

Lymphedema resulting from filariasis successfully treated by surgery

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Abstract

Filariasis is an infectious disease caused by a filarial worm infection transmitted by mosquito bites. The disease can result in reduced work productivity, disability and social stigma. This disease transmission process begins when a mosquito bite and suck the blood containing the microfilaria. Filarial infections have been grouped into three categories based on their location diseases of the disease: (1) lymphatics, (2) skin, and (3) body cavities. Morbidity is almost entirely due to the species that cause lymphatic diseases, and skin diseases to a lesser degree. A 28-year-old male came with a chief complaint of swollen right leg since four years ago which worsened in the last three months. Upon physical examination, edema, fibrosis, and hyper-pigmented plaques were present on the right lower extremity. The blood microfilariae examination was positive for *Wuchereria bancrofti*. The lymphedema did not resolve despite of antifilarial treatment and surgery was eventually performed to resect the fibrous tissue and subcutaneous edema. The patient responded well to the treatment with a significant reduction in the edema. No complication was present until two years after surgery.

Introduction

Filariasis is an infectious disease caused by filarial worm infections that are transmitted by mosquito bites. This disease can result in decreased work productivity, disability, and social stigma. The transmission process begins when mosquitoes bite and suck the blood of people who contain microfilaria. Filariasis ranks as the second largest vector infectious disease after malaria and has infected more than 120 million people in 73 tropical and sub-tropical countries in the world, including Indonesia.¹⁻³ The prevalence of filariasis in Indonesia is around 1.1% (range: 0.3-6.4%).

Filarial infections is grouped into three categories based on the location, lymphatics, skin, and body cavities. Morbidity is mostly caused by lymphatic complications and skin diseases to a lesser degree.^{3,4} Most infected individuals do not show typical clinical symptoms although worm larvae have damaged the lymph system and only a small percentage of cases develops into lymphedema.^{1,2} In addition to causing disability due to the damage in the limbs and genitals, filariasis can also causes a severe stigma that might severely impact the quality of life.²

We report a case of a case of lymphedema due to filariasis in a 28-year-old man with who was successfully treated with surgical therapy.

Case Report

A 28-year-old male was referred to the dermato-venereology clinic of Wahidin Sudirohusodo Hospital from another hospital with a chief complaint of swollen right leg since four years ago which worsened in the last three months. There was no itchiness or pain. Initially there were small bumps which became injured and eventually swollen. Fever was reported to occur a few times in the last one year. In addition, the patient also complained pain in the thigh folds that radiated to the legs. The patient worked as a farmer. There was a history of tuberculosis treatment for nine months. The wound dried but there was no improvement in the swollen legs besides the wound. There was no history of the same complaint in the family. History of allergy was denied.

From physical examination, the patient was found to be in a moderate general condition with normal vital signs. From dermatological examination of the right inferior extremity and feet regions, there were edema, fibrosis, and hyper-pigmented plaques (Figure 1).

The blood microfilariae examination showed positive for *Wuchereria bancrofti* with a larvae count of six. Musculoskeletal doppler ultrasound examination of the right inferior extremity showed subcutaneous edema of the right leg with normal vascular flow from femoral to right pedis arcuate artery and vein and lymphedema from popliteal fossa region to distal regions. The AFB culture was negative. Thorax and foot x-ray examination showed left hilum thickening and soft tissue mass that has not involved the bone, respectively. PCR examination for TB and fungal culture were all negative. The patient was diagnosed with filariasis and given Albendazol therapy 1x 400 mg, diethyl carbamazine 5x100 mg,

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cetirizine 2x10 mg, and vitamin B complex twice a day.

After 14 days of treatment the swelling in the legs had not changed and subsequently the patient was consulted to the vascular surgery department. The patient was scheduled for operation to remove the fibrotic tissue and edematous subcutaneous tissue as well as bandage therapy for the affected extremity (Figure 2).

For postoperative treatment, patients was given ceftriaxone injection every 12 hours and ketorolac injection every 8 hours for three days. On the third day the patient was discharged and was given cefadroxil 2x500mg and mefenamic acid 3x500mg.

On the 56th day of follow up, the surgical wound appeared to have dried and the size of the foot appeared to be smaller than before, bandage therapy, antibiotics and analgesics were continued. Two years after post-operation, the size of the right leg has greatly improved and the patient has no complaints (Figure 3).

Discussion

On history-taking, a 28-year-old male patient complained of swelling in the right leg since 4 years ago, had a history of fever

and pain in the folds of the thigh spreading to the legs. Filariasis infection generally started in childhood age and it may take years before the symptoms finally developed. Acute symptoms may include recurrent fever for 3-5 days, swollen lymph nodes despite the absence of injury, retrograde lymphangitis, abscess, and early lymphedema of the limbs, arms, breast, and testicles that were erythematous and warm.⁴⁻⁶

Physical examination revealed edema, fibrosis and hyperpigmented plaque in the right inferior extremity. Chronic filariasis with sequelae of lymphatic obstruction (lymphedema, elephantiasis, hydrocele, and chyluria), may become clear 10-15 years after infection. The skin overlying the area can be hypertrophic, verrucous, and fibrotic with excessive skin folds. Cracks, ulcerations, secondary bacterial infections, and gangrene may occur. The lower extremities, scrotum, and penis are most commonly affected, with the upper extremities, breasts, and vulva being less commonly affected.

Based on the history, physical examination and supporting examination, a diagnosis of filariasis was established. In the literature, the diagnosis of filariasis is based on history relating to mosquitoes in endemic areas, clinical examination, and blood tests at night. Peripheral blood filarial antigen examination, with or without microfilariae, is considered as a patent diagnosis of filarial infections and is used to monitor the effectiveness of treatment.⁴ In addition, the number of microfilariae can also be calculated under the microscope using the Sedgwick Refler Counting Cell. A lymphographic examination with a picture of obstruction, atresia or dilation accompanied by a tortuous canal and a back-flow to the skin can help diagnose this disease.⁵⁻⁸

The use of antifilarial drugs in the treatment of acute lymphadenitis and lymphangitis is controversial. Diethylcarbamazine can be useful for the treatment of acute lymphangitis and can be given to people with asymptomatic filariasis to reduce the number of parasites in the blood. The dose of diethylcarbamazine is gradually increased. For adults, the dose is 50 mg single dose orally on day 1, 50 mg 3x/day orally on day 2, 100 mg 3x/day orally on day 3, 6 mg/KgBB 3x/day orally on days 4-14.^{4-6,9} Side effects such as fever, headache, myalgia, vomiting, weakness and asthma, are usually caused by the destruction of microfilariae and sometimes by adult worms, especially in severe infections. Diethylcarbamazine is not recommended for pregnant women. Other drugs that are also active against microfilaria are ivermectin and albendazole. A combination of a single dose of ivermectin with DEC results in a more rapid



Figure 1. Edema, fibrosis, and hyperpigmented plaques on the right inferior extremity.



Figure 2. Resection of the fibrotic tissue and edematous subcutaneous tissue.



Figure 3. Two years post-surgery, the leg has significantly reduced in size and bandage therapy is still applied.

microfilariae clearance.¹⁰ Treatment of elephantiasis of the upper and lower extremities consists of prevention of infection, conservative action and surgery. Conservative therapy can be attempted especially when fibrosis has not occurred. In this approach, pressure is put on the affected site to reduce the edema, which, when resolved, is maintained by elastic bandages. These pads are applied from the digits to the proximal end of the extremities.¹¹ Surgical approach aims to excise the excess tissue or anastomosis of lymph channels to other lymph channels or to the venous canal. Initial surgical procedures are used to reduce fibrosis, reduce the size of the lesion and reduce the size of the foot. The goal is to form legs so that later the application of compression can be used adequately so that it does not require more aggressive surgical procedures. Microsurgery procedure involves making lymphaticolymphatic or lymphaticovenous anastomosis, which can theoretically increase lymph flow drainage.¹² The most important aspect of the surgical approach is maintaining the integrity of the skin to allow further actions, including compression, to be performed. Intensive treatment of lymphedema which is immediately followed by surgery is the most effective and fastest method of reducing the size of lymphedema in the limbs.¹³

The prognosis of this disease depends on the number of adult worms and microfi-

lariae in the patient's body, the potential for worms to multiply, the opportunity for re-infection and RES activity.^{4,14} In early and moderate cases, the prognosis is good especially if the patient moves from an endemic area. Supervision of endemic areas can be done by giving drugs, as well as vector eradication. In advanced cases especially with leg edema, the prognosis is worse.^{4,15}

Conclusions

This case highlights that untreated filariasis might lead to permanent destruction of lymph nodes which manifests as lymphedema. Surgical approach is thus needed to resect the fibrotic tissue and edema.

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