidaemia by blood smear review will not be possible in most cases.[4]

Our report describes the detection of a disseminated Candida albicans in a peripheral blood smear and also from the blood culture.

Case Report

Our patient was a 24 year old male, a chronic alcoholic and ganja addict; was admitted in a state of altered sensorium. Patient also had generalized tonic clonic convulsions. Clinical impression was metabolic encephalopathy in an alcoholic and patient was started on fluids, a third generation cephalosporin, cefotaxim and amikacin. The routine blood investigations and the CSF routine examination did not reveal any significant finding. The computed tomography showed mild oedema of the brain parenchyma.

Six days later, patient had a spike of fever. The white blood cell count was 3,000 cells/mm^3, with 60% polymorphonuclear neutrophils. On Wrights' stained smears, polymorphonuclear neutrophil cells were damaged morphologically, and showed intracytoplasmic yeast cells (Fig. 1). The yeast cells were both intracellular and extracellular, and consisted of round or oval blastospores and pseudohyphae. Blood cultures were carried out immediately. Candida albicans was isolated from the blood culture (Fig. 2) which was confirmed by Germ Tube test, growth on Corn Meal Agar and sugar assimilation tests.

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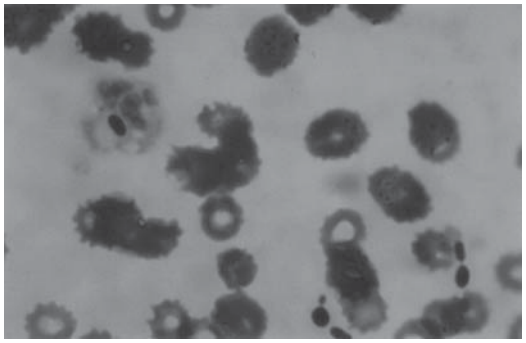

Fig. 1 : Peripheral blood smear showing intracellular round or oval yeast cell

The patient succumbed inspite of antifungal therapy with IV Amphotericin B.

Discussion

Fungal pathogens, in particular Candida spp, have become a major cause of nosocomial infection.[3,5] In most reported cases, the observation of fungal elements in peripheral blood smears from patients has allowed an early diagnosis and the initiation of antifungal treatment.[6] Case reports have described detection of candidaemia by examination of peripheral blood smears. It is unclear whether this method has wider applicability for early detection of fungaemia.[4] The diagnosis was mainly fortuitous in systematic peripheral blood smears stained with Giemsa, often when performing a white blood cell count.[6]

The presence of yeast forms inside neutrophils and monocytes is often cited as proof of true fungaemia, as opposed to contamination of the specimen after the draw.[7,8] Similar scenario occurred in our case.

The mean interval between admission and infection, for Candida species was 22 days in the SCOPE study.[1] In present case the candidaemia developed within seven days.

The findings in our case concludes that peripheral blood smears may be useful in the diagnosis of fungal infections and should be looked into carefully, so as to find a clue to diagnosis.

Fig. 2 : Culture of Candida albicans on Sabouraud's dextrose agar

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