



Idiopathic Scrotal Calcinosis: A Review of the Literature with Seven Cases

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Abstract

Objective: Scrotal calcinosis is a rare benign disease characterized by calcified nodules on the scrotum skin. In this article, seven patients who were diagnosed as idiopathic scrotal calcinosis were reviewed with the relevant literature.

Methods: Seven patients who were operated for scrotal calcinosis between 2007 and 2015 were included in the study. Patients' age, admission symptoms, accompanying symptoms, duration of symptoms, size and number of masses, type of anesthesia, type of treatment, duration of hospitalization, complications and disease recurrence were evaluated.

Results: All patients presented with a painless mass in the scrotum and their ages ranged from 18 to 67 years (mean 34.2 years). The mean time from the onset of the disease to the time of admission was 2.5 years (range, 6 months-9 years). The masses ranged from 2 mm to 40 mm. There were no pathological findings in the systemic examinations except the lesions in the scrotum. One patient was operated under local anesthesia, three patients under spinal anesthesia and three patients under general anesthesia. The patients were removed from follow up at their own request after 12 months. No recurrence was observed during the follow up period.

Conclusion: Although there are various theories about the etiology of the disease, its etiology is still controversial and the disease is considered idiopathic.

Keywords: Etiology, calcinosis, scrotum

INTRODUCTION

Idiopathic scrotal calcinosis is a very rare benign skin disease characterized by numerous asymptomatic calcified nodules on the scrotum skin (1,2). Although it was described by Lewinski (3,4) in 1883, it was long after Shapiro et al. (5) and his colleagues proposed the name "idiopathic scrotal calcinosis". The disease starts in the third decade. Although it is frequently seen in young adults, it can also be seen in other age groups, and the number and size of nodules tend to increase over time. The masses are dirty yellow and can reach sizes ranging from 1 mm to 3-4 cm. The largest reported nodule size is around 7 cm (6). Although the lesions are mostly painless and cause cosmetic problems, it may rarely present with pruritus, secondary infection and a chees-like drainage. The calcium and phosphorus deposits on the scrotum skin are microscopically observed as amorphous basophilic

masses and the lesions are usually accompanied by foreign body reaction (3,7). In the biochemical analysis of nodules, phosphate, carbonate, magnesium and calcium are found (2). The etiology of the disease is not clear. Although it is accepted as idiopathic, some metabolic (metastatic calcification, hyperparathyroidism, sarcoidosis) and systemic diseases (dermatomyositis, scleroderma) have been implicated in the etiology (8). Clinically, scrotal calcinosis can be confused with other benign masses such as epidermal inclusion cyst, cutaneous horn, lipoma, fibroma, angiokeratoma and lymphangioma circumscriptum (9). The definitive diagnosis is made by histopathological examination after excision of the masses. The treatment of the disease is surgical and cure is provided. In this article, seven patients who were diagnosed as idiopathic scrotal calcinosis were reviewed with the relevant literature.



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METHODS

Seven patients aged between 18 and 67 years (mean 34.2 years), who underwent surgery for scrotal calcinosis between 2007 and 2015, were included in the study. Patients' age, admission symptoms, accompanying symptoms, duration of symptoms, size and number of masses, type of anesthesia, type of treatment, duration of hospitalization, complications and disease recurrence were evaluated.

RESULTS

All of the patients presented with a painless mass in the scrotum, and one patient had pruritus before the admission (Table 1). The mean time from the onset of the masses to the time of admission was 2.5 years (range, 6 months to 9 years). It was learned that the numbers and sizes of masses gradually increased over time, appearing as raised, yellow colored masses. At the time of admission, one patient had a single mass, and six patients had multiple masses (Figures 1, 2). The masses ranged from 2 mm to 40 mm. On examination, it was observed that well circumscribed hard masses were not tender. None of the patients had scrotal trauma, systemic disease, metabolic disease and positive family history. Systemic examination of the patients was normal except for these lesions in the scrotum. No pathology was detected in laboratory tests. One patient was operated under local anesthesia, three patients under spinal anesthesia and three patients under general anesthesia. Spinal and general anesthesia preferences were determined according to the extensivity of the lesions and the preference of the patients. The masses were excised with intact skin margin and all defects were closed using simple sutures (Figure 3). The patient who was operated with local anesthesia was discharged on the same day and the other patients were hospitalized for one day and discharged with oral antibiotics and analgesics. None of the patients had any early or late complications. Histopathological examination results were reported as idiopathic scrotal calcinosis. The patients were

removed from follow up at their own request after 12 months. No recurrence was observed during the follow up period (Figure 4).

DISCUSSION

Idiopathic scrotal calcinosis is a rare disease presenting with numerous asymptomatic nodules on the skin of the scrotum (1,7). Nearly 200 cases have been reported since its description at the end of the 19th century. Although it is frequently seen in children and young adults, it is also seen in other age groups (2,5,7). In the literature, the oldest patient is 85 years old and the youngest patient is 9 years old (10). In our series, the admission age was in the young adult age group with the youngest patient being 18 years old and the oldest patient being 67 years old. The numbers and sizes of the masses tend to increase slowly over time (2,7). Generally, the number is more than one. In our



Figure 1. The appearance of single scrotal nodule on the scrotum

Table 1. Demographic data of patients						
Patient ID	Age, years	Symptoms	Symptom duration	Mass size and number	Length of hospital stay	Anesthesia type
1	22	Painless mass	1 year	Multiple, 2 mm-5 mm	1 day	Spinal
2	18	Painless mass	6 months	Multiple, 3 mm-25 mm	1 day	Spinal
3	56	Painless mass	3 years	Multiple, 2 mm-30 mm	1 day	Spinal
4	32	Painless mass	2 years	Single, 30 mm	Same-day	Local
5	67	Painless mass, pruritus	9 years	Multiple, 4 mm-30 mm	1 day	General
6	21	Painless mass	2 years	Multiple, 2 mm-3 mm	1 day	General
7	24	Painless mass	9 months	Multiple, 4 mm-40 mm	1 day	General

ID: Identify



Figure 2. Appearance of various sized nodules on the scrotum skin



Figure 3. Early postoperative appearance cases, one patient presented with a single nodule and multiple lesions were detected in six patients. In one patient, pruritus was detected as a concomitant symptom. Generally, they are painless



Figure 4. Postoperative 1st year appearance

lesions and they rarely present with itching, signs of secondary infection and drainage of mass content secondary to the trauma (5). The calcium phosphate hydroxyapatite crystals deposited in the scrotum tissue are observed as amorphous basophilic masses in pathological evaluation and the lesion is often accompanied by foreign body reaction (2,7). However, microscopically, it has morphologic variability ranging from epidermal cyst to calcified dermal nodules (2). Although different theories regarding the etiology of scrotal calcinosis have been proposed, the disease is thought to be idiopathic (2,7,11-14). It has been suggested that calcifications are caused by trauma (12) or by calcification of the dartos muscle (13) or dystrophic calcification caused by inflammation of the epidermal cyst (14). Veress and Malik (12) and Feinstein et al. (15) suggested that minor trauma contributed to the development of dystrophic calcification. Ultrastructural studies carried out by Takayama et al. (16) and Pak et al. (17) revealed the presence of calcium and phosphorus mineral crystals. High amounts of calcium, phosphorus, granular crystals and cell residues have been described by Füzesi et al. (18) using electron microscopy and radiographic microanalysis.

Although these findings support the hypothesis that there is a degenerative starting source for scrotal calcinosis, they do not fully explain the mechanism. In the presented cases, no history of trauma was reported. Many researchers have detected foreign body elements in the calcified nodule and fascicles of the dartos muscle (13,19,20). In a histological study, King et al. (13) found calcification foci regularly surrounded by dartos muscle bundles, and necrosis of the dartos muscle was suggested to be a result of the degeneration of the dartos muscle with dystrophic calcification in a process similar to the calcification of uterine leiomyoma (21). One of the unproven hypotheses is that dartos muscle degeneration and necrosis may be an important factor in the pathogenesis of scrotal calcinosis (19). Swinehart and Golitz (14) is the first to suggest that scrotal calcinosis originates from epidermal inclusion cysts and reported cases of scrotal calcinosis developed from epidermal cysts in 1982. They observed the stages of inflammation associated with scrotal calcinosis and calcific keratin and minimal active inflammation in some cysts. As a result of these findings, some researchers have developed the hypothesis that scrotal calcinosis causes calcium precipitation by inflammation of ruptured epithelial cysts (2,14,22,23). The etiology of the disease was accepted as idiopathic in our study since no epithelial cells or signs of degeneration were observed in the microscopic examination of the pathological specimens of the presented patients and no other etiologic factors could be identified. This distinction is not clinically important, as histopathological findings support idiopathic calcinosis and thus it does not make a difference in the etiology and does not change the treatment. As the lesions are limited to the dermis, excision of the scrotum skin is sufficient for treatment. Although there is no consensus on the pathogenesis of scrotal calcinosis, the recommended treatment is surgery. Scrotum skin is usually repaired primarily, but in the presence of very extensive lesions, alternative reconstruction options such as skin grafts and local flaps have been reported (24-27). In all of our cases, defects that were formed after excisions were repaired primarily and cosmetic results after surgery were acceptable. In scrotal calcinosis, surgery is a curative treatment and recurrence is rare (27,28). No recurrence was observed in the 12th month follow up after surgical treatment.

CONCLUSION

As observed in our series, the majority of patients with scrotal calcinosis present to the hospital due to painless masses. There are no sensitive and specific findings in the medical history of the patients and routine laboratory tests. Surgical excision and histopathological examination is necessary to confirm the

diagnosis. Although the etiologic factor does not change the treatment plan, we think that the term “idiopathic” is appropriate for these cases.

Ethics

Ethics Committee Approval: Retrospective study.

Informed Consent: Retrospective study.

Peer-review: External and internal peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: M.S., O.A., Concept: M.S., O.A., Design: M.S., O.A., Data Collection or Processing: M.S., O.A., Analysis or Interpretation: M.S., O.A., Literature Search: M.S., O.A., Writing: M.S., O.A.

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