Microfilaria in Cytological Smears at Rare Sites Coexisting with Unusual Pathologies - A Series of Eight Cases

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Abstract

Microfilaria infection is one of the major health problem in developing countries like India, especially in rural areas. In most of the cases microfilaria was an incidental finding in FNAC smears prepared from swellings from various locations in the body and also from fluid aspirate. Peripheral blood smear examination is usually done for the diagnosis. Here, we presented a series of eight cases with very unusual and rare locations. We found microfilaria in subcutaneous arm swelling, pleural effusion, axillary swelling, breast and salivary gland. All cases were rare and unique.

KEYWORDS: Microfilaria, FNAC, cytology.

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Introduction

Filarial infection is a major global health problem mainly in tropical areas of Southeast Asia. In India it is present endemically specially in coastal areas where the most common manifestation of filariasis is lung involvement. There are three different filarial species that can cause lymphatic filariasis in humans. Most of the infections worldwide are caused by *Wuchereria bancrofti* [1]. In Asia, the disease can also be caused by *Brugia malayi* and *Brugia timori*. It spreads in humans through mosquito bites. Though it is a common infection in India but it is very rare to find microfilaria in Fine Needle Aspiration Cytology (FNAC) smears and body effusions. Filariasis has been reported in cytologic smears from various organs and sites like breast, soft tissue swelling, body fluids, salivary gland and axillary swelling [2-4].

Here, we report a case series of eight cases which were diagnosed with microfilaria in routine FNAC smears and pleural fluid examination without any suspicion of microfilaria infection. In our eight cases three cases were from arm sub-cutaneous swelling, one case was from axillary swelling, two cases were from pleural effusion, one case was breast (right sided) and remaining one case was from salivary gland. All these locations were rare for filarial infection. So, this study was planned to know age, clinical characters, gross and microscopy findings associated with microfilarial infection in these rare sites.

Method

The study was conducted in Rural Institute of Medical Science and Research, Saifai, Etawah (U.P.) India. A total of eight cases diagnosed with microfilaria on microscopic examination were included in present study. The age of patients were ranging from 17-80 years. All these patients were thoroughly examined and routinely investigated. Total leucocyte count, differential leucocyte count and erythrocyte sedimentation rate was done in all cases. After aspiration smears were prepared and wet fixed immediately in 95% alcohol followed by staining with Hematoxylin and Eosin stain. Air dried smears were stained by May-Grunwald Giemsa stain whereas for fluid examination, aspirate was centrifuged at 3000 RPM for 20 minutes and

smears were prepared from sediment and then stained with Hematoxylin-Eosin stain and May-Grunwald Giemsa stain.

Result

Eight cases of filariasis with unusual location were diagnosed on cytology examination from various sites. Out of these eight cases, the maximum numbers of microfilaria positive cases were from arm swelling (3) followed by salivary gland (1), axillary lump (1), right breast (1) effusion fluid (2) [Table 1]. The clinical presentations of these cases varied. The duration of symptom varied from day to years. The disease was equally prevalent in males and females (M:F = 1:1).The most common age of presentation was 21-30 years, with a range of 17-80 years. In the present study, clinically most cases presented with swelling. The size of swelling ranged from 1 cm to 6 cm. The aspirate was grossly fluid in six cases and in other two hemorrhagic and purulent. On microscopic examination, microfilaria was diagnosed in all cases, all microfilaria had sheaths and curved tails which were free of nuclei. In one case, malignancy was diagnosed along with the presence of microfilaria in sub-mandibular gland. One case of axillary accessory breast tissue was diagnosed along with microfilaria in right accessory breast tissue. Another breast lump showed benign proliferative breast disease with microfilaria. Rest of the cases showed inflammatory pathology with microfilaria.

Discussion

Microfilarial infection is a major health problem and it is endemic in India. Most of the infections worldwide are caused by *Wuchereria bancrofti*.

In Asia, the disease can also be caused by *Brugia malayi* and *Brugia timori* and it is transmitted through culex mosquito [5]. An adult worm can obstruct lymphatics and cause lymphedema and fibrosis. Cutaneous filariasis may be caused by *Loa loa* (the African eye worm), *Onchocerca volvulus* and *Mansonella streptocerca*. These worms reside in the subcutaneous layer of the skin, in the fat and make a nodule formation. *Wuchereria bancrofti* causes 90% and *Brugia* species causes 10% of total number of infections worldwide [6, 7]. The disease caused by this parasite mainly involves lymph nodes, lymphatic system. It can also involve lungs, pleural, pericardial, ascitic fluid, ovarian cyst fluid, breast lump, bone marrow, bronchial aspirate, thyroid, parotid and gall bladder [6, 8].

Figure 1. 30-year-old male (Case 1) presented with submandibular region swelling measuring 1x1 cm, tender, firm, painful and fixed to underlying skin.

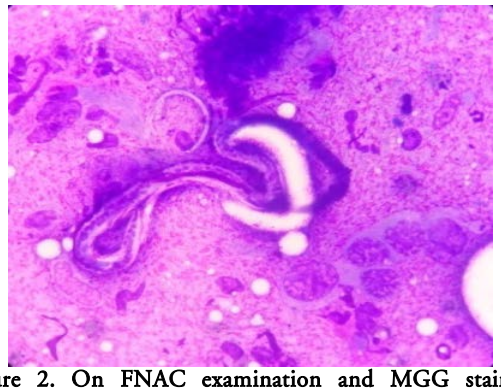

Figure 2. On FNAC examination and MGG staining (100x), smears shows muco epidermoid carcinoma of the salivary gland along with the microfilaria (Case 1)

Figure 3. Swelling in arm measuring 4x3 cm, painful, soft in nature and not fixed to the underlying skin (Case 6).

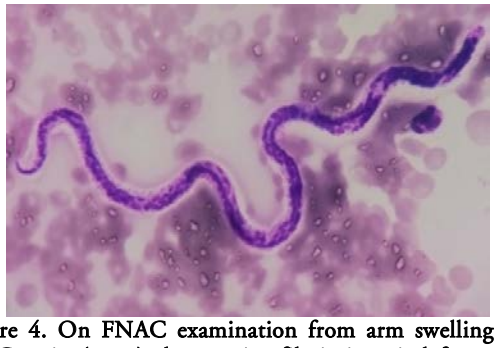

Figure 4. On FNAC examination from arm swelling and MGG stain (100x) shows microfilaria in spiral form with sheath, somatic cells and inflammatory cell in background (Case 6).

Table 1. Site, Age, Clinical symptoms and Microscopic findings in patients diagnosed with Microfilaria.

Anatomical site	Age(y)/Sex	Size	Duration	Fever	Tender	Consistency	Gross	Microscopic findings
1. Salivary gland (submandibular)	30/M	1x1 cm	5 mths	A	P	Firm	Blood mix pus	Mucoepidermoid carcinoma with MF
2. Breast (right side)	22/F	4x4 cm	5 yrs	A	A	Firm	Blood mix fluid	Benign proliferative breast disease with MF
3. Axillary swelling	25/F	4x4 cm	2 yrs	A	P	Firm	Blood mix fluid	Accessory breast tissue with MF
4. Left upper arm	20/M	6x6 cm	6 mths	A	P	Soft and cystic	30 ml pale fluid	Inflammatory Pathology with MF
5. Right upper arm	17/F	5x4 cm	2.5 yrs	A	A	Soft	Pus like material	Inflammatory Pathology with MF
6. Right upper arm	26/F	4x3 cm	6 mths	A	P	Soft	5 ml fluid	Inflammatory Pathology with MF
7. Effusion (pleural fluid)	50/M	-	-	P	-	-	10 ml fluid	Inflammatory Pathology with MF
8. Effusion (pleural fluid)	80/M	-	15 days	P	-	-	10 ml fluid	Inflammatory Pathology with MF

M= Male, F= Female, Yrs = Years, Mths= Months, A= Absent, P= Present, MF = Microfilaria

Filarial parasite demonstrated in cytological smears from many unusual sites is an incidental finding [9, 10].

Finding of microfilaria in salivary gland swelling associated with malignancy is very rare [6, 8]. The rich blood supply of tumors could increase the concentration of the parasite at that site. The larvae may be present in the vasculature and aspiration may lead to rupture of vessels resulting in the haemorrhage and release of microfilaria [8]. The presence of microfilaria within the neoplasm is a chance association. The patient probably had subclinical filariasis when the tumor developed.

Many authors have reported microfilariae in breast lumps by FNAC smears [6, 8, 11]. We have also diagnosed microfilaria in breast tissue along with proliferative breast disease.

Accessory breast is the presence of ectopic breast tissue. Axilla is common location for accessory breast. We have reported a case of accessory breast in axilla along with microfilaria.

Finding of microfilaria in subcutaneous arm nodule is rare [3, 12]. Here we reported three cases of microfilaria in upper arm subcutaneous nodule. It was purely an accidental finding in asymptomatic, unsuspected cases. On microscopy, along with microfilaria inflammatory smear was also found. Inflammatory reaction might be due to microfilaria, acting as foreign body.

Next two cases were of 50 and 80 years old male patients in which we found microfilaria in pleural effusion. Pleural fluid is uncommon site for microfilaria. Navaz et al. [13] stated that idiopathic pleural effusion must look for microfilaria, just like in our case where patient had no other history regarding pleural effusion.

Oza et al. [3] stated that FNA is an important tool for diagnosing filarial infection in India which is endemic for this infection. Present study also confirms this since we have diagnosed microfilaria in cytology examination.

Conclusion

India is endemic for filarial infection, it is necessary to examine carefully FNAC and fluid smears from different body swelling at different unsuspected locations for microfilaria. FNAC is a rapid, OPD procedure and is diagnostic tool for the diagnosis of microfilaria. We conclude that vigilant screening of cytological smears should be done to diagnose microfilaria, which helps clinician to provide early treatment and to reduce morbidity due to microfilaria.

Conflict of Interest

None declared

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