Cryptococcal Lymphadenitis on Fine Needle Aspiration Cytology: A Report of 2 Cases

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Abstract:
Cryptococcal infection most commonly affects the lung, meninges and skin. The involvement of lymph node in cryptococcosis is considered to be rare and is usually observed in cases where the disease is very widely disseminated affecting the mediastinal and cervical lymph nodes. Disseminated cryptococcosis is a life threatening disease seen more commonly in patients with acquired immunodeficiency syndrome (AIDS) or other forms of immune suppression. We report 2 cases of AIDS with cryptococcal lymphadenitis, diagnosed by fine needle aspiration cytology of the involved lymph node.

Key Words: Lymphadenitis, Cryptococcus neoformans, Fine needle aspiration cytology, Acquired immunodeficiency syndrome.

Introduction:
Human immunodeficiency virus (HIV) infection has emerged as a global epidemic and the data of the Center for Disease Control and prevention shows that cryptococcosis occurs in about 7% of acquired immunodeficiency syndrome (AIDS) patients (Ioachim & Ratech, 2002). Cryptococcosis is a chronic opportunistic infection caused by the encapsulated yeast Cryptococcus neoformans (Das et al, 2002). Primary infection is usually through the respiratory system but dissemination to central nervous system (CNS), skin, bone, lymph node, kidney and other viscera may occur. Disseminated cryptococcosis is a life-threatening disease seen more commonly in patients with AIDS and other forms of immunosuppression (Suchita et al, 2008).

Lymph node fine needle aspiration cytology (FNAC) in patients with cryptococcal lymphadenitis provides an economical and rather quickly accomplished cytdiagnosis.

Case 1:
A 38 years old male presented to outpatient department with complaints of fever and swelling in the right side of the neck for one month with history of anorexia and weight loss. Patient was a known case of HIV infection and was on treatment. On examination, he was thin built and poorly nourished. Oral cavity showed whitish lesions suggestive of candidiasis. Multiple swellings were seen over the right supraclavicular region, largest measuring 2 cms in diameter, soft to firm, discrete, mobile and non tender. His blood investigations revealed hemoglobin level of 8.2gm%, total leukocyte count of 5100 cells/cu mm and CD4 counts of 56 cells/cu mm. Erythrocyte sedimentation rate (ESR) by Westergren’s method was 110 mm at the end of one hour; other biochemical investigations were within normal limits. His chest X-ray was unremarkable.

Smears from FNAC of right supraclavicular lymph node stained by Giemsa stain, revealed extensive necrotic background, amidst which, numerous

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Fig.1: Photomicrograph of case one, showing encapsulated cryptococci in necrotic background (May Grunwald Giemsa stain, 400X).
encapsulated budding yeast cells of varying sizes and surrounded by halos was seen with few lymphocytes, plasma cells, histiocytes and plump fibroblasts (Fig. I). The capsule was demonstrated by India ink preparation and Periodic Acid Schiff (PAS stain; Fig. II). Ziehl Neilsen’s (ZN) staining did not reveal any acid fast bacilli, ruling out any coexisting tuberculous infection. A diagnosis of cryptococcal lymphadenitis was made. The patient was immediately started on antifungal treatment to which he responded.

Fig. II: Photomicrograph of case one, highlighting the yeast forms (PAS stain, 400X).

Case 2:

A 43 year old female patient was admitted with symptoms of fever, headache and vomiting of 8 days duration. Patient was a known case HIV infection and was on treatment. He was put on empirical treatment for tuberculosis for one month. On examination, the patient was found to be febrile with pulse rate 120 per minute and blood pressure 100/80 mm of Hg. She had mild pallor. Bilateral multiple axillary and inguinal lymph nodes were enlarged, largest being 3x2cm, soft to firm, non tender and mobile. Neck rigidity was present (Kernig’s sign was positive). Both plantar reflexes were extensor with exaggerated deep tendon reflexes of lower limb. Provisional diagnosis of meningitis was made for which she was further evaluated.

Her blood investigations revealed hemoglobin level of 7.6g%, total leukocyte count of 4100 cell/cu mm, CD4 count of 72cells/cu mm & ESR by Westergren’s method was 100 mm at the end of one hour, biochemical investigations were within normal limits. Her chest X-ray showed patchy interstitial infiltration.

Cerebrospinal fluid (CSF) examination revealed total count of 250 cells/cu mm with predominance of lymphocytes (80%), budding yeasts like organisms were also observed. India ink preparation revealed capsulation of yeast cells (Fig. III). Fine needle aspiration cytology of left axillary lymph node revealed amorphous granular background with scattered epithelioid cell and many encapsulated forms of cryptococci along with lymphocyte and histiocytes (Fig. IV). Periodic Acid Schiff was positive for budding yeasts; ZN staining of smears revealed acid fast bacilli, suggesting co-existing tuberculous infection.

A diagnosis of cryptococcal lymphadenitis and meningitis along with co-existing tuberculous infection was made. Additional antifungal treatment was started; patient showed signs of improvement.

Fig. III: Photomicrograph of case two, highlighting cryptococcal capsule in CSF smear (India ink preparation, 400X).

Fig. IV: Photomicrograph of case two, showing encapsulated cryptococci in amorphous granular background (May Grunwald Giemsa stain, 400X).
Discussion:

Cryptococcosis is a chronic opportunistic infection caused by the encapsulated yeast Cryptococcus neoformans which is present worldwide, particularly in soil contaminated by pigeon excreta (Das et al 2002). Primary infection is usually through respiratory system by inhalation of infected dust, but dissemination to CNS, skin, bone, lymph node, kidney and other viscera occurs (Suchita et al, 2008).

Cryptococcal meningitis and disseminated cryptococcosis have gained importance recently because of the rapid rise in the world wide incidence of HIV infection (Das et al, 2002). Cryptococcus lymphadenitis is an uncommon form of extrapulmonary cryptococcosis, which is one of the AIDS defining criteria according to the Centre for Disease Control and prevention guidelines (Scheider et al, 2008).

Identification of cryptococcus has been reported from cytological specimens of CSF, sputum, bronchial washing and FNAC smears of the lymph nodes, thyroid, spleen, adrenal gland, bones and the lung (Wright et al, 2000; Kalra et al, 1999; Cox & Perfect, 1998). The organism is surrounded by a mucopolysaccharide capsule and measures 5-15µm in diameter. Special stains (Gomori’s Methanamine Silver, PAS and Mucicarmine) facilitate the identification of this organism. Granulomatous inflammation, which may be slight or absent, can be caused by cryptococci (Lee et al, 2001). Both the cases of present study showed necrotic background with numerous budding yeast cells surrounded by halos. In the second case there were scattered epithelioid cells but no granuloma formation. Capsule was identified by special stains such as India ink preparation and PAS. Hence, diagnosis of cryptococcosis can be made cytologically on obtained smears when the mucopolysaccharide capsule is visualized with special stains.

Cryptococcal meningitis is the most common type of opportunistic CNS infection in AIDS patients in developed countries. However, in developing countries, tuberculosis is the most common cause of meningitis in AIDS patients (Das et al, 2002). The diagnosis of Cryptococcosis could be definitely made by FNAC in both the cases of present study.

FNAC can thus be a simple and useful technique in the diagnosis of fungal infection. Identification of these organisms, with or without cellular reaction can lead to a rapid diagnosis and importantly an early initiation of specific and life saving treatment.

Bibliography:

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