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RETROSPECTIVE STUDY OF FILARIASIS – CASE STUDY OF 19 CASES

Pathology

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ABSTRACT

Background: Filariasis continues to be one of the endemic problems worldwide. It is diagnosed by demonstration in peripheral smear and fine needle aspiration of swelling.
Objectives: To discuss the role of routine screening of peripheral smear and FNAC in diagnosis of Filariasis.
Material And Methods: This is a retrospective study carried out in the Department of Pathology at SSIMS Bhilai, Chhattisgarh. Aspiration was made by 22-23 gauze needle, smears were stained by Field stain, Papanicolaou and May-Grunewald Giemsa stain, and routine screening of peripheral smear and confirmation with wet mount smear for filariasis.
Result: Twelve out of total 19 cases were incidental finding of microfilaria in peripheral smear examination. Seven out of total 19 cases incidentally showed microfilaria in cytology specimen without any clinical suspicion which included Breast lumps (two cases), Thyroid swelling (one case), Lymph node (one case), Subcutaneous swelling (one case) and two case of Scrotal swelling.
Conclusion: Routine screening of peripheral smear and FNAC can play an important role in diagnosis of Filariasis in clinically unsuspected cases in endemic areas.

KEYWORDS

Filariasis, Fine needle aspiration cytology, Microfilariae

INTRODUCTION

Filariasis is a global problem. India, china and Indonesia have major health issue of filariasis, it account for around two third of estimated world total infected persons. India account for about 40% of the total global disease burden [1]. In the endemic areas, up to 10% may be afflicted by filariasis [2]. In India, lymphatic filariasis is mainly caused by *Wuchereria bancrofti*, the vector for which is the mosquito *Culex quinquefasciatus* ©. *fatigans*).[8]

The life cycle of filariasis is divided in two phase mosquito phase and human phase. During a blood meal, an infected mosquito introduces third-stage filarial larvae on to the skin of the human host, where they penetrate into the bite wound. They develop in adults that commonly reside in the lymphatics. The female worm measure 80 to 100 mm in length and 0.24 to 0.30 mm in diameter, while the males measure about 40 mm by 1 mm. Adults produce microfilariae measuring 244 to 296 µm by 7.5 to 10 µm, which are sheathed and have nocturnal periodicity. The microfilariae migrate into lymph and blood channels moving actively through lymph and blood. A mosquito ingests the microfilariae during a blood meal. After ingestion, the microfilariae lose their sheaths and some of them work their way through the wall of the proventriculus and cardiac portion of the mosquito's midgut and reach the thoracic muscles. There the microfilariae develop into first-stage larvae and subsequently into third-stage infective larvae. The third-stage infective larvae migrate through the hemocoel to the mosquito's proboscis and can infect another human when the mosquito takes a blood meal.[9]

Filarial infection can cause a variety of clinical manifestations, including lymphedema of the limbs, genital disease (hydrocele, chylocele, and swelling of the scrotum and penis) and recurrent acute attacks, which are extremely painful and are accompanied by fever. The vast majority of infected people are asymptomatic, but virtually all of them have subclinical lymphatic damage and as many as 40% have kidney damage, with proteinuria and haematuria. [10]

The diagnosis of filariasis requires examination of a blood smear. Since the number of parasites (parasitemia) in the blood is higher during the night, blood samples are best obtained at night. A somewhat easier diagnostic test was recently developed that may be used at any time during the day. It is based on detecting the presence of antigen and antibodies, generated in reaction to the foreign bodies, the parasites themselves. Recently a new technique of Molecular xenodiagnosis (MX) detects filarial DNA in mosquitoes by PCR. Ultrasound study can identify rapidly moving adult worm.

METHOD

This is a retrospective study of clinically unsuspected case of filariasis diagnosed on peripheral smear and FNAC performed in SSIMS Bhilai CG. Routine screening of peripheral smear was done followed by wet smear study if filarasiasis present. FNAC was performed with 22/23 gauze needle and 5 ml syringe. Aspiration was air dried for Field stain and Leishman stain, wet fixed in 95% alcohol for Papanicolaou stain. Total 19 cases were diagnosed over a period of 2 year. (Jun 2018 to June 2020).

Microscopic examination of microfilariae and evaluation of morphological features like they have a gently curved body and a tail that is tapered to point. The nuclear column (the cells that constitute the body of the microfilaria) is loosely packed; the cells can be visualized individually and do not extend up to the tip of the tail.

Inclusion Criteria:
Cases in which microfilaria is detected in PS and Cytology

Exclusion Criteria:
Peripheral smears of FNAC diagnosed cases were not included in this study.

Statistical Analysis:
Statistical analysis was carried out wherever necessary.

RESULT

The study included 19 cases of filariasis which included 07 cases of FNAC, 12 cases of peripheral smear study. Respective frequencies of detection of organisms in FNAC from different sites are shown in (Table 01).

The patients usually presented as swelling at various sites with or without pain and fever. The duration of history ranged from days to years.

Table: 01. Frequency Of Filariasis

S. No.	Specimen	No. of cases with Filariasis
1.	Breast lump	2
2.	Thyroid swelling	1
3.	Lymph node	1
4.	Subcutaneous swelling	1
5.	Scrotal swelling	2
6.	Peripheral smear	12

In our study of total number of 19 cases, the morphology of the microfilariae was consistent with *W. bancrofti*. Microfilaria had sheath, smooth curves and pointed curved tail which were free of nuclei. The age of the patients ranged from 17 to 50 yrs with no specific age preponderance. Out of 19, twelve were males and 07 were female and the ratio was 1.7:1.

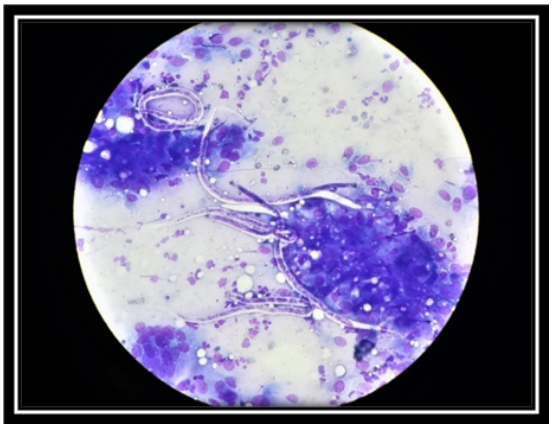

Figure 1: FNAC Smear From Breast Swelling Show Ductal Cells And Microfilaria Of Wucheriabancrofti (MGG Stain, 40X)

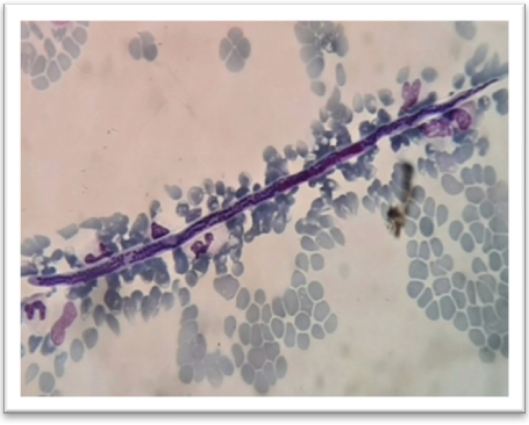

Figure 2: FNAC Smear From Subcutaneous Nodule Show Microfilaria Of Wucheriabancrofti (MGG Stain, 40X)

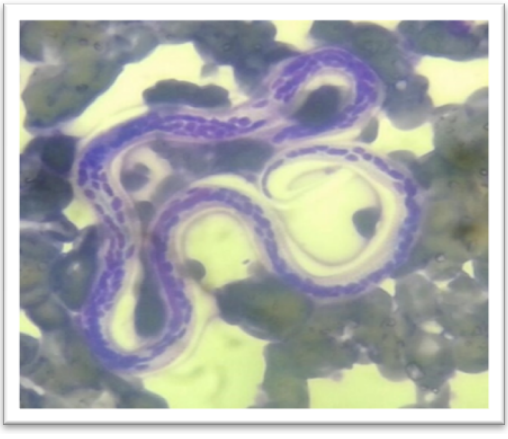

Figure 3: PS Smear Study Show Microfilaria Of Wucheri abancrofti Had Sheath, Smooth Curves And Pointed Curved Tail Which Were Free Of Nuclei. (MGG Stain, 40X)

Table-2: Summary Of Clinical Data And Cytological Findings In The 19 Case Of Filariasis

Case no.	Type of specime	Age/sex	Clinical presentation	Microfilar	Eosinophili
1	Aspirate	22 y/F	Thyroid Swelling	+	-
2	Aspirate	30 y/F	Breast lump	+	-
3	Aspirate	17y/F	lymph node swelling	+	-
4	Aspirate	46y/F	Breast Lump	+	-
5	Aspirate	22 y/M	Subcutaneous swelling	+	+
6	Aspirate	50y/M	Scrotal swelling	+	+
7	Aspirate	48y/M	Scrotal swelling	+	-
8	PS	18 y/F	clinically unsuspected case	+	+
9	PS	23 y/F	clinically unsuspected case	+	-
10	PS	28 y/F	clinically unsuspected case	+	+
11	PS	40 y/M	clinically unsuspected case	+	-
12	PS	43 y/M	clinically unsuspected case	+	-
13	PS	36 y/M	clinically unsuspected case	+	-
14	PS	42y/M	clinically unsuspected case	+	-
15	PS	26y/M	clinically unsuspected case	+	+
16	PS	48 y/M	clinically unsuspected case	+	-
17	PS	42 y/M	clinically unsuspected case	+	+
18	PS	27y/M	clinically unsuspected case	+	-
19	PS	31 y/M	clinically unsuspected case	+	+

Cut off value for eosinophilia in peripheral smear was considered when eosinophils count above 500 mm^3/ml. The peripheral blood smears revealed eosinophilia in only 5/12 cases of peripheral smear study and 02/07 case in cytology smear study. The number of eosinophils ranged from 8 to 27%. Nocturnal blood sample examination for presence of microfilaria was done in only seven cases; out of which one case of subcutaneous and scrotal swelling was reported as positive for microfilaria.

DISCUSSION:

India is one of the tropical country where filariasis is seen endemically. Others countries commonly affected are China, Indonesia, and parts of Africa [3, 4].

Adult filarial worm reside in lymphatic's or lymph nodes while larval form circulate in peripheral smear which is taken by mosquito and is caused by the nematode worms Wuchereria bancrofti, Brugia malayi [5]. Humans are the definitive host for these infections while mosquito acts as an intermediate host. Lymphatic's blockage and lymphadenitis cause lymphedema. Extralymphatics filariasis is rare entity includes uncommon sites like skin and soft tissue swelling, breast, thyroid nodule, salivary gland, cervicovaginal smear, ovarian cyst, effusion fluids, urine, bronchial, laryngeal, and pharyngeal brushings.[6][7]

FNAC is good diagnostics tool to evaluate subcutaneous soft tissue swelling to diagnose different parasite like Filarial worm, Hydatid cyst and Cysticercosis. Careful evaluation of all peripheral smears in endemic area is also good tool to diagnose cases of microfilaria. Provocation test with Diethylcarbamazine drug is done in all suspected cases. Other test include Skin tests with filarial antigens, serological detection of filarial antigen and antibody which include ELISA test, IHA test, Immunochromatographic card test and ultrasonography test. In present study none of the case was clinically suspected for filariasis, all cases were incidental finding. Present study show male to female ratio was 1.7:1, with patient age ranges from 17 to 50 year, no age preponderance was there.

Present study does not show any site preponderance.

Cases of breast filariasis, one case present as painless slowly growing breast mass duration of 3 month and axillary lymphadenopathy. Other case of breast filariasis present as painful breast mass with sign of inflammation and axillary lymphadenopathy.

Cases of scrotal filariasis one case presented as bilateral scrotal swelling with sign of epididymo-orchitis, other case presented as painful testicular mass with no history of trauma and inguinal lymphadenopathy. Case of thyroid filariasis presented as painless enlargement of thyroid swelling over a period of 8 month with normal thyroid function. Case of subcutaneous nodule present as supraclavicular swelling clinically mimicking as lymph node.

Case of lymph node filariasis presented as painless cervical

lymphadenopathy without history of fever. Nocturnal blood sample of all seven cases was done, only one case of scrotal swelling and subcutaneous swelling show microfilaria. All peripheral smears carefully evaluated during the period of 2 year, 12 cases show filariasis. Later on for all positive cases of peripheral smear filariasis, wet smear study was done.

The present study prove the role of careful evaluation of all peripheral smear examination and role of cytology as a simple and cheap method in detection of filariasis in clinically unsuspected patients, especially in endemic areas and disease may be missed if someone is not aware of possibility.

CONCLUSION:

Filariasis is not an uncommon in tropical countries like India. It is major cause of clinical suffering and disability. It is not only disease but an economic and social burden for the society. The possibility of filariasis should always be kept in mind especially in patients from endemic areas with swelling of unknown cause**.**

Fine needle aspiration cytology and peripheral smear study is easy and cost effective screening tools for diagnosis of microfilaria.

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