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CRYPTOCOCCAL MENINGITIS IN AN ISOLATED IGG DEFICIENCY YOUNG FEMALE: A RARE CASE REPORT

General Medicine

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ABSTRACT

Cryptococcal meningitis is a life-threatening fungal infection, usually seen in patients with profound immunosuppression, most commonly HIV/AIDS. Reports of cryptococcal meningitis in non-HIV immunodeficiency states are sparse. We present a young female with no known comorbidities who was diagnosed with cryptococcal meningitis and subsequently found to have isolated IgG deficiency. Diagnosis was established through cerebrospinal fluid (CSF) analysis and India ink preparation. The patient responded well to antifungal therapy with amphotericin B and flucytosine, followed by fluconazole consolidation. This case highlights the need to consider primary immunodeficiency, including IgG deficiency, in apparently immunocompetent individuals presenting with cryptococcal meningitis

KEYWORDS

Cryptococcal Meningitis, IgG Deficiency, Primary Immunodeficiency, Antifungal Therapy

INTRODUCTION

Cryptococcal meningitis is most commonly reported in HIV-infected patients with CD4 counts below 100 cells/µL. However, other forms of immunodeficiency, including hematological malignancies, steroid therapy, organ transplantation, and rarely primary immunodeficiency disorders, can predispose to infection. IgG deficiency, though typically associated with recurrent bacterial respiratory infections, is an uncommon predisposing factor for invasive fungal infections. We present a rare case of cryptococcal meningitis in a patient later identified with IgG deficiency.

Case Study

A 23-year-old female from Rajkot presented with fever and headache of one-month duration, followed by vomiting and altered sensorium for one day. On examination, she was febrile, disoriented (GCS 10/15), with neck stiffness and positive Babinski reflex bilaterally. Other systemic examinations were unremarkable.

Investigation

- Blood tests: Hb 11.1 g/dl, TLC 19,000/µL, Platelets 2.21lakh/µL, Sodium-131mmol/L.
- Neuroimaging: MRI brain showed meningeal enhancement over the left cerebral convexity with gyral edema and diffusion restriction suggestive of meningoencephalitis.

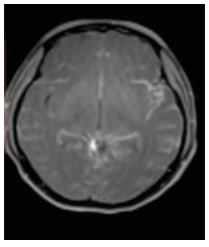

Figure 1 T1

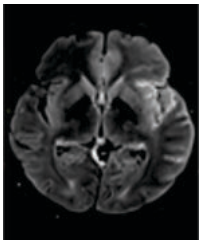

Figure 2 FLAIR

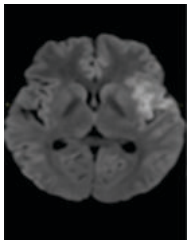

Figure 3 DWI

- CSF Analysis:

	VALUES
CSF Protein	↑ 229 mg/dl
CSF Glucose	26 mg/dl
Serum RBS(at the time of CSF collection)	119 mg/dl
CSF cell count	TLC-↑110 cells/cumm Lymphocyte-98% Polymorphs-2%
Microscopic examination	Lymphocyte predominant
CSF CB-NAAT	M.TB NOT Detected
CSF Aerobic culture	No growth
CSF ADA	Normal
CSF Viral encephalitis panel	Normal

- Microbiology-

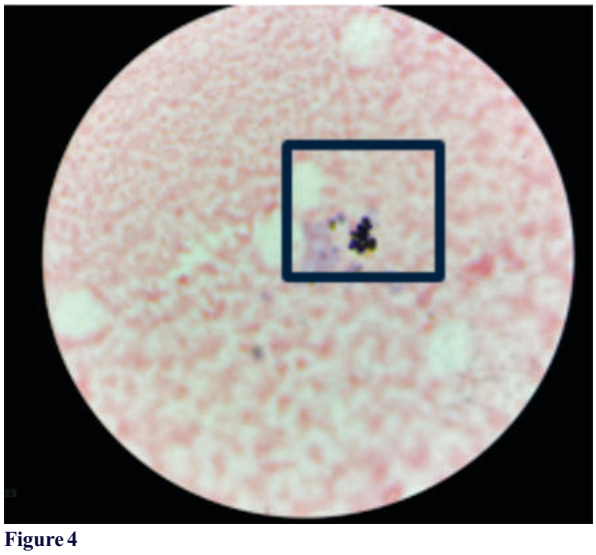

Figure 4

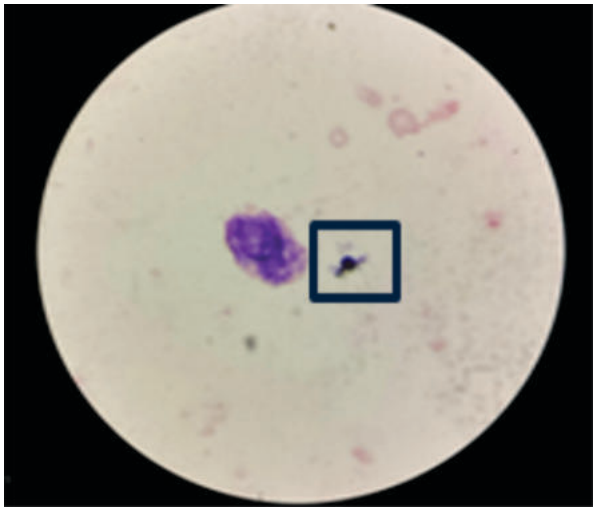

Figure 5 [Figure 4&5 shows Gram positive, budding yeast cells]

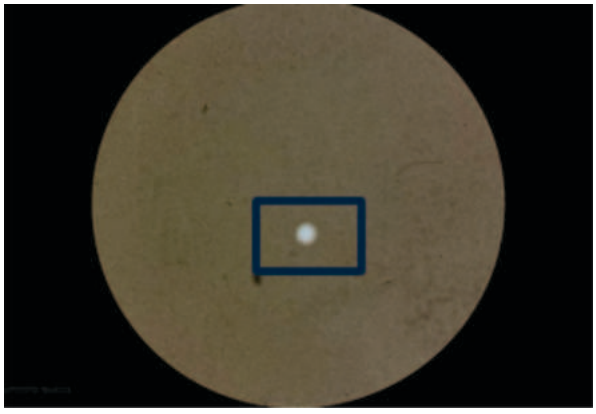

Figure 6 Shows Demonstrates the Capsule, Which Appears as Refractile Delineated Clear Space Surrounding the Round Yeast Cell Against Black Background.

Microbiological Findings Confirming Cryptococcal Meningitis.

- Immunological work-up: HIV, HBsAg, Anti-HCV were negative.CD3%,CD4%,CD8% Tcells WNL(90.15%,40.28%, 42.23% respectively) Serum immunoglobulins revealed low IgG levels(6.02g/l), with normal IgM and IgA(1.34 &1.08g/l).

Management & Outcomes

The patient was initially treated empirically with broad-spectrum antibiotics and acyclovir. Following microbiological confirmation, she was started on amphotericin B (0.1mg/kg IV daily) and flucytosine (100 mg/kg/day in 4 divided doses)for 14 days in accordance with the Infectious Diseases Society of America guidelines for cryptococcal disease in a non-HIV-infected, non-transplant host (1). She regained consciousness by day 3, became afebrile, and had no recurrent seizures. Electrolyte disturbances (hypokalemia, hypomagnesemia) were corrected. She was discharged on fluconazole 800 mg daily for 8 weeks, with advice for long-term follow-up.

DISCUSSION

Cryptococcal meningitis classically associated with HIV/AIDS and disorders of cell-mediated immunity, and has been very rarely reported with immunoglobulin deficiency and hyper IgM syndrome with low IgG, IgA and IgE(2-4). In our patient, the discovery of IgG deficiency explained the unusual predisposition. While IgG deficiency usually manifests with recurrent bacterial sinopulmonary infections, fungal infections such as cryptococcosis have been rarely reported.

This case emphasizes the importance of evaluating for underlying immunodeficiency in patients with cryptococcal meningitis who test negative for HIV. The management requires a three-phase antifungal regimen: induction with amphotericin B plus flucytosine, consolidation with high-dose fluconazole, and maintenance therapy to prevent relapse.

CONCLUSIONS

We report a rare case of cryptococcal meningitis in a young female with IgG deficiency. This case underscores the need for a high index of suspicion for primary immunodeficiency in apparently healthy individuals presenting with cryptococcal meningitis. Early diagnosis and prompt antifungal treatment remain the cornerstone for favorable outcomes.

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