Case Report

Incidental Finding of Microfilariae in Cervicovaginal Smears on Liquid-based Cytology - A Case Report of two Cases with Review of Literature

Swati Singla, Gaurav Singla, Tanisha Singla, Sachin Kolte

Department of Pathology, Vardhman Mahavir Medical College and Safdarjung Hospital, New Delhi, India

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Abstract

Filariasis is a vector-borne disease, which is quite common in tropical countries such as India. In India, it is most commonly caused either by *Wuchereria bancrofti* or *Brugia malayi*. It can present in any possible site, possibly, because of their ability to migrate along the lymphatics. Very few cases have been reported in the literature where microfilariae have been found in cervicovaginal smears. Most of the cases have been reported on conventional Pap smears. Here, we present two such cases where microfilaria was found as an incidental finding in liquid-based cytology preparation.

Keywords: *Cervicovaginal, liquid-based cytology, microfilaria*

Introduction

Filariasis is a vector born disease, which is quite common in tropical countries such as India. It poses a major social and economic health problem in India, where over 600 million people are at the risk of lymphatic filariasis infection.[1] The disease is endemic in the states of Uttar Pradesh, Bihar, Jharkhand, Andhra Pradesh, Odisha, Tamil Nadu, Kerala, and Gujarat.[2] In India, it is most commonly caused by *Wuchereria bancrofti* followed by *Brugia malayi*.

The conventional diagnosis of filariasis is based on demonstrating microfilariae in peripheral blood film examination.[1] However, the incidental detection of microfilariae has been reported in cytological smears from almost any part of the body.

Very few cases have been reported in the literature where microfilariae were found in cervicovaginal smears. Most of the cases have been reported on conventional Pap smears. Rarely, they have been reported on liquid-based cytology (LBC). Here, we are presenting two such cases where microfilaria was found as an incidental finding in LBC preparation.

Case Reports

Case 1

A 42-year-old P5 L5 asymptomatic female presented to the outpatient gynecology department for routine Pap screening. A cervical sample was collected and dropped into BD SurePath™ ethanol-based preservative fluid. Samples were sent to the pathology department where they were processed, and LBC smears were prepared. The smears revealed an uncoiled, eosinophilic, elongated, shrunken, thin organism, which on higher power showed the presence of nuclei not extending up to the tip of the tail [Figure 1]. There were no/few inflammatory cells. The rest of the Pap smear showed normal morphology. A peripheral blood film was made which revealed the presence of eosinophilia and microfilaria (*W. bancrofti*) [Figure 2]. The patient was referred to the medicine outpatient department where she was started with treatment for filariasis.

Case 2

A 25-year-female patient presented to the obstetrics and gynecology department with complaints of pain lower abdomen and burning micturition for 15–20 days. Per speculum and per vaginal examination revealed no clinical abnormal finding. Routine Pap screening was done. The cervical sample was collected and sent to the

Address for correspondence: Dr. Sachin Kolte, Department of Pathology, Vardhman Mahavir Medical College and Safdarjung Hospital, New Delhi - 110 029, India.
E-mail: drsachinkolte@gmail.com

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pathology department where LBC smears were prepared. LBC smears again revealed a similar morphology with an eosinophilic, elongated shrunken, thin organism [Figure 3] with nuclei not extending up to the tip of the tail [Figure 4]. It was reported as microfilariae.

Discussion

Microfilariae were first reported by Demarquay in 1863 in hydrocele fluid followed by Wucherer who found microfilariae in chyluria in 1866. Microfilaria in peripheral blood was first reported by Lewis in 1872.[3] Of all the chronic filarial species that infect the humans serious infestation is caused by only four, that is, *W. bancrofti*, *B. malayi*, *Onchocerca volvulus*, and *Loa loa*.[2] *W. bancrofti* is the most common causative organism, accounting for about 95% of all filarial infections. Not only in India it is present in tropics and subtropics of Africa, Asia, Western Pacific, and parts of the America affecting over 83 countries.

Bancroftian filariasis produces a wide spectrum of clinical manifestations. Headache, backache, muscle pain, insomnia, anorexia, urticarial rash, malaise, nausea, and fatigue are common complaints. Eosinophilia and microfilaremia are common in acute phase. Chronic stage of bancroftian filariasis is characterized by lymphadenopathy, lymphadema, hydrocele, and elephantiasis. Significant number of infected individuals in endemic areas remains asymptomatic throughout their life. The later situation is conventionally classified as "endemic normal."[4]

Microfilariae have been detected in almost every site of the body possibly because of their ability to migrate along the lymphatics. They have been found in lymph node aspirates and occasionally reported in thyroid, breast, brain, lung, salivary gland, epididymis, endometrial, and bone marrow aspirates.[4] They have also been reported occasionally in bronchial, gastric, laryngeal and pharyngeal washings; nipple secretions, ovarian cyst fluid, urine samples, and various effusion fluids such as pleural, pericardial, ascitic, and intraperitoneal fluids.[4] The appearance of microfilariae in tissue fluid and exfoliated surface material may be due to either lymphatic or vascular obstruction.[5] Few cases of microfilariae have been reported in conventional cervicovaginal Pap smears.[6] They have been rarely reported on liquid-based preparations.

Reporting of microfilariae on LBC smears remains an uphill task because of variation in morphology as

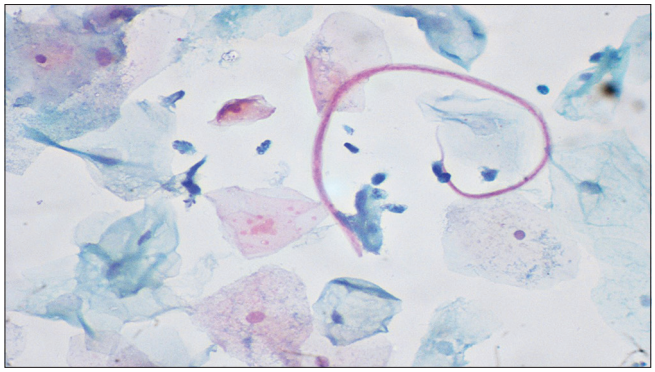

Figure 1: Liquid-based cytology smear shows an uncoiled, eosinophilic, shrunken, thin organism in a background of superficial and intermediate cells (pap, ×40)

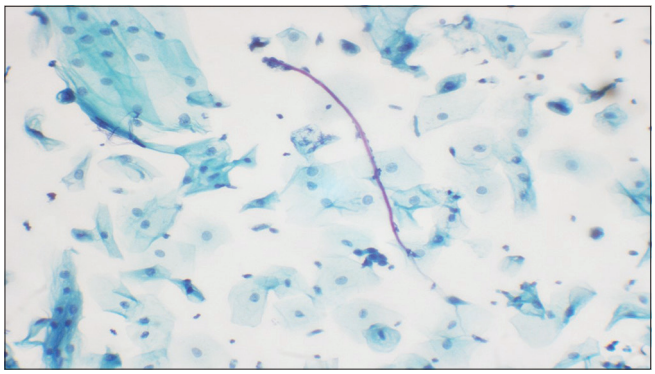

Figure 3: Liquid-based cytology smear shows an eosinophilic, shrunken, thin elongated organism in a background of superficial and intermediate cells (pap, ×40)

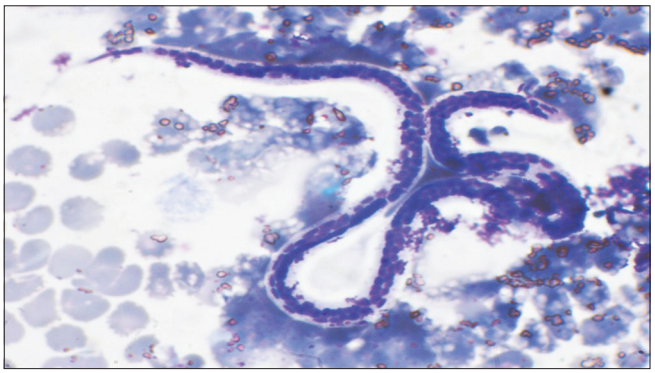

Figure 2: Peripheral blood smear showing the presence of a microfilaria which appeared as coiled basophilic thick organism with nuclei (pap, ×100)

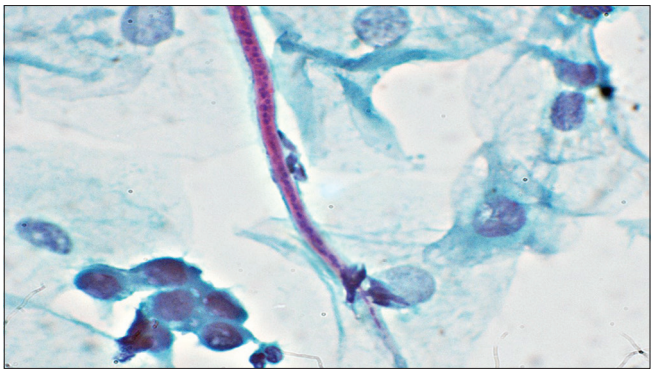

Figure 4: Liquid-based cytology on higher magnification revealing nuclei not extending up to the tail (pap, ×100)

compared to traditional Giemsa-stained smears. In Giemsa-stained smears microfilariae appear as coiled structures. They are thicker and wider. The nuclear sheath is clearly visible and appears basophilic. The nuclei are clearly appreciated. However, in LBC Pap smears, microfilariae are relatively uncoiled. They are elongated and shrunken. The nuclear sheath is not clearly visible, appears eosinophilic, and the nuclei are comparatively less clear. They can be easily mistaken as an artifact due to this unusual location and change in morphology.

Extensive search of the literature shows only one case report[7] where microfilariae were reported on liquid-based preparation smears. The importance of this case lies in the fact that the young budding pathologists should keep in mind, the variation in morphology of these microfilariae in LBC smears and not mistake them as an artifact. Thus, it becomes important during routine Pap screening to carefully look for these parasites, as it may help in the early detection and management of unsuspected cases.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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