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Case Report

Surgery Section

Avascular Necrosis of the Femoral Head Managed with Total Hip Arthroplasty in a Patient with Lymphatic Filariasis: A Case Report

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ABSTRACT

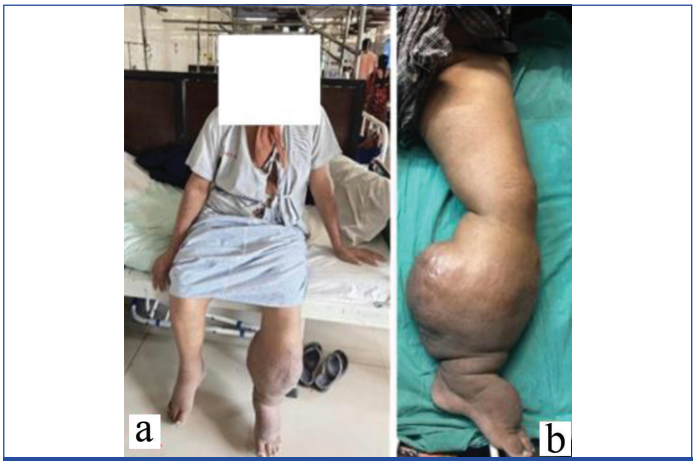
Lymphatic filariasis is one of the major issues in public health in endemic regions. This tropical disease is caused by mosquito-borne parasites such as *Wuchereria bancrofti*, *Brugia malayi*, and *Brugia timori* and predominantly targets the lymphatic system, causing limb dysfunction and other complications. It is clinically noted as lymphoedema, swelling, pain and fever. This is a case of a 52-year-old male farmer from an endemic region with chronic lymphoedema and progressive right hip pain. He presented to the Outpatient Department with complaints of pain in right hip and swelling in left lower limb. Initially, the patient experienced a dull, aching pain in the right hip. The pain was persistent throughout the day, relieved with rest and exacerbated on walking and weight-bearing activities. The pain progressively worsened, eventually leading to significant difficulty in moving the left lower limb. Radiological evaluation revealed avascular necrosis of the femoral head of the right hip, for which the patient subsequently underwent right-sided-total hip arthroplasty. The diagnosis of lymphatic filariasis involving the left lower limb was confirmed by serological testing, and appropriate medical management was initiated. This case highlights an unusual orthopaedic manifestation of lymphatic filariasis requiring hip arthroplasty, rarely reported in literature.

Keywords: Diethylcarbamazine citrate, Filarial parasites, Lower limb swelling, Mass drug administration

CASE REPORT

A 52-year-old male farmer from an endemic region presented with chronic swelling in his left lower limb persisting for the past 17 years, accompanied by recurrent episodes of fever and severe discomfort. Over the past year, he reported progressive pain over the right hip and difficultly walking. The pain was dull and aching in nature, persistent throughout the day which exacerbated by weight bearing and walking and was relieved by rest. The pain gradually limited the basic and minimal movements of the right lower limb. There were no co-morbidities reported. There was no history of trauma or corticosteroid use. The patient belonged to a low socioeconomic background and reported frequent exposure to mosquito bites. During the acute phase of illness, no disease specific signs or symptoms were noticed. However, the patient reported recurring acute inflammatory episodes involving the lower limbs and scrotum, consistent with acute adenolymphangitis. The patient presented with pitting oedema which was noted during the initial years of illness and gradually progressed to brawny oedema over a period of approximately 10-12 years, as the underlying tissues became indurated. The patient had a history of previous right hip surgery performed approximately eight years ago, details of which were not available due to lack of medical records. As per patient recall, the surgery was done for hip pain and resulted in temporary relief. There was no history suggestive of postoperative infection or complications.

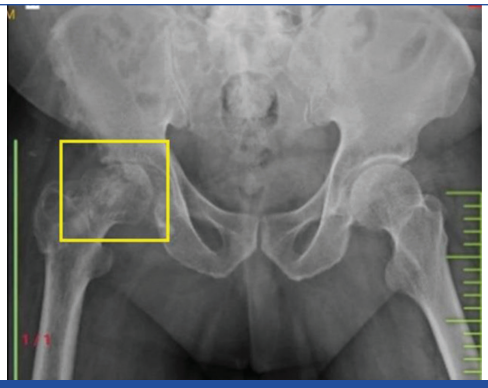
The physical examination revealed oedema of the left lower limb with overlying skin thickening, induration, tenderness, and firmness on palpation, consistent with features of lymphoedema [Table/Fig-1]. Local examination was performed with the patient in supine position ensuring both anterior superior iliac spines were at the same level. The right hip showed no swelling, however, a well-healed scar from a previous surgery was noted. On palpation, there was no local rise in temperature, bilaterally. Tenderness was elicited over the anterior joint line. Limb length discrepancy was not appreciated.



[Table/Fig-1]: Asymmetric lower limb swelling due to lymphatic filariasis.

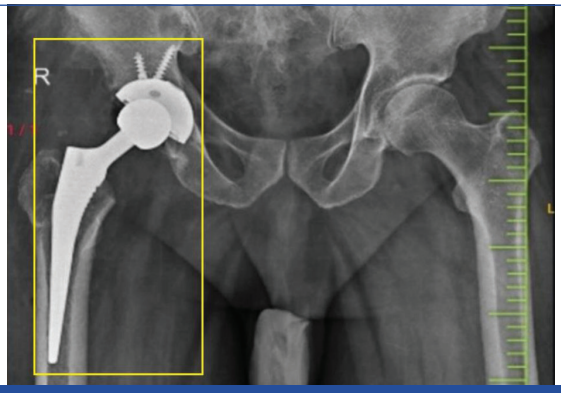
Range of motion of right hip was markedly restricted; flexion and extension were limited while abduction, adduction, and internal rotation were significantly restricted. Flexion combined with both internal and external rotation was painful. Distal neurological and vascular examinations were normal, with preserved ankle and toe movements, intact distal circulation, and no evidence of neurodeficit. Based on the clinical presentation, the provisional diagnosis was degenerative arthritis secondary to avascular necrosis of femoral head of the right hip along with lymphatic filariasis of left lower limb. Differential diagnoses included advanced osteoarthritis, and inflammatory arthritis, which were subsequently evaluated through radiological imaging and laboratory investigations. Radiographic evaluation with an X-ray of the pelvis demonstrated degenerative changes of the right hip joint and features of avascular necrosis, including narrowing of joint space and subchondral sclerosis, consistent with advanced osteoarthritic changes [Table/Fig-2].

Ultrasound of lymphatic system revealed markedly dilated lymphatic channels with reduced flow, consistent with lymphatic obstruction.



[Table/Fig-2]: X-ray pelvis suggestive of degenerative changes of the right hip joint.

Laboratory investigations revealed eosinophilia on complete blood count. Signs of acute inflammation, including local rise of temperature and erythema, were also evident, hence the patient was subjected to serological tests. The Circulating Filarial Antigen (CFA) test and immunochromatographic test card test were both positive for *Wuchereria bancrofti*, thereby confirming the diagnosis of lymphatic filariasis. The imaging and serological results, in conjunction with the patient's clinical history and physical examination, established the diagnosis of chronic lymphatic filariasis of left lower limb with degenerative arthritis secondary to avascular necrosis of femoral head of right hip. For the management of lymphatic filariasis, the patient was administered Diethylcarbamazine Citrate (DEC) 6 mg per kg body weight for 12 days and was started on doxycycline 200 mg/day for six weeks. The patient underwent a total hip arthroplasty of right side, uncemented under the spinal and epidural anaesthesia. The procedure was uneventful and given the high risk of infection associated with chronic lymphoedema, strict aseptic precautions were followed, including preoperative optimisation, perioperative antibiotic prophylaxis with Ceftriaxone and Sulbactum 1.5 gm intravenously, meticulous soft tissue handling, and close postoperative wound surveillance. Pain was managed with intravenous Diclofenac sodium diluted in 100 mL normal saline, administered twice daily. No wound dehiscence or implant complications were noted in the recovery period. Physiotherapy was initiated on postoperative day 2. The sixth week follow-up showed the patient recovering well and he could ambulate independently. The postoperative X-ray showed well-positioned prosthesis [Table/Fig-3].



[Table/Fig-3]: Postoperative X-ray showing a prosthesis.

DISCUSSION

Lymphatic filariasis is characterised by enlargement and persistent inflammation of the dermal and hypodermal connective tissue. It is usually preceded by and associated with lymphatic and venous congestion, which can be caused by a number of reasons that hinder or impede the regular passage of lymphatic and venous fluids. The lymphatic system may be affected at this period, even though there may not be any symptoms [1]. Infected people continue to spread the disease throughout this phase, which can last for many years. Long-lasting systemic effects may show themselves as excruciating limb swelling [2,3]. As of 2021, approximately 657 million individuals from different countries were at risk and required Mass Drug Administration (MDA) to prevent further transmission. Globally, early estimates indicated that 25 million men were affected by hydrocele and over 15 million individuals suffered from lymphatic filariasis-associated lymphoedema [2]. The morbidity of lymphatic filariasis is marked by progressive and disfiguring symptoms such as lymphoedema, including Acute Dermato-Lymphangioadenitis (ADLA) and urogenital manifestations like hydrocele and lymph scrotum. The episodes of ADLA result from secondary bacterial infections and present with fever and intense pain, often recurring over time. Less commonly observed symptoms include lymphoedema of the breast or vulva, and complications involving rheumatologic or respiratory systems [3]. Similar clinical symptomatic presentations such as fever and intense pain were noted in this patient.

Chronic lymphatic filariasis causes chronic lymphedema, fibrosis, and intermittent inflammatory episodes that may have deleterious consequences for musculoskeletal health and surgical outcome [4]. Chronic lymphoedema is established to result in changed biomechanics of gait, decreased mobility and abnormal load distribution across weight bearing joints and as such it may be an indirect factor for progression of degenerative changes of the hip [5]. A similar case of a 59-year-old female was observed in Karnataka, India, who underwent total knee replacement with a good outcome at 5-year follow-up [6]. Large orthopaedic procedures like total hip arthroplasty in filariasis or other such infectious disease patients are demanding because of obstruction of lymphatic drainage, susceptibility to infection and delayed wound healing [7]. Though, there are only few research studies on total hip arthroplasty in patients of chronic filariasis which provides a selective evidence that total hip arthroplasty can significantly reduce pain and improve functionality in cases with failed conservative treatment. Careful preoperative preparation, meticulous aseptic handling and tailored-optimisation of lymphoedema by various means are required to yield positive outcomes [6,7].

Lymphatic filariasis is treated with anti-helminthic medications and preventive chemotherapy. It can be eradicated by mass treatment with recommended safe oral drug regimens of Albendazole, either alone or in combination with Ivermectin Diethylcarbamazine Citrate, or all three, depending on the situation, can stop the spread of infection throughout the community [2,8]. Widespread public health campaigns are carried out to provide these drugs. The efficiency of the treatment plan, coverage rate and the percentage of the population that receives the medications are necessary for the MDA to be effective. An yearly dose for four to six years containing MDA with two-drug regimens has been noted as effective in ending the cycle of transmission and spread of infection [9,10].

India has intensified its efforts to eliminate lymphatic filariasis, a mosquito borne disease transmitted by Culex mosquitoes that causes significant disability and affects communities. The country has set a target to achieve elimination by 2027, ahead of global goal. In an effort to eradicate lymphatic filariasis, the Indian government has proactively unveiled a revised five-point plan that aims to shield communities from the costs of social difficulties, economic instability, and disability [11]. CFA detection test is the gold standard for identification of *Wuchereria bancrofti* infections. The sensitivity of these tests surpasses that of earlier parasite-detection methods, and they demonstrate nearly complete specificity [12]. Annual MDA and home-based care of lymphoedema patients, as well as the expansion of hydrocele procedures in designated community health centres, district hospitals, and medical colleges, are the two main initiatives for the eradication of lymphatic filariasis [13]. A successful control and eradication program can be implemented by coordination between healthcare practitioners, governmental organisations, non-governmental organisations, and local communities, which in turn benefits the affected individuals [14,15].

Additionally, there is a need to develop early detection systems for those at risk. The absence of early diagnostic confirmation contributes to disease progression, culminating in severe lymphedema. It was also noted in this patient too, which lead to secondary degenerative hip changes, thereby underscoring the importance of integrating orthopaedic care and infectious disease in lymphatic filariasis patients with severe sequelae.

CONCLUSION(S)

Lymphatic filariasis is a long-term illness which can be controlled and eradicated by combining medical therapies with health education, preventive measures, and social support networks. This case report emphasises on different complaints related to the primary cause that could be a major reason for the repeated hospital visits, higher treatment cost and a huge burden on the quality of life necessitating the need to emphasise on the significance of a multidisciplinary approach to lymphatic filariasis management, which entails cooperation between medical professionals, community leaders, public health professionals, and the impacted persons themselves.

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