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RESEARCH ARTICLE

UNUSUAL ASSOCIATION OF COMMON INFECTIONS: A CASE REPORT

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ABSTRACT

Filariasis is a major public health problem, largely confined to tropics and subtropics. The diagnosis is conventionally made by demonstrating themicrofilaria in three consecutive night blood samples. However, in early stages, fine needle aspiration cytology (FNAC) of the enlarged lymph nodes is a useful diagnostic tool and may reveal the parasite. Although many risk factors like HIV infection, immunosuppression, malnutrition and diabetes predispose to development of tuberculosis, few studies have addressed the effects of co-incident helminth infection on incident tuberculosis (TB). Herein we present an incidental finding of microfilaria on FNAC of sub-mandibular lymph node along with tuberculosis TB infection, which is a rare association.However, the patient did not have any clinical features of filariasis or peripheral blood microfilaraemia.

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INTRODUCTION

Filariasis is a disabling parasitic disease prevalent worldwide caused by various species of filarial organism. It is a major public health problem in many tropical and sub-tropical countries (Brown *et al.,* 2006). In endemic areas filariasis may be entirely asymptomatic with high microfilaraemia. Mycobacterium tuberculosis (TB) infection is a disease of significant public health importance. It has been studied by WHO that 1.4 million deaths were associated with TB in 2010 worldwide (Metenou *et al.,* 2012). Herein, we report a rare association of filariasiswith TB in the same patient. The demonstration and identification of the parasite along with evidence of TB in the cytological smears played a significant role in the prompt recognition and institution of specific treatment for both the ailments.

CASE REPORT

A 21-year-old male presented with right neck swelling for last 15 days. There was no history of fever or weight loss; however, patient gave history of TB contact in his family. On examination, a single 2X2 cm swelling was noted in the right submandibular area. The swelling was firm, mobile and mildly tender.

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Examination of blood revealed hemoglobin of 11.5g/dl; total leukocyte count of 9800/cu mm; differential leukocyte count being; polymorphs-68, lymphocytes-22, monocytes-04, eosinophils-06 with peripheral smear showing normocyticnormochromic red blood cells. An increase in Erythrocyte sedimentation ratewas also noted (40 mm at the end of 1sthour). Stool examinationalso did not show any parasite, ova or cyst. Chest X-ray showed some patchy infiltrationsbilaterally in the mid-zone.

On fine needle aspiration, blood mixed cellular aspirate was obtained and subsequent smears prepared were fixed in 95% ethyl alcohol and air dried followed by staining with Papanicolaou, Giemsa and Zeihl Nelsen (ZN) stain for acid fast bacilli (AFB), respectively. Smears examinedalso revealed few microfilarial worm of *W. bancrofti*species, identified as such because the nuclear column was not extending upto the tail end [Fig 1a-b].However, peripheral blood did not reveal any microfilaria despite repeated examinations.Smears examined showed few epithelioid cell granuloma, acute and chronic inflammatory cells with caseous necrosis in background [Fig1c]. Zeihl Nelsen staining for acid fast bacilli was positive [Fig1d]. Based on cytomorphological examination, a diagnosis of Tubercular abscess with microfilaria was made. This was an early case of filariasis without microfilaremia and was detected by FNAC of the lymph node. The association of filariasis and tuberculosis was purely coincidental.

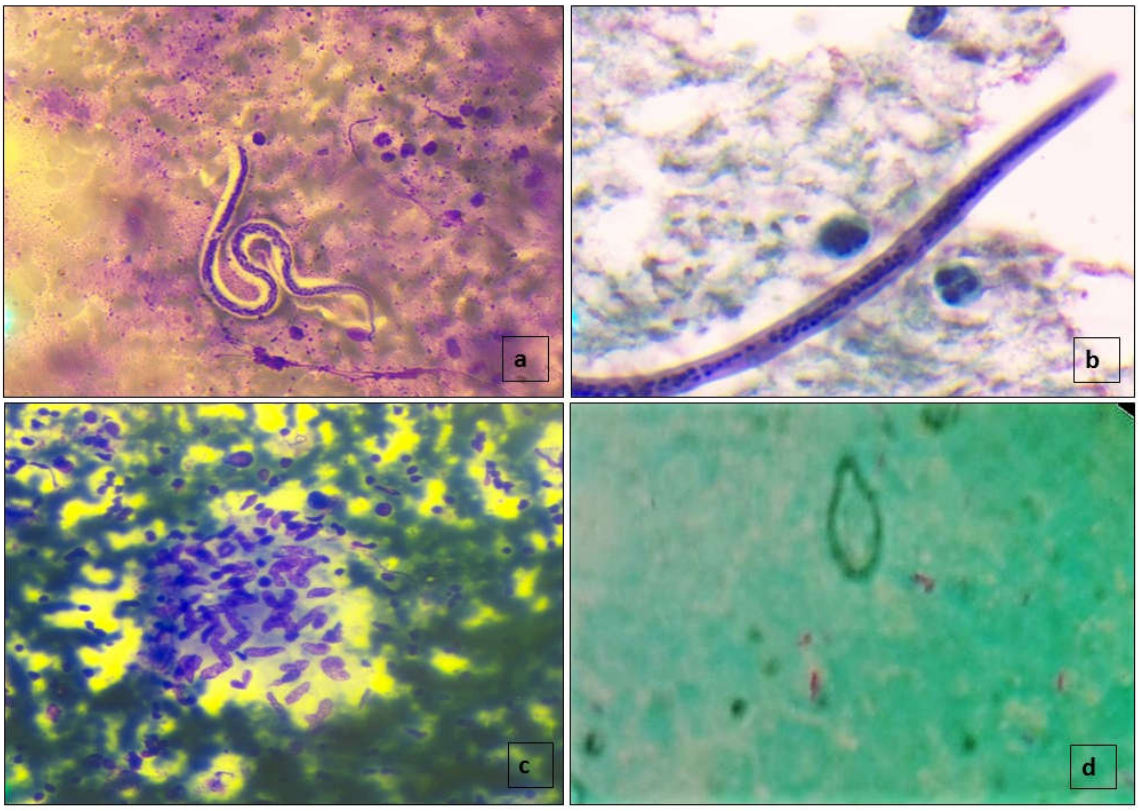

Fig. 1. 1a and 1b: FNAC smear from lymph node showing microfilarial worm of *W. bancrofti* species with nuclear column not extending upto the tail end [1a: Giemsa X100, 1b: GiemsaX200]. 1c: Figure showing few epithelioid cell granuloma with background caseous necrosis [Giemsa X100]. 1d: Image showing ZN stain positivity for Acid fast bacilli (TB) [X1000]

DISCUSSION

Lymphatic filariasisis usually confined to tropics & subtropics and is a major concern in India. Inspite of its high incidence, it is unusual to find microfilaremia in FNAC smears of lymph nodes. Microfilariasis is caused by nematodes group of parasites usually located in blood vessels, lymphatics, connective tissue and serous cavities. The most common species seen in India is *Wuchereriabancrofti* (Brown *et al.,* 2006). This is sheathed microfilaria with tail tip free from nuclei. *W. bancrofti* completes its life cycle in two hosts. Man is the definitive and mosquito is the intermediate host. Adult worms live in lymph nodes where the gravid females release microfilaria, which circulate in the peripheral circulation. These larval forms are injurious causing lymphadenitis leading to further complications. Apart from lymph nodes, it can be seen in lungs, liver and spleen.

The diagnosis of filariasis is by direct evidence of larval forms or by indirect immunoallergic tests. However, FNAC is an important diagnostic tool in the diagnosis of filariasis in the early stages, as seen in our case.

Bancroftian filariasis causes a wide range of clinical manifestation. Acute phase is characterized by fever, lymphangitis, lymphadenitis, epididymo-orchitis and funiculitis. Chronic stage is manifested as lymphadenopathy, lymphedema, hydrocele and elephantiasis. A significant number of infected individuals remain asymptomatic throughout their lives. Often the findings were incidental, detected in asymptomatic patients. In early stage, microfilaria do not appear in peripheral blood & diagnosis usually depends on lymph node FNAC and biopsy or immunological test (Brown *et al.,* 2006; Metenou *et al.,* 2012).

There are case reports of Microfilaria found in FNAC smears at different unusual sites like breast, thyroid, lymph nodes, liver, lung, salivary glands, breast, cutaneous nodules, soft tissue nodule, oral and skin ulcers, pericardial fluid and in bone marrow aspirates, joint aspirates and other body fluids; though it is frequently found in axillary lymph nodes as incidental finding (Metenou *et al.,* 2012; Lipner *et al.,* 2006). In the present case, there were multiple cervical lymph nodes as the initial presentation without evidence of lymphangitis. Radiological findings may not be conclusive in diagnosis of microfilaria. Absence of microfilaia in peripheral blood does not rule filariasis. Histopathology of lymph node may not show microfilaria/ adult worm. So, even in the absence of clinical features of filariasis, FNAC can be an invaluable tool in diagnosis of lymphatic filariasis, as noted in the present case. Many studies have been done to analyze the correlation of both the infections in the same patient. Potential interaction occurs among these pathogens due to their overlapping geographic distribution (Elias *et al.,* 2006). Both the infections have different anatomic predilection and the interplay among them is indirect and is related to different immunological responses that each of the pathogen induces (Resende Co *et al.,* 2007). In most co-endemic regions acquisition of filarial infection with Mycobacterium tuberculosis is occasionally seen. Various filarial genome project points towards role of some immune-suppressant molecules in lowering the immunity of the host, thereby resulting in poor immune surveillance. The molecules which help in evading the immune mechanism are cysteine protease inhibitor, TGF homologues, and serine protease inhibitors[3-5].This lowered immunity predisposes the host to opportunistic infections and neoplasm. Filarial Infection Modulates the Immune Response toMycobacterium tuberculosis through Expansion of CD4+ IL-4 (Resende Co *et*

al., 2007). It has been studied that helminth infection may be associated with generation of alternatively activated macrophages which lead to impaired machinery and thereby failing to respond to bacterial infections. However, the causation of their association is still not proven. A large study is needed to validate their coexistence. Microfilarial larvae in asymptomatic patients can reach tissue spaces due to vascular or lymphatic obstruction, leading to extravasations of larva. Cytology can demonstrate these extravasated larvae in tissue spaces or fluids. Thus, demonstration and identification of the parasite in cytologic smears played a significant role in the prompt recognition of the disease and institution of specific treatment, obviating the more severe manifestations of lymphatic filariasis. In our case, the patient was a native of an endemic area without any specific signs and symptoms. FNAC proved to be a simple and effective method of diagnosis in this case.

Conclusion

Co-existence of tuberculosis and filariasis is a rare association and is the result of the altered immunological response.This study highlights the importance of a simple and effective diagnostic modality, i.e. FNACin detection of these infective etiologies in the same patient and further helping in disease eradication by providing two distinct modes of treatment for these infections.

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