ORIGINAL RESEARCH PAPER
Volume - 12 | Issue - 05 | May - 2023 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

SCROTAL CALCINOSIS: CASE REPORT AND REVIEW OF LITERATURE

General Surgery

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ABSTRACT

Idiopathic scrotal calcinosis is a rare benign disorder of the scrotal skin. It consists of multiple nodules of the scrotal skin with no evident underlying cause, often with normal calcium and phosphate metabolism. The pathogenesis of scrotal calcinosis is still controversial. Metabolic and hormonal work-up needs to rule out other causes. Surgical excision is the choice of treatment both for confirming the diagnosis as well as for treatment. More studies need to be carried out on the best option for scrotal reconstruction.

KEYWORDS

Calcinosis Cutis, Calcium and Phosphate mechanism, Idiopathic, Excision.

INTRODUCTION

The term 'Idiopathic scrotal calcinosis' has been applied to a disorder characterized by solitary or multiple, firm and painless papules or nodules of the scrotum that usually occur during childhood or early adult life. This condition was first described by Lewinsky as a subtype of calcinosis cutis [1]. The pathogenesis of scrotal calcinosis is still controversial. Our aim is to report this disease in a 72 -year-old man and review the literature about its pathogenesis and surgical management.

CASE PRESENTATION

A 72 years old male presented to us with small, multiple and painless subcentimetric swellings over the scrotal skin for the last ten years, which were insidious in onset, progressively increasing in size and number over this period of time. These swellings fused together to form large multinodular swellings. There was no history of trauma. Patient was not a known case of Diabetes mellitus and was not on any immunosuppressive drugs.

On examination patient's BMI was 17.2 and his performance score on Karnofsky scale was 70. On inspection multiple yellowish nodular swellings were seen on scrotum with foul smelling serosanguinous discharge. The surrounding scrotal skin was normal. There were no other similar swellings over the body. On palpation there was no tenderness, no local rise in temperature, it was firm to touch and the skin over swellings was not pinchable. Both testes were normally palpable in scrotal sac. A single enlarged right inguinal lymph node about 1.5 cm in size and freely mobile with smooth surface and non-tender was felt on examination.

The investigations showed Hb 4.8 gm/dl which was built up to 9.2gm/dl with blood transfusion. His liver function tests and kidney function tests results were within normal limits. Ultrasonography of the abdomen suggested minimal fluid in pelvis and grade one fatty liver. FNAC of Right inguinal lymph node revealed scanty clear aspirate with no cells. Excision biopsy report of single scrotal swelling was suggestive of calcinosis cutis. After preanaesthetic checkup wide local excision of all the lesions followed by scrotal reconstruction was done. Histology of the excised lesion showed calcium deposits staining dark blue with hematoxylin and eosin (H and E) and black with Von Kossa stains (Fine granules seen in the dermis and subcutaneous tissue showed irregular calcium masses). Postoperative outcome of scrotal reconstruction was satisfactory with no surgical site infection.

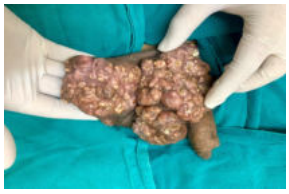

Figure 1. Showing multiple nodular swellings over the s crotal skin.

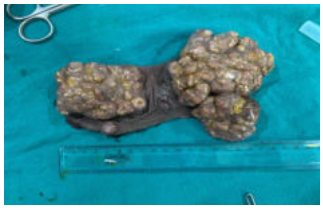

Figure 2. Showing resected scrotal skin.

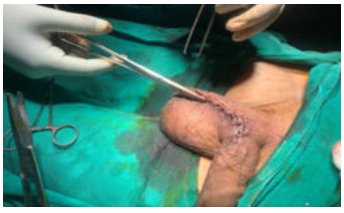

Figure 3. Post-operative outcome of scrotal reconstruction

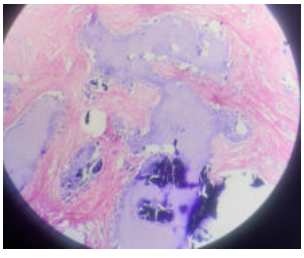

Figure 4. Dark blue stained calcium deposits under the dermis and subcutaneous tissue.

DISCUSSION

Calcinosis of the scrotum was first described in 1883 by Lewinsky. Most of the cases reported in literature presented between 20 and 40 years of age [2]. The youngest and oldest patients were 9 and 85 years old respectively. The interval between the onset of the disease and therapy was often several years. Because of the benign course and negligible symptoms, treatment is often done only for cosmetic reasons. Scrotal calcinosis is more common in dark colored race [3] and affects mainly males but similar lesions like vulvar calcinosis has been reported in females [4].

Many cases have been reported, but its pathogenic mechanism is still unclear. Whether the calcified nodules are idiopathic or whether they are due to dystrophic calcification of epidermal or eccrine cysts is the prime issue of debate concerning the cause of this entity. Most of the patients present with cosmetic concerns. Few patients present with

pruritus, ulcerations, and discharge of chalky material with occasional superimposed secondary bacterial infection. Differential diagnoses for such scrotal swellings are neurofibromas, calcified onchocercoma [6], schwannomas, steatomas, lipoma, and fibroma. Biopsy for histopathological examination is done to differentiate scrotal calcinosis from such similar lesions. In textbooks of Dermatology and Urology one may encounter statements to the effect that scrotal cysts may calcify, which our findings tend to refute. We agree that true cysts may occur on the scrotum and may be multiple but are distinct from idiopathic scrotal calcinosis. They may mimic cysts clinically but otherwise they have nothing in common. Pathological calcification can be broadly divided into two categories, metastatic and dystrophic. The former is rare and associated with underlying disease like renal disorders, in which there is increased levels of serum calcium, phosphate or both and the deposition occurs mainly in kidneys, lungs, heart and arteries but may occasionally be found in skin.

Pathogenesis still remains unclear and debatable. Generally extraskeletal calcifications are classified into idiopathic, dystrophic or metastatic calcifications. Scrotal calcinosis occurs with normal serum calcium and phosphate levels. It is still debatable whether the calcification is triggered by any pathological lesion (dystrophic calcification) or may occur in normal scrotal tissue without any pathological process (idiopathic calcification). Many studies proposed dystrophic calcification of pre-existing lesion like epidermal cyst [1,7-9], eccrine duct milia [10] and degenerated dartos muscle as the underlying aetiopathogenesis of this disease. Dubey et al. suggests that epidermal cyst inflammation occurs and calcium deposits in the cyst wall and free calcium deposit in dermis demonstrated in all such patients [9]. Dare and Axelsen demonstrated the involvement of eccrine duct milia in scrotal calcinosis by using immunoperoxidase technique for demonstrating carcinoembryonic antigen (CEA) which serves as a marker of eccrine sweat glands [10].

Carson highlights the role of nanobacteria in producing sufficient calcium apatite to initiate pathologic calcification and stone formation. Formation of carbonate apatite crystals is characteristic of nanobacteria, like Bartonella, at normal pH and normal blood calcium and phosphate levels [11]. Patient with intense pruritus or ulceration will require surgical intervention. Smaller lesions are amenable to the novel pinch punch excision [14]. Larger lesions may require wide excision and direct closure can be achieved in most patients as shown in our index case. Extensive disease involving the whole scrotum or florid recurrent disease will require complex scrotal reconstruction.
Scrotal skin reconstruction is difficult because of its unique cosmetic and functional features. Rugal nature of the scrotal skin and its thinness is important for temperature control and optimal spermatogenesis. Meshed skin graft can also be used to provide a thin covering. Skin flap from the groin or medial circumflex femoral perforator flap can provide thin and mobile cover for scrotal reconstruction. Demir et al. used Johnsen score for spermatogenesis and found that use of graft in animals for scrotal reconstruction diminishes testicular function whereas use of flaps resulted in testicular function similar to control group [15]. Even though scrotal calcinosis is a benign condition possibility of recurrence should be explained to the patient [8]. Recurrence may be due to microscopic foci of calcification in the remaining scrotal skin.

CONCLUSION

Idiopathic scrotal calcinosis is a rare benign lesion. Metabolic and hormonal work-up is needed to rule out other causes. Surgical excision is required both for confirming the diagnosis as well as for treatment. Scrotal calcinosis must be included in the differential diagnosis of cutaneous swellings in the scrotal region. More studies need to be carried out on the subject of best options for scrotal reconstruction.

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