ABSTRACT
Bancroftian filariasis, a tropical and subtropical disease caused by Wuchereria bancrofti, is transmitted by the culex mosquito. The disease is conventionally diagnosed by the demonstration of microfilaria in peripheral blood smear. Microfilaria and adult filarial worms have been incidentally detected in fine needle aspiration cytology (FNAC) in various locations. The disease may be missed if one is not aware of the possibility, particularly in cases where eosinophilia is absent. Therefore, clinicians and pathologists need to be more vigilant in the endemic zones for early diagnosis and the treatment of filariasis. We report here an unusual case of filariasis in a 17-year-old female with a swelling in the lower part of the left arm on the flexor surface. This highlights the chances of finding microfilaria in cytology of an unsuspected case at an unusual site. This case, in addition, stresses the fact that microfilaria may be associated with an abscess even in the absence of eosinophilia.

Key words: Fine needle aspiration cytology (FNAC); microfilaria; Wuchereria bancrofti

Introduction
Filariasis is caused by slender threadlike nematodes belonging to superfamily Filarioidea. Wuchereria bancrofti, Brugia timori (B. timori), and Brugia malayi are the most common organisms causing filariasis in humans. Filariasis is endemic in tropical countries, especially India, China, Indonesia, and parts of Africa.[1] The disease is endemic all over India except for some parts of northern India.[2] Bancroftian filariasis produces a wide range of clinical manifestations. Eosinophilia and microfilaraemia are common in the acute phase. The chronic stage is characterized by lymphadenopathy, lymphedema, hydrocele, and elephantiasis.[3] Fine needle aspiration cytology (FNAC) has an important role in the diagnosis of subclinical filariasis.

Case Report
A 17-year-old female patient presented with a subcutaneous swelling on the flexor surface of the lower part of the left arm for last 3 weeks. The swelling was accompanied by mild pain. It was 2 cm × 2 cm, spherical in shape with well-defined margins. The swelling was freely mobile without any signs of acute inflammation. The patient did not reveal any other swelling in the body. Routine hematologic tests showed complete blood count and erythrocyte sedimentation rate within normal limits. Peripheral smear prepared from the patient’s blood did not demonstrate any parasite. Absolute eosinophil count and eosinophil count were within normal limits (absolute eosinophil count 200/mm³, eosinophils 2%).

Clinical diagnosis of neurofibroma/lipoma was made by a treating physician and the patient was referred to the Department of Pathology for FNAC, which was done using a 10 mL syringe and a 22 gauge needle under aseptic precautions yielded pus. Aspirated material was spread on
slides, air-dried, and stained with Giemsa stain and Ziehl-Neelsen stain for acid-fast bacilli.

Cytological examination of Giemsa-stained smear showed a large number of microfilaria in the background of degenerated inflammatory cells that comprised of neutrophils, eosinophils, histiocytes, and lymphocytes. The microfilaria had typical features of the presence of hyaline sheath, cephalic space, and tail end devoid of nuclei. Thus, these Wuchereria belonged to the species bancrofti [Figure 1].

Ziehl-Neelsen staining did not show any acid-fast bacilli.

Follow-up
The patient was treated with diethylcarbamazine [100 mg ter die sumendum (TDS)] for 21 days and kept on follow-up. The swelling subsided by the end of the 3rd week.

Discussion
Lymphatic filariasis is a term that refers to a condition caused by infection by the nematode worms Wuchereria bancrofti, Brugia malayi, and B. timori that are transmitted by mosquitoes. The life cycle of Wuchereria bancrofti is found in two hosts, man (definitive host) and mosquito (intermediate host). The adult worm resides in lymph nodes, where the gravid female releases a large number of microfilariae. These larvae pass through the thoracic duct and pulmonary capillaries to the peripheral circulation.[1] Adult worms can survive in the lymphatic system for 5-15 years.[4]

Quite often, detection of microfilariae in superficial locations by FNAC is an incidental finding and clinically not anticipated. Microfilariae have been demonstrated in aspirates from different sites such as cervical lymph node (provisional diagnosis of tuberculosis),[9] nonhealing leg ulcer (provisional diagnosis of skin infection),[3] preauricular swelling in subcutaneous tissue (provisional diagnosis of preauricular abscess).[3] In our case, there was superficial swelling on the flexor surface of arm with a provisional diagnosis of lipoma/neurofibroma.

Definitive diagnosis of microfilaria is made by the demonstration of parasite in peripheral smear. In our case, subsequent peripheral examination following cytological diagnosis did not reveal microfilaria that suggests that filariasis can exist without microfilaremia as also reported by Haleem et al.[6] Blood eosinophil counts within normal range, as observed in our case, were reported as well by Rawat et al.[7] and Varghese et al.[8] These observations suggest that there is no consistent relationship between filarial infection and blood eosinophilia that in turn reflects the difference in host response to parasite from person-to-person. The detection of antigen may be helpful in these cases but such tests are expensive and available only in research labs. There was an associated inflammatory reaction in smears in our case that mainly consisted of neutrophils and eosinophils. Restricted movement of the adult worm may elicit severe reaction in the form of eosinophilia, eosinophilic abscess, neutrophilic abscess, necrosis, and epithelioid cell granuloma.[6]

FNAC plays an important diagnostic role in clinically palpable lesions. Filariasis is more often an incidental finding rather than being a primary diagnosis. There is very low detection rate of microfilaria in superficial swellings, with the absence of eosinophilia.[9] Peripheral blood smears and histopathological examination may not always demonstrate microfilaria. Microfilariae may not be seen in peripheral blood due to elephantiasis, lymphangitis, early stages of allergic manifestations, and in occult filariasis. In the early allergic stage, microfilariae do not appear in peripheral blood and, therefore, lymph node FNAC adjacent to the area of lymphangitis and/or immunologic tests may help in early detection.[9] Monoclonal antibodies against circulating filarial antigen and molecular biology techniques such as in situ hybridization (ISH), fluorescence in situ hybridization (FISH), and polymerase chain reaction (PCR) are now available for specific diagnosis, but are available only in specialized centers.[9]

Conclusion
High degree of suspicion is required to diagnose filariasis, especially when eosinophil count is normal and there is an absence of microfilaria in peripheral blood. Careful screening of cytological smear can render definitive diagnosis of early, asymptomatic, and clinically unsuspected cases of filariasis,

Figure 1: FNAC smear showing microfilaria in the background of degenerated inflammatory cells (Giemsa, ×100)
Thus, FNAC can be helpful to render a diagnosis of filariasis, even in the absence of clinical features of filariasis.

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Conflicts of interest
There are no conflicts of interest.

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