



## National Journal of Medical and Allied Sciences

[ISSN Online: 2319 – 6335, Print: 2393 – 9192|Original article |Open Access]

Website:-[www.njmonline.org](http://www.njmonline.org)

### INCIDENTAL DETECTION OF MICROFILARIA IN CYTOLOGIC SMEARS AT UNUSUAL SITES IN RURAL POPULATION OF NORTH INDIA

Geeta Maurya <sup>1</sup>, Sanjeev Kumar Singh <sup>2</sup>, Ruquiya Afrose<sup>3</sup>, Pinki Pandey<sup>4</sup>

<sup>1</sup>Lecturer <sup>2,3</sup> Assistant Professor <sup>4</sup> Professor & Head

Department of Pathology, UP University of Medical Sciences, Saifai Etawah

#### Abstract

**Introduction:** Microfilarial infection is a major public health problem in India, and caused by mainly *Wuchereria bancrofti* and transmitted by culex mosquito. Diagnosis is usually made by demonstrating microfilaria in peripheral blood smears. Detection of microfilaria is an incidental finding in cytologic smears prepared from swellings from various locations in the body and fluids. This study was undertaken to assess the role of FNAC/cytologic smears in diagnosis of microfilaria in asymptomatic cases.

**Materials and methods:** In this prospective observational study, we screened 1850 cytologic smears (FNAC and body fluids) in a duration of 15 months and incidentally detected microfilaria in few cases, which were clinically unsuspected cases.

**Results:** We incidentally found microfilaria in cytologic smears prepared from pleural fluid (2 cases), from vaginal fluid (1 case), FNAC smears from arm swelling (3 cases) and from Lymph node swelling (2 cases). Interestingly all cases in our study showed no clinical evidence or suspicion of filariasis.

**Conclusion:** Our study emphasizes that in rural population of north India, careful screening of cytologic smears is very helpful in detecting microfilaria even in asymptomatic patients. So by early treatment we can prevent the complications.

**Key words:** Microfilaria, FNAC, lymph node, pleural fluid, vaginal fluid

Corresponding author: Sanjeev Kumar Singh Email: [drsanjeev.rml@gmail.com](mailto:drsanjeev.rml@gmail.com)

#### INTRODUCTION

Filariasis is a major health problem in tropical and subtropical countries like India, China, Indonesia and the far east. <sup>(1)</sup> Microfilarial infection is endemic in India and most of the infections are caused by two nematode worms- *Wuchereria bancrofti* and *Brugia malayi*. They are transmitted by *Culex* mosquito. The disease mainly involves the lymphatic system of the body. Despite its high incidence, it is infrequent to find microfilaria in

cytologic smears e.g. Fine Needle Aspiration Cytology (FNAC) smears and body fluids smears. The Diagnosis is usually made by demonstrating microfilaria in peripheral blood smears (PBS). However microfilaria might be coincidentally detected in FNAC smears in association with various inflammatory and neoplastic lesions in clinically unsuspected cases of filariasis. <sup>(2-5)</sup> So we conducted this study to assess the role of FNAC and other cytologic smears in diagnosis of microfilaria

in asymptomatic cases from the rural population of this region.

## **MATERIAL AND METHODS**

This prospective observational study had been conducted in Department of Pathology, UP University of Medical Sciences, Saifai, Etawah, India. Study duration was from January 2016 to march 2017. In this study we screened 1850 cytologic smears prepared in our departmental cytology lab, and incidentally detected microfilaria in few cases, which were clinically unsuspected cases. All cytological tests were performed as routine diagnostic tests and proper informed consent had been taken in all cases. A total of eight cases diagnosed with microfilaria. Peripheral blood smears (PBS) were negative for microfilaria in all these cases. FNAC smears were prepared by 21-23G needle with negative pressure, fine needle aspiration cytology method. Smears were prepared as routine wet-fixed and air dried, and stained by Pap staining and May-Grunwald-Giemsa staining respectively. While for fluid examination, smears were prepared from sediments deposits after centrifugation and stained by Pap staining and May-Grunwald-Giemsa staining.

## **RESULTS**

**Case 1-** A 17 year old female presented with firm painless swelling on right upper arm since 3 months, measuring 4x4 cm. Cytological examination (FNAC) revealed microfilaria in reactive lymphoid background. [Figure-1 (A,B)] PBS was negative for microfilaria.

**Case 2-** A 18 year old male presented with firm right upper arm swelling for 2-3 months, measuring 3x3 cm. Cytological examination(FNAC) revealed microfilaria in reactive lymphoid background. PBS was negative for microfilaria.

**Case 3-** A 20 year old male presented with soft cystic swelling on left upper arm since 15 days, measuring 5x4 cm. Cytological examination(FNAC) revealed microfilaria and background showed reactive lymphoid cells and

cystic macrophages. PBS was negative for microfilaria.

**Case 4-** A 11 year old male presented with left neck swelling for 1-2 months, measuring 4x4 cm. Cytological examination(FNAC) revealed granulomatous lymphadenitis along with microfilaria. [Figure-1 (C,D)] PBS was negative for microfilaria.

**Case 5-** A 40 year old female presented with left axillary swelling since 20 days, measuring 2x2 cm. Cytological examination(FNAC) revealed granulomatous lymphadenitis along with microfilaria. PBS was negative for microfilaria.

**Case 6-** A 37 year old female presented with bleeding PV and subsequent vaginal fluid is examined. Cytological examination of fluid revealed microfilaria and smear reported as negative for intraepithelial lesion or malignancy. [Figure-1 (E,F)] PBS was negative for microfilaria.

**Case 7-** A 80 year old male presented with fever and cough since one month. Cytological examination of pleural fluid revealed microfilaria in dense bacterial contaminated background. [Figure-1 (G)] PBS was negative for microfilaria.

**Case 8-** A 45 year old female presented with fever and cough for 1-2 months. Cytological examination of pleural fluid revealed microfilaria. [Figure-1 (H)] PBS was negative for microfilaria.

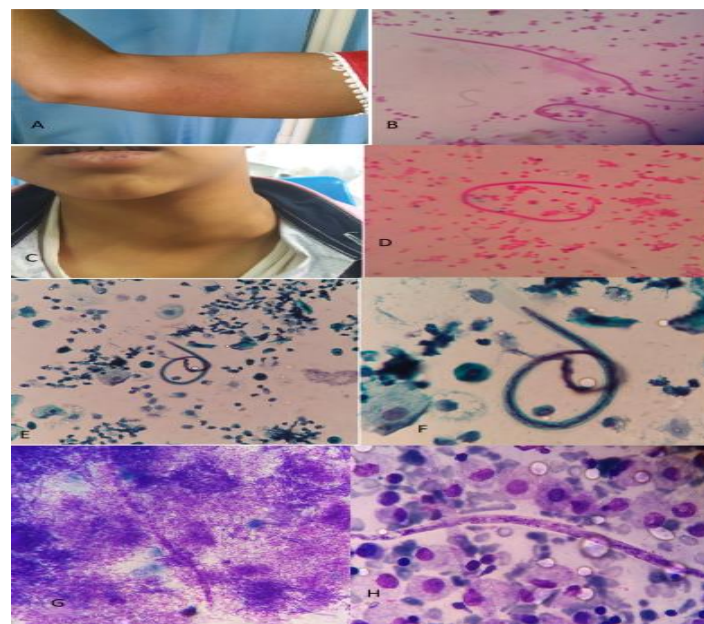


Figure-1- (A) Clinical image of right upper arm swelling of case 1 (B) Two microfilaria and lymphoid cells seen in 100x (C) Left neck swelling of case 4 (D) One microfilaria seen in 100x (E) Microfilaria seen in vaginal smear 100x, case 6 (F) Sheathed microfilaria in vaginal smear 400x (G) Microfilaria in pleural fluid of case 7, 400x, (H) Microfilaria in pleural fluid of case 8, 400x.

**Table-1: Clinical details of the microfilaria positive cases in cytology smears**

Case No.	Age/ Sex	Site/duration	Clinical examination	Aspirate/fluid gross characteristics	Microfilaria in blood smear
1	17 yr F	Right Upper Arm swelling/ 3 months	Measuring 4x4 cm, firm, nonmobile, nontender	Blood mixed aspirate	Negative
2	18 yr M	Right Upper Arm swelling/2-3 months	Measuring 3x3 cm, firm, nonmobile, nontender	Blood mixed aspirate	Negative
3	20 yr M	Left Upper arm swelling/ 15 days	Measuring 5x4 cm, soft, cystic, nonmobile, nontender	Blood mixed aspirate	Negative
4	11 yr M	Left neck swelling/ 1-2 months	Measuring 4x4 cm, firm, mobile, nontender	Pale-white aspirate	Negative
5	40 yr F	Left axillary swelling/ 20 days	Measuring 2x2 cm, firm, mobile, nontender	Blood mixed aspirate	Negative
6	37 yr F	Vaginal fluid	Bleeding PV	Whitish vaginal fluid	Negative
7	80 yr M	Pleural fluid	Fever and cough for 1 month	Pale-white fluid	Negative
8	45 yr F	Pleural fluid	Fever and cough for 1-2 months	Yellowish fluid	Negative

**DISCUSSION**

Filariasis is a global health problem with nearly 1.3 billion people living in areas where the disease is endemic. It is caused by nematode mainly *Wuchereria bancrofti*, which accounts for 95% cases of lymphatic filariasis, while the two closely related nematodes *Brugia malayi* and *Brugia timori* are responsible for other cases. Heavily infected areas in India are Uttar Pradesh, Bihar, Jharkhand,

Andhra, Odisha, Gujrat, Tamil Nadu and Kerala. <sup>(1)</sup> Lymphatic Filariasis clinically manifests as acute, chronic and asymptomatic disease. Microfilaria in blood and eosinophilia are common in acute phase. <sup>(1)</sup> The chronic phase of filariasis is characterized by lymphadenopathy, lymphedema, hydrocele and elephantiasis, caused by lymphatic blockage. Many infected persons in endemic areas remain asymptomatic throughout their life, and serves as an important source of infection in the community. Despite its high incidence, it is very rare to find microfilaria in FNAC smears and body fluids. However microfilaria have been coincidentally detected, when FNAC and other cytologic smears are examined for various inflammatory, neoplastic or other pathologic lesions in clinically unsuspected cases of filariasis, with absence of microfilaria in the peripheral blood. <sup>(2) (3) (4) (5)</sup> In a study by Walter et al., diagnosis of filariasis was made from cytologic smear in all 35 cases, while none had clinical filariasis. <sup>(6)</sup> There are very few cases of microfilaria at unusual sites such as lymph node, breast lump, pleural fluid, pericardial fluid, thyroid masses, bone marrow, bronchial aspirate, nipple secretion, ovarian cyst fluid and cervicovaginal smears in the literature. <sup>(7)</sup> Finding of microfilaria in subcutaneous arm nodule is rare. <sup>(8)</sup> In present study we reported 3 cases of microfilaria in upper arm subcutaneous nodule. They had no other complaint associated with nodule. All the 3 cases were negative for microfilaria in PBS. It was purely an incidental finding in asymptomatic unsuspected cases. Haren et al. reported a case of mid arm swelling, Cytologic smears from which were positive for microfilaria. They stated that FNAC is an important tool for diagnosing filarial infection in India which is endemic for this infection. <sup>(9)</sup> We also reported two cases of lymph node swelling, Left axillary swelling in 40 year old female and left neck swelling in 11 year male. FNAC smears of both cases showed microfilarial infection along with granulomatous lymphadenitis. Tuberculosis is chronic debilitating illness and immune response of patient is decreased, especially in Indian rural population. Gupta et al., also stated that sometimes

association of filarial infection with chronic debilitating diseases suggest that it should be considered as opportunistic infection. <sup>(10)</sup> Incidental finding of microfilaria in one case of vaginal fluid examination in our study, was another a very rare finding. Filarial elephantiasis of female genitalia is extremely rare and approximately its incidence is 1-2% of total cases of filarial elephantiasis. <sup>(11)</sup>

We reported two cases on the basis of pleural fluid cytology. One case was 80 year old, while other was 45 year female. We found microfilaria in pleural fluid cytology, which is considered rare site of presentation. Navaz et al., stated that idiopathic pleural effusion must look for microfilaria. <sup>(12)</sup> In our cases pleural effusion was idiopathic with no other history or associated lesion. That is why, our cases were in high suspicion category. Arora VK et al., also reported a case of pleural effusion with microfilarial infection. <sup>(13)</sup>

## CONCLUSION

Our study emphasize that careful screening of cytologic smears is very helpful in detecting microfilaria in clinically unsuspected and asymptomatic patients. So Filariasis may be detected incidentally in cytologic smears prepared from unusual sites and body fluids. By early detection of microfilaria, we can prevent severe disabling complications.

## REFERENCES

- (1) Park K, editor. Park's Textbook of Preventive and Social Medicine. 22th ed: M/s Banarsidas Bhanot Publishers; 2013; 245-51.
- (2) Varghese R, Raghuvver CV, Pai MR, Bansal R. Microfilaria in cytologic smears: A report of six cases. Acta Cytol. 1996; 40 (2):299-301.
- (3) Sinha BK, Prabhakar PC, Kumar A, Salhotra M. Microfilaria in a fine needle aspirate of breast carcinoma: An unusual presentation. J Cytol. 2008; 25(3): 117-8.
- (4) Gupta S, Sodhani P, Jain S, Kumar N. Microfilariae in association with neoplastic lesion: Report of five cases. Cytopathology. 2001; 12(2): 120-6.

- (5) Gupta K, Sehgal A, Puri MM, Sidhwa HK. Microfilariae in association with other diseases. A report of six cases. Acta Cytol. 2002; 46 (4): 776-8.
- (6) Walter A, Krisnaswami H, Cariappa A. Microfilariae of Wuchereria bancrofti in cytologic smears. Acta Cytol. 1983; 27(4): 432-6.
- (7) Chowdhary M, Langer S, Aggarwal M, Agarwal C. Microfilaria in thyroid gland nodule. Indian J Pathol Microbiol. 2008; 51 (1): 94-6.
- (8) Karumbaiah KP, Arshiya A, Subbannaiah, Kariappa TM. Cytodiagnosis of filariasis from a swelling in upper arm- a rare presentation. Sch J App Med Sci. 2013; 1 (5): 593-4.
- (9) Oza H, Bhalodia J, Shah A, Modi P. Mid arm swelling- a rare presentation of microfilaria. National J of Med Resarch. 2014; 3 (4): 256-8.
- (10) Gupta K, Sehgal A, Puri MM, Sidhwa HK. Microfilariae in association with other diseases. A report of six cases. Acta Cytol. 2002; 46 (4): 776-8.
- (11) Khanna NN, Joshi GK. Elephantiasis of female genitalia. Case report. Plast Reconstr Surg. 1971; 48 (4): 379-81.
- (12) Navazalam K, Raikar MP, Acharya V, Shetty SK. Pleural effusion: An unusual cause and association. Lung India. 2013; 30 (2): 158-60.
- (13) Arora VK, Gowrinath K. Pleural effusion due to lymphatic filariasis. Indian J Chest Dis Allied Sci. 1994; 36 (3): 159-61.

Conflicts of Interest: Nil Source of Funding: Nil

**Citation: Maurya G, Singh SK, Afrose R, Pandey P. Incidental Detection of Microfilaria in Cytologic Smears at Unusual Sites in Rural Population of North India National Journal of Medical and Allied Sciences 2017; 6(2): Online first**