

# Lymphatic Filariasis

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## Abstract

A myanmar male presented with a large, swollen, indurated and ulcerated scrotum. The clinical diagnosis was elephantiasis or lymphatic filariasis. He was treated by diethylcarbamazine and scrotoectomy with orchidectomy. By the gross appearance, the gangrenous ulcer was noted at scrotal sac and spermatic cord. Sclerosed seminiferous tubules and multiple abscesses with eosinophils infiltration were described by microscopic exam. Microfilariae were observed in the blood and lymphatic vessels. Some segments of adult filariae were also presented. Result of scrotal culture revealed that superinfection of the ulcer was caused by *P. aeruginosa*. (*J Infect Dis Antimicrob Agents* 1999;16:21-3.)

## INTRODUCTION

Lymphatic filariasis is one form of filarial infection in human. There are three filarial parasites of man that cause lymphatic obstruction i.e.: *Wuchereria bancrofti*, *Brugia malayi* and *Brugia timori*. *W. bancrofti* is the most widely distributed<sup>1</sup> especially in the tropics and subtropics including South America, Africa, Asia and the Pacific.<sup>2</sup> Periodicity of the circulating microfilariae distinguishes the parasites into two forms: nocturnal periodic and subperiodic form. Most of *W. bancrofti* is nocturnally periodic. The natural vectors are *Culex fatigans* in urban setting and anopheline or aedeon mosquitoes in rural areas.

Adult worms of filaria are thread-like 2-10 cm long by less than 0.4 mm wide and usually reside in the lymph nodes or afferent lymphatic channels.<sup>2</sup> The female worms produce large numbers of microfilariae 175-300 micron long which circulate in peripheral blood awaiting ingestion by mosquito which is an intermediate host.

Humans are the only definitive host for filarial parasites. The common manifestations of lymphatic filariasis are asymptomatic microfilariasis, hydrocele,

lymphatic inflammation and lymphatic obstruction.

Most of the pathology of filariasis initiates in the lymphatics. It is started with reversible lymphedema, lymphadenitis and lymphangitis. It involves both the upper and lower extremities in bancroftian and malayian filariasis but genital lymphatic involvement develops almost exclusively in relation to *W. bancrofti* infection. Genital involvement can be manifested by funiculitis, epididymitis and scrotal pain and tenderness. Chronic obstruction of lymphatic vessels causes elephantiasis of the limbs, breasts and genitalia.

Concomitant local thrombophlebitis and bacterial superinfection of poorly vascularized tissue is not uncommon.

## INTERESTING CASE

A 50-year-old man was referred from Maesariang Hospital, Mae Hong Son province because of edema and ulceration of scrotum. Duration of illness could not be informed because of language problem. He was a myanmar labor resided near myanmar-Thailand border.

On physical examination, he was a middle age

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man, a febrile and good consciousness. His vital sign showed a temperature of 37°C, pulse rate of 98/min, respiratory rate of 20/min and blood pressure of 120/80 mm.Hg.

His physical signs were unremarkable except the genitalia and legs (Fig. 1). The abnormal findings was swollen scrotum of diameter about 8 cm with hard consistency. Ulceration of scrotal sac with serious bloody discharge was noted (Fig. 1). There was also necrotic tissue in other area of scrotum. The dorsum of feet were nonpitting edematous. The provisional diagnosis was elephantiasis with orchitis. A complete blood count showed a hemoglobin of 9.4 g/dL. Hematocrit of 21.7 vol%, white blood cell count of 7,700 cells/mm<sup>3</sup> with neutrophil 14.3 percent, lymphocyte 11.9 percent, monocyte 64.6 percent and eosinophil 9.1 percent. Platelet count was 41,000 cells/mm<sup>3</sup>. Urine analysis showed many red blood cells. Two blood samplings were taken at 12 PM but all were negative for microfilaria. Blood urea nitrogen was 40 mg/dL, creatinine was 1.0 mg/dL. Serum electrolytes showed Na of 130.5 meq/L, K of 4.94 meq/L Cl of 110 meq/L, CO<sub>2</sub> of 15.3 meq/L and anion gap of 11.3 meq/L. Liver function was also tested and it showed albumin of 2.1 g/dL, globulin of 3.3 g/dL. Direct bilirubin of 2.0 mg/dL, total bilirubin of 4.9 mg/dL, alkaline phosphatase of 319 mg/dL, SGOT of 41 mg/dL and SGPT of 40 mg/dL.

Scrotal discharge was examined using gram stain and many Gram-negative bacilli were demonstrated. Seven days later, the culture grew out *Pseudomonas aeruginosa*. It was sensitive to ceftazidime, aztreonam and piperacillin. The diagnosis was elephantiasis with superinfection and liver cirrhosis. Diethylcarbamazine 300 mg/day and antibiotics were started on the first day of admission. He also received vitamin K<sub>1</sub> and spironolactone. On the third day of admission, a urologist was consulted for surgical treatment. Scrotectomy and orchidectomy with herniorrhaphy were performed.

Macroscopic pathological finding showed edematous and ulcerated scrotal sac consisted of spermatic cord and testis measuring 15 x 12 x 12 cm. The left testis was 1 x 1.5 x 2 cm and appeared atrophic. The epididymitis was unremarkable. The soft tissue around the testis and spermatic cord showed focal abscesses and white consolidation. The scrotal sac had gangrenous ulceration of 6 cm diameter.

Microscopic description revealed atrophic testis



Fig. 1 Showed edematous and ulcerated scrotal sac.

with sclerosed seminiferous tubules. Multiple areas of abscess formation eosinophilia with some segments of adult worm as feature of filaria were presented. Several microfilariae were observed both in blood and lymphatic vessels. The ulcerated scrotum presented coagulative necrosis.

#### Clinical course

After *Pseudomonas aeruginosa* was demonstrated to be the causative organism of ulcer superinfection, the antibiotic was switched to ceftazidime and amikacin. The urine culture also showed *Pseudomonas aeruginosa*. Later the surgical site was reinfected by *Klebsiella pneumoniae* and *Pseudomonas aeruginosa* so antibiotics were reintroduced and re-debridement of surgical wound was performed. After a long admission of 50 days in Nakornping Hospital, the patient was referred to Maesariang Hospital.

#### DISCUSSION

Definite diagnosis of filariasis can be made only by demonstration of parasites either adult worms associated with the lymphatics as illustrated in our patient or microfilariae in the peripheral blood or hydrocele fluid.<sup>2</sup> Genital involvement in this case suggested that *Wuchereria bancrofti* was the causative parasite.

Treatment of lymphatic filariasis is currently limited to diethylcarbamazine give at 6 mg/kg/day in either single or divided doses for 2-3 weeks.<sup>1</sup> This regimen rapidly clear microfilariae from the blood but efficacy for adult worms and lymphatic filariasis is not so clearly defined so recurrent may occur after therapy. Long term intermittent treatment with low

dose of DEC are often required and there is some evidence that this regimen may effect a cure.

Filariasis is still a public health problem in some area of Thailand.<sup>3,4</sup> The causative parasites of filariasis in this country are *Brugia malayi* and *Wuchereria bancrofti*. *B. malayi* is found only in small area in the south of Thailand and bancroftian filariasis appears in small area in Narathiwat and in Thai-Myanmar border i.e.: Mae Hong Son, Tak, Ranong.<sup>3,4</sup> Infection of bancroftian filariasis in Thailand is nocturnally subperiodic<sup>5</sup> transmitted by *Aedes* and *mansonia* mosquitoes. Infection rate is significant increased after migration of the myanmar labour to Thailand. The prevalence of bancroftian filariasis among the Myanmar in Tak province is high as 2.3 percent surveyed by mobile health unit.<sup>6</sup> *Culex quinquefasciatus*, the vector of urban bancrofti filariasis was highly prevalent in urban Thailand so prevention and control of filariasis in the Myanmar migrants is essential.

The single dose of DEC is suitable to control disease transmission. The regimen of DEC 6 mg/kg single dose every 6-month or 1 year was recommended by WHO.<sup>7,8</sup>

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