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RESEARCH ARTICLE

DEBULKING SURGERY: MANAGEMENT OF PENOSCROTAL LYMPHOEDEMA IN A NEGLECTED TROPICAL DISEASE AFFLICTING YOUNG MALE PATIENTS

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Abstract

Lymphatic filariasis, caused by parasites such as Wuchereria bancrofti, Brugia malayi, and B. timori, remains a significant global health concern, leading to severe physical and psychosocial disabilities. This study provides an overview of lymphatic filariasis, commonly known as elephantiasis, with a focus on its symptoms, detection methods, epidemiology, and risk factors. Despite efforts to eliminate the disease, LF remains prevalent in some regions, including India, presenting challenges exacerbated by factors such as climate change. This paper presents a case study of a young male patient suffering from massive penoscrotal lymphoedema due to microfilaria, highlighting the clinical presentation, diagnostic approach, surgical intervention, and postoperative management.

Introduction:-

Lymphatic filariasis is caused by a parasite Wuchereria (Brazil) Bancrofti (Australia). It was also called Malabar leg.[1] Scrotal massive lymphedema, also known as scrotal elephantiasis, is a rare event. The main etiology is the occurrence of venereal lymphogranuloma or penoscrotal filariasis.[2] Microfilaria is colourless, translucent, 300u length and 10u thick. It has a head, body and tail. Microfilaria circulate in blood,[3] The parasites lodge in the lymphatic system leading to chronic obstruction and subsequent oedema, Lymphoedema, hydrocele, Lymph scrotum, chyluria etc can be various other clinical manifestations of Lymphatic Filariasis.[4] Lymphatic filariasis showing swelling in the foot, extending progressively in the leg, buffalo hump in the dorsum of the foot, squaring of toes, debility, immobility, obesity, muscles wasting, psychological and social discomfort.[5] The inguinal lymph nodes are commonly affected and this condition is more often found in males, lymph nodes become enlarged and tender, A history of periodic fever with pain, swelling of spermatic cord with dilatation of lymphatic vessels is often found in Filariasis, there may be thickening of the skin of the scrotum.[6] The lymph nodes are swollen and tender, Retroperitoneal lymphangitis produces acute abdominal pain, after repeated infections the skin over the limb becomes dry, thickened, thrown into folds and even nodules thus break and opens and result in ulcers, hence called elephant legs,[7] Morbidity in LF is expressed as painful and profoundly disfiguring visible chronic manifestations that include lymphoedema (acute dermatolymphangioadenitis—ADLA and elephantiasis) and male urogenital disease (hydrocele and lymph scrotum), [8]Lymphatic filariasis (LF) is a neglected tropical disease caused by Brugia malayi, Brugia timori, and Wuchereria bancrofti and over 90% of cases are caused by the last. These parasites are transmitted via a number of different mosquito hosts, which vary geographically. LF is considered endemic in 72 countries, and Brazil, the Dominican Republic, Guyana, and Haiti are the four remaining countries in the Americas where it is considered endemic,[9] In 2000, the WHO launched the Global Program to Eliminate Lymphatic Filariasis

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(GPELF) having the aim of eradication LF by 2030. The aim of the GPELF is based on disrupting transmission using mass drug administration (MDA), and, in parallel, relieving and preventing suffering and disability in those who already have chronic manifestations of the LF,[10] In LF needs investigations are venous Doppler, us abdomen, ESR, peripheral smear, Lymphangiography, isotope-lymphoscintigraphy, MRI, CT scan to identify the cause, lympho fluruscopies using indocyanine green is an excellent method .[11]

In Ayurved samhita,' Shlipad ' reference came in 'Sushrut Nidansthan-Adhyaya-12 quote that vitiated Vatadi dosh gets aggravated and affects lower extremities and become localized in the skin, make it thick (swollen) and has been divided into three types Vataj, Pittaj and Kaphaj and also references seen in 'Asthang Sangrah Samhitas' and also in 'Madav-nidan', according to Ayurveda, LF cause due to Shlipad krumi so it is a Krumijanna vyadhi occurs due to mosquito-bite.[12]

Case Presentation

A 14-year-old male patient presented with gradually progressive swelling at the scrotal region, with lower extremity swelling since 12 years. It was difficult for the patient to carry on with his normal work, and he developed pain and massive swelling over the last 3-4 months. There was no history of any medical illness. On clinical examination, it appeared to be an advanced case of lymphedema due to microfilaria (commonly called Elephantiasis), which is endemic in this part of the country.

Figure 1:- Clinical Presentation of Penoscrotal Lymphoedema.

Investigations revealed hemoglobin levels of 13.1 g/dL, a total white blood cell count of 10700/cmm, platelet count of 203000/cmm, and eosinophil count of 4%. Serology (HIV-negative, HBsAg-negative) was performed, and the peripheral smear confirmed, it to be a case of Filariasis. As the patient was unable to walk due to huge scrotal swelling, bilateral leg edema with a pulse rate of 76/min and blood pressure of 110/78 mmHg, ultrasonography findings showed a grossly thickened scrotal wall with multiple hypoechoic tubular channels suggestive of lymphedema. There was a massive scrotal swelling and leg edema with no pitting. The scrotal swelling was hard in consistency and painless on palpitation. He was started on antiparasitic drugs and antibiotics, and limb elevation and compression were also given to reduce the edema. Surgery was planned after a week with the arrangement of adequate blood transfusions. During surgery, it was found that there was no normal skin at the scrotal region which could be left behind. The whole skin of the leg below the knee up to the foot was markedly thickened and fibrosed, so it was left as it is. The entire thickened and fibrosed scrotal skin had to be removed.

Figure 2:- Intraoperative Findings of Debulking Surgery.

The patient was given fluids and blood transfusions until hemostasis was achieved. A massive amount of thickened skin was removed,weighing about 4.6 kg. Postoperatively, the patient was doing well, and skin grafting would be planned after healthy granulation tissue had formed.

Discussion:-

LF characterizes a disfiguring end stage of lymphatic disease (stage 3rd according to the International Society of Lymphology.[13]] Clinical measures were the main treatment over 6 years, without improvement in the quality of life of this patient. The poor response of the clinical treatment was the main motivation for the surgical treatment. Functional operations (lymph node transplantation and lymphaticovenous anastomosis) were not indicated since it was an advanced case, with a thick and fibrotic skin and subcutaneous tissue.

Hence, the radical and gentle resection was the chosen procedure. Due to a lack of cleavage plane during the resection, it was difficult to preserve the genital structures within the mass.[14,15,16] Tissue fibrosis, fat deposition, hyperpigmentation, cutaneous acanthosis, and papillomatosis are present. The skin develops a cobble-stone surface pattern. The disease is slowly progressive. An increased risk of soft tissue infections can further aggravate the condition. Debulking surgery is an option for these patients where it intends to reduce the distressing volume as well as can prevent the soft tissue infections.[17,18] While Lymphatic reconstruction and tissue transfer procedures can be done in earlier stages of Elephantiasis, Debulking procedures and split skin grafting have been employed for late stages of Elephantiasis. Several approaches for debulking surgery have been developed. Excision of large amounts of subcutaneous tissue with insufficient lymphatics followed by adaption to muscle aponeurosis and/or muscular tissue after partial removal of aponeurosis has been performed for a long time. The idea behind this technique was de novo formation of lymphatics and blood vessels from sprouting of intramuscular blood and lymphatic vessels. For long-term success of excisional surgery, postoperative complications and maintenance of DLT (decongestive lymphatic therapy) become a major critical issue.[19]

Conclusion:-

Surgical management, including debulking surgery, plays a crucial role in treating severe penoscrotal lymphoedema associated with lymphatic filariasis. Despite the challenges posed by advanced disease stages, appropriate surgical interventions can significantly improve patients' quality of life and functional outcomes. This study underscores the importance of comprehensive treatment strategies and long-term follow-up to address the complex needs of patients with advanced LF manifestations.

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