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Original Research Article

The cost effective role of Eschmarch tourniquet and psychosocial awareness of disease as a key factor in decompressive therapy of filarial lymphedema

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ABSTRACT

Background: The filiariasis is the most common cause of secondary lymphedema of the lower limb. Due to poor awareness of this disease in the people of the lower socioeconomic strata, the patient understands the importance of conservative modality of therapy very late. The cutaneous changes and its complications develop in patient due to unawareness about the nature of noncurable progressive disease. The self-negligence to their own limb also contributes to increase in the morbidity of the disease. The article discusses about cost effective role of Eschmarch tourniquet as a decompressive therapy. The disease causes socioeconomic impairments, stigmatization due to elephantiasis and job insecurity due to cosmetic and functional disability.
Methods: This was a retrospective study done in 28 cases of filarial lymphedema. All patients received limb elevation and decompressive therapy by Eschmarch tourniquet.
Results: Out of 28 cases, 14 cases in study group of filarial lymphedema with pitting edema (71.42%) and non-pitting edema feet with minimal cutaneous changes (28.57%) showed significant reduction in size of limb girth and satisfactory fluctuating limb girth during the follow up period in OPD respectively, by adequate limb elevation, elastic stockinet and decompressive therapy by Eschmarch tourniquet as compared to the remaining 14 patients of control who received only limb elevation. The better follow up results are noticed by proper guidance to the patient about the disease and its conservative modality of treatment.
Conclusions: It is a challenge for the treating consultant to create early awareness about the nature of the filarial disease and early guidance about the conservative treatment which helps to restrict the rapid growth of limb size in filiariatic lymphedema. The eschmarch tourniquet is one of the cost effective decompressive therapy.

Keywords: Lower limb filarial lymphedema, Decompressive therapy, Eschmarch tourniquet, Patient counselling

INTRODUCTION

The literature search describes about Eschmarch tourniquet routine use for exsanguination of the limb and for better bloodless field during intraoperative area; and its great invention by Friedrich von Eschmarch, a German Professor of General surgery.[1-3] The article also describes about one of the simple and cost effective use of the Eschmarch tourniquet in the basic decompressive therapy of lymphedema. The study also helps to assess the efficacy and safety of decompressive therapy. The aim and objective of this article is to create social awareness about the non-curable nature of filarial lymphedema which will make patients understand the importance of effective early conservative modalities of the treatment for better control over the increasing limb girth.

METHODS

Study design: Retrospective analysis was done in 28 cases of filarial lymphedema.

Study place: Rajiv Gandhi Medical College and Shivaji Hospital, Kalwa, Thane, Mumbai.

Study period: 01 September 2018 to 31 December 2018.

Written informed consent was obtained from all the patients by explaining about noninvasive routinely used Eschmarch tourniquet. Eschmarch tourniquet is routinely used for exsanguination of the extremities and as a tourniquet.

Selection criteria

Patients with pitting edema feet or cases with non-pitting edema feet with minimum cutaneous changes are included in the study group. Patients received limb elevation and decompressive therapy by Eschmarch tourniquet.

Patients in control group are of pitting edema feet and cases with non-pitting edema with minimal cutaneous changes.

Patients with ulcer, maggots and severe lymphedema with cutaneous changes of elephantiasis are excluded from study group because Eschmarch tourniquet cannot be practically applied.

RESULTS

Out of 31 cases of filarial lymphedema, retrospective observational study of 28 cases was carried out by excluding 3 cases of severe elephantiasis, (Figure 1) ulcer and maggots in the wounds. The selected sample of 28 cases was in the stage (Figure 2-4) of pitting and non-pitting edema with minimal cutaneous changes. They all received a course of antibiotics, diethylcarbamazine and Albendazole course, and adequate limb elevation with strict bed rest for 7 days. There were separate two sets of 10 cases (71.42%) of unilateral pitting edema leg and 4 cases (28.57%) of non- pitting edema leg in both study and control group.

Table 1: Retrospective observation in study group.

Number of patients/ cases in study group	Status of limb	Post decompressive therapy by eschmarch limb girth reduction & patient comfort in hospital	Limb status in OPD follow up
10 cases (71.42%)	Unilateral pitting lymphedema	Significant satisfactory reduction in limb girth	Good achieved limb girth maintained
4 cases (28.57%)	Unilateral nonpitting edema with minimal cutaneous changes	Satisfactory reduction in size of limb girth with minimal reduction in cutaneous changes	Fluctuating size of limb girth on excess mobilization, but patient satisfied
3 cases excluded from study.	Cases of severe elephantiasis, ulcer, Maggots.		

Table 2: Retrospective observation in control group.

Number of patients/ cases in control group	Status of limb	Patient received only limb elevation & satisfaction in IPD	Limb status in OPD follow up
10 (71.42%)	Unilateral pitting lymphedema	Initial reeducation in size of limb girth which recurred early	Progressive lymphedema
4 (28.57%)	Unilateral nonpitting edema with minimal cutaneous changes	Minimal reduction in size of limb girth	Progressive lymphedema

The cases in study group in addition to adequate limb elevation, received decompressive therapy by eschmarch tourniquet. The cases in study group purchased and used the cost effective and easy to use eschmarch tourniquets with the help of relative as compared to the pneumatic pressure tourniquet. During the period of hospitalization, patient and their relative were explained about the nature of the non-curable disease. The patients were made to understand the importance of limb elevation by keeping a cotton mattress roll below both limbs to get significant reduction in the size of swelling. Most of the patients had previously approached to multiple physicians without satisfactory result.

All the 28 cases were from poor socioeconomic class. It was analyzed from patient history, that the basic cause of inability to control the progressive lymphedema was ineffective way of treating the conservative mode of

treatment. They were not made aware of the non-curable nature of this disease. The patients were sleeping in limb elevation with a single pillow. The patients had heard about decompressive therapy, but could not purchase or hire the pneumatic compression tourniquets. All the patients had received the dose of diethycarbamzine and albendazole and antibiotics during acute phase and an analgesic in the past.

It was retrospectively observed that there was significant and satisfactory reduction in the size of the limb girth (Figure 2C) which was maintained during the follow up period with elastic stockinet (Figure 2D) by the study group (Table 1) in comparison to control group (Table 2). The cases of unilateral pitting edema leg without cutaneous changes (71.42%) in the study group showed significant reduction in limb girth circumference with satisfactory lifestyle by wearing elastic stockinet. During the period of hospitalization, the cases of non-pitting edema leg with minimal cutaneous changes (28.57%) showed satisfactory reduction in size of limb girth with minimal reduction in cutaneous changes and on discharge there was fluctuating size of the limb girth in the OPD follow up. But as compared to initial size and shape of the limb, there was tremendous satisfaction and smile on the face of the cases in study group. The patients were following the instructions of conservative modalities of treatment as discussed. The satisfied patients are the best counselor to the new admitted patient and play an important role in the treatment of new cases.

Figure 1: A case of severe filarial lymphedema.

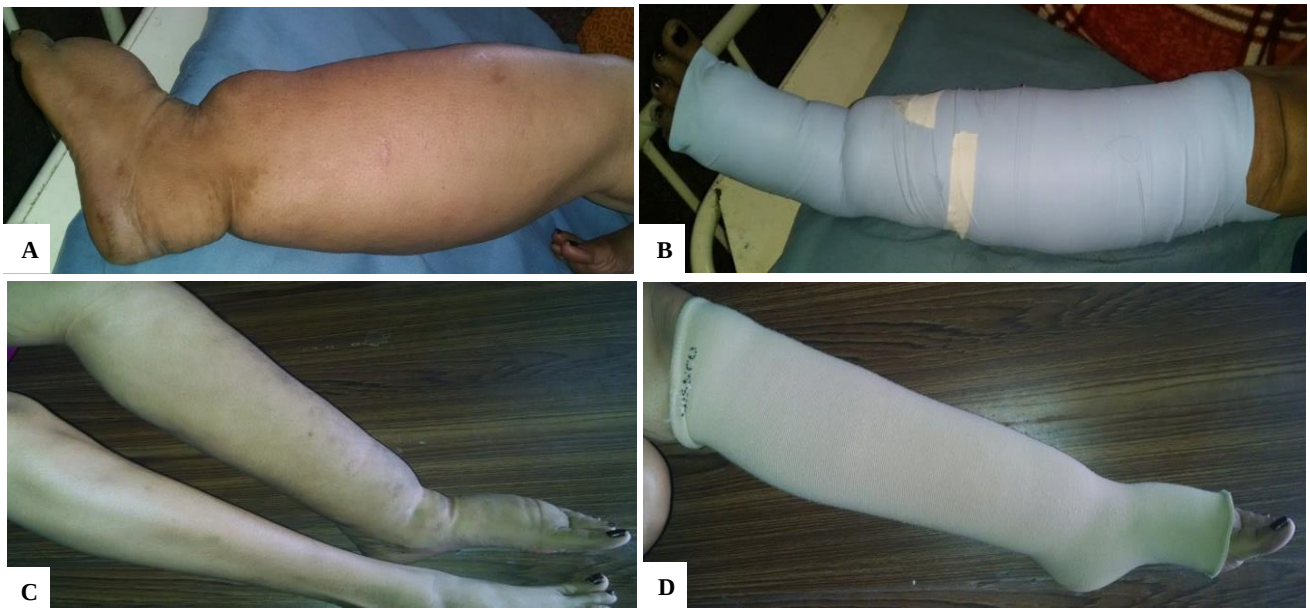

Figure 2: (A) Patient with unilateral pitting filarial lymphedema; (B) trained to wear Eschmarch tourniquet; (C) during follow up period showing satisfactory reduction in size of limb girth and (D) with satisfactory reduction in size of limb girth maintained on elastic stockinet.

The patients with unilateral pitting edema leg (71.42%) in the control group who received only adequate limb elevation showed initial reduction in the limb circumference during the period of admission in ward. The cases of non-pitting edema leg with minimal cutaneous changes (28.57%) who received only limb elevation showed minimal reduction in size of the limb during the period of admission in the ward. But all the

cases in the control group went in the phase progressive lymphedema with increase in the size of the limb in follow up period.

In this short term observational retrospective study the patients had satisfactory functional and cosmetic result of the limb as compared to the control group.

Figure 3: A case with unilateral pitting filarial lymphedema.

Figure 4: Patients with unilateral non pitting filarial lymphedema with minimal cutaneous changes.

DISCUSSION

The main etiopathological disorder causing lower limb secondary lymphedema are infective/inflammatory, traumatic, post lymph node dissection surgery and radiotherapy.[4] In India, the most common cause of secondary lymphedema in extremity are post lymph node dissection surgery and filiariasis. Filiariasis affects the lower socioeconomic group.[5] Most of the cases are treated by general physician with clinical diagnosis of the disease in its initial phase as traumatic inflammation and with a dose of antibiotic, anti-inflammatory and antipyretic drug. In India, the patients usually approach a consultant for not getting any relief after multiple course of anti-inflammatory and analgesic drug therapy for repeated episodes of inflammation and growing limb girth. The patient approach plastic surgeon for cosmetic disfigurement of the limb in the tertiary phase of the disease. Hence, the control over the disease can be achieved by social awareness about clinical spectrum of filariasis in the community, effective counselling of the patient to explain about its incurable nature and its long term conservative modalities of treatment and limited effective cosmetic surgical intervention.[6,7]

The clinical manifestation of filiariasis are recurrent episodes of fever, pain and pitting edema in initial phase to progressive non-pitting edema resulting into cosmetic and functional disability.[8]

The various modalities of conservative treatments are discussed in the literature. Herd immunity is developed by prophylactic measure of administering the cocktail therapy of ivermectin plus diethylcarbamazine plus albendazole as per WHO guidelines to eradicate the disease by 2020.[9]

The main aim of treatment of the filarial lymphedema is reduction and maintaining the reduced size of the limb to achieve acceptable cosmetic shape and function.[10]

The conservative management of lymphedema includes manual lymphatic drainage, lymphedema rehabilitation exercises, compression therapy, and skin care, and pneumatic compression, elevation of the extremities, thermal therapy, and complete decongestive physiotherapy.[11]

The effectiveness of conservative treatment are judged by symptomatic relief to the patient by decrease in size of the limb girth, improvement in functionality and cosmetic disfigurement, mobility and satisfactory quality of life.

It is reported that the highest flow of 20 to 120 ml/1 h cycle was obtained by pneumatic compression devices with compression pressures between 80 and 120 mmHg and inflation timing 6–7 min, sequentially from foot to groin.[4] The effectiveness of various modalities of conservative therapy is uncertain and the condition of affected limb worsen due to interruption in the conservative treatment by the patient due to unexpected repeated episodes of lymphangitis.[12]

The main objective of our article was to do effective counselling of the patient about the nature of this incurable disease and the lymphedema which can be effectively controlled in its early phase by use of cost effective decompressive device in the form of Eschmarch tourniquet. At the end of the study the patients in the control group are also made aware about the importance of decompressive therapy.

CONCLUSION

It was a challenge for the treating consultant to create early awareness about the nature of the filarial disease and proper guidance about the conservative treatment to restrict the increasing limb circumference in lymphedema due to filariasis. There is definite improvement in limb functionally and reduction in cosmetic disfigurement in the study group by early use of cost effective Eschmarch tourniquet as compared to pneumatic decompressive device. The reduced size of the limb girth is maintained by better awareness created in the mind of patient and hence used effectively the conservative modality of treatment.

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