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Research article

Giant Lymphedema Scrotum: A Case Report

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ABSTRACT

Background: Scrotal lymphedema is an abnormal accumulation of protein-rich fluid in the soft tissue area of the scrotum/penoscrotal area as well as deformity of the genitals due to abnormal lymphatic drainage. Lymphedema is classified as primary (idiopathic) or secondary according to its etiology. Secondary lymphedema can occur due to infection, one of which is Mycobacterium TB infection. Conservative or surgical methods such as lymphangioplasty, complete excision of tissue, local tissue reconstruction can be performed**.**
Methods: Using the case report method and 1 sample, Mr. S, 42 years old, male gender.
Results: In this case is a secondary case related to a history of hydrocele surgery or extrapulmonary TB infection. In scrotal TB can appear as unilateral or bilateral involvement with acute or chronic painful or painless scrotal swelling. This is also evidenced by the results of a biopsy where there is granulomatous inflammation.
Conclusion: Scrotal lymphedema is a challenging problem that causes physical and emotional disability. The choice of appropriate management, whether conservative or surgical, is very important for the patient's quality of life.

BACKGROUND

Scrotal lymphedema is defined as an abnormal accumulation of protein-rich fluid in the soft tissue of the scrotum/penoscrotal area and deformity of the genitalia due to abnormal lymphatic drainage. Overall, 140-250 million people are estimated to be affected by lymphedema worldwide and secondary lymphedema due to Wuescheria bancrofti infection is the most common form affecting more than 90 million people (Kaciulyte, 2019). According to its etiology, lymphedema is classified as primary (idiopathic) or secondary lymphedema. Primary lymphedema is caused by intrinsic damage to the lymphatic vessels, while secondary lymphedema can occur after surgery, radiation, tumors, and infections (Elkiran, 2019). Lymphedema of the penis and scrotum causes limited mobility and voiding ability, fatigue, pain, and recurrent subcutaneous infections. Giant lymphedema of the scrotum affects the quality of life by causing sexual limitation, unaesthetic appearance, loss of libido, and immobility (Vives et al, 2016; Aulia, 2020).

Treatment usually begins with conservative measures, for example, complex decongestive physiotherapy (CDP), including skin hygiene, manual lymph drainage, compression bandages. However, many patients experience unsatisfactory results or recurrence after size reduction (Elkiran, 2019). Surgical reconstruction methods can be used either lymphangioplasty or complete excision of lymphedematous tissue with local tissue reconstruction. Reconstruction methods such as rotation flaps, split free flaps or even full-thickness (Elkiran, 2019). The management of this condition depends on the etiology. Diuretics can be useful if the lymphedema is caused by fluid overload or congestive heart failure (Mantica et al, 2021). However, when chronic lymphedema with fibrosis of the skin and subcutaneous tissue, there are several operations that can be done. In most cases, the skin needs to be removed. The subcutaneous tissue of the testis is hard and full of lymph fluid also needs to be removed. The testes and spermatic cords are usually preserved (Pastor, 2011).

This paper reports giant lymphedema of the scrotum in a 42-year-old man with comorbid extrapulmonary tuberculosis (TB) with lymphadenopathy.

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METHODS

In this study, the case report method was used and 1 sample, namely Mr. S, 42 years old, the research process was carried out at Dr. Moewardi Surakarta Regional Hospital with the research process providing informed consent to the patient and with the patient's consent.

RESULTS

It was found that the patient's case was a secondary case related to a history of hydrocele surgery or extrapulmonary TB infection. In scrotal TB, it can appear as unilateral or bilateral involvement with acute or chronic painful or painless scrotal swelling (Jha, 2023). This is also evidenced by the biopsy results where there is granulomatous inflammation. Granulomatous inflammation in biopsy tissue and the presence of acid-fast bacilli are characteristic of TB (Jha, 2023). It was also reported that the patient had completed TB treatment on July 25, 2022. In addition, the patient denied a history of traveling to areas endemic for Chlamydia trachomatis or Wuechereria bancrofti.

Due to the chronic nature of the patient's disease and irreversible changes in her skin and subcutaneous tissue, the patient would not benefit from conservative management. The patient underwent scrotoplasty and phenoplasty. Surgical treatment is indicated in cases of moderate to severe scrotal lymphedema. The main goals of surgery are to reduce the volume of the scrotum, reconstruct the scrotum, and repair the penile skin (lin et al, 2019). In this case, excisional scrotoplasty performed to reconstruct the penis provided satisfactory cosmetic and functional results.

DISCUSSION

Scrotal lymphedema is a condition characterised by the abnormal accumulation of lymphatic fluid in the scrotal sac, leading to significant enlargement (Meyer et al., 2020). The pathophysiology often involves a disruption of normal lymphatic drainage. In many cases, this condition can arise as a secondary complication, particularly following surgical interventions such as hydrocele repair, or as a result of infections, notably extrapulmonary tuberculosis (TB) (Davis et al., 2019). The lymphatic system plays a crucial role in maintaining fluid balance and immune response; thus, any impairment can lead to significant morbidity.

In our case, the patient's history of hydrocele surgery is particularly relevant. Surgical interventions can cause scarring and damage to the lymphatic vessels, leading to a cascade of events that ultimately result in lymphedema (Sullivan et al., 2018). Furthermore, the presence of tuberculous inflammation, as confirmed by biopsy, indicates that mycobacterial infections can also compromise lymphatic function. This dual aetiology underscores the complexity of scrotal lymphedema and highlights the need for a thorough clinical assessment to identify underlying causes (Kumar et al., 2021).

Statistical data suggest that lymphedema affects approximately 1 in 1,000 individuals, with a significant proportion of cases being secondary to surgical trauma or infections (World Health Organization, 2021). In regions where tuberculosis remains endemic, the incidence of lymphedema secondary to TB is particularly concerning. For instance, a study in India reported that nearly 30% of patients with lymphatic disorders had a history of TB (Choudhury et al., 2020). This illustrates the importance of considering infectious aetiologies in the diagnostic process for lymphedema.

The clinical presentation of giant scrotal lymphedema can vary widely, but it typically manifests as a progressive enlargement of the scrotum, which can become severely disfigured and may lead to significant discomfort and psychosocial distress (Smith et al., 2022). Patients often report symptoms such as heaviness, pain, and difficulty with ambulation, which can severely impact their quality of life. The physical examination usually reveals a swollen, tense scrotum, with potential skin changes, including thickening and hyperpigmentation (Johnson et al., 2019).

Diagnosis is primarily clinical, supported by imaging studies such as ultrasound or MRI, which can help delineate the extent of lymphatic involvement and exclude other conditions such as testicular tumours or hernias (Nguyen et al., 2020). In our case, the biopsy results confirming tuberculous inflammation were pivotal in guiding the treatment approach. This highlights the necessity of a multidisciplinary approach involving urologists, infectious disease specialists, and pathologists to ensure accurate diagnosis and management (Patel et al., 2021).

Moreover, the psychological impact of such a condition cannot be overlooked. Studies have shown that patients with visible deformities often experience anxiety, depression, and social withdrawal (Barker et al., 2021). Therefore, a comprehensive assessment should include not only the physical but also the emotional and psychological dimensions of care.

The management of giant scrotal lymphedema often necessitates a multifaceted approach, with surgical intervention being the cornerstone of treatment (Lee et al., 2021). In our case, the patient underwent scrotoplasty and phenoplasty, procedures aimed at reducing the excess tissue and restoring anatomical function. Surgical options may include debulking procedures, lymphaticovenous anastomosis, or even more complex reconstructive surgeries, depending on the severity of the condition and the patient's overall health status (Cohen et al., 2020).

The choice of surgical technique is influenced by several factors, including the extent of lymphedema, the patient's age, and their functional status. For instance, in cases where significant skin changes have occurred, a scrotoplasty may be necessary to remove excess skin and restore a more normal appearance (Huang et al., 2021). Additionally, phenoplasty can help in reconstructing the scrotal sac, providing not only aesthetic benefits but also functional improvements.

Outcomes of surgical interventions are generally positive, with studies indicating that patients experience significant improvements in both physical symptoms and quality of life post-operatively (Smith et al., 2022). However, it is crucial to set realistic expectations, as complete resolution of symptoms may not always be achievable. Long-term follow-up is essential to monitor for potential complications, such as recurrence of lymphedema or infection.

Postoperative care following surgical intervention for scrotal lymphedema is critical to ensure optimal recovery and minimise complications. Patients should be counselled on wound care, signs of infection, and the importance of maintaining mobility to prevent stiffness and promote lymphatic drainage (Thompson et al., 2020). Compression garments may also be recommended to support the scrotal area and reduce the risk of recurrence.

Additionally, physiotherapy can play a significant role in postoperative management. Techniques such as manual lymphatic drainage (MLD) have been shown to be beneficial in reducing swelling and improving lymphatic flow (Harris et al., 2021). Education on self-management strategies is equally important, empowering patients to take an active role in their recovery.

Psychosocial support should not be overlooked, as many patients experience emotional distress following surgery. Access to counselling services and support groups can provide valuable resources for patients navigating the psychological impacts of their condition and its treatment (Wang et al., 2021). Overall, a holistic approach to postoperative care is essential for enhancing the patient's quality of life and ensuring long-term success of the surgical intervention.

The management of giant lymphedema scrotum requires a comprehensive understanding of its aetiology, clinical presentation, and treatment options. This case report highlights the significant impact of underlying conditions such as tuberculosis on lymphatic function and the importance of tailored surgical approaches to improve patient outcomes. As our understanding of lymphatic disorders evolves, future research should focus on optimising surgical techniques and exploring novel therapies to enhance lymphatic drainage and reduce the burden of lymphedema.

Longitudinal studies are needed to assess the long-term outcomes of surgical interventions and the effectiveness of adjunctive therapies, such as physiotherapy and psychological support (Johnson et al., 2022). Furthermore, as the global burden of tuberculosis continues to pose a public health challenge, increased awareness and early intervention in at-risk populations are crucial for preventing complications such as lymphedema.

While surgical treatment remains the gold standard for managing giant scrotal lymphedema, a multifaceted approach that addresses both physical and psychological aspects of care is essential for improving the overall quality of life for affected individuals.

CONCLUSION

Scrotal lymphedema is a rare condition that is mostly caused by filarial infection and severely impairs the patient's ability to function fully. Scrotal lymphedema is characterized by scrotal enlargement caused by impaired lymphatic flow. This case report is a 42-year-old man with scrotal enlargement since 10 years ago. Most likely in this patient is a secondary case due to a history of hydrocele surgery or extrapulmonary TB infection. This is also evidenced by the biopsy results which showed tuberculous inflammation. A history of travel to an endemic area of Chlamydia trachomatis or Wuechereria Branchofti is unquestionable. Due to the chronic nature of the patient's disease and the irreversible changes in his skin and subcutaneous tissue, he would not benefit from conservative management. The patient underwent scrotoplasty and phenoplasty. With satisfactory results, surgical management is the treatment of choice to improve the patient's overall quality of life. In severe cases, surgical management is the treatment of choice to improve the patient's overall quality of life.

CONFLICTS OF INTEREST

No conflict of interest was found during the research

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