

Ideopathic Scrotal Calcinosis (ISC): Etiology and Treatment

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ABSTRACT

INTRODUCTION: Idiopathic scrotal calcinosis (ISC) is a rare benign disorder characterized by multiple asymptomatic nodules. The nodules occur on the scrotal skin wall. The purposes of the present study were to: (1) determine whether or not there is a defect in calcium and phosphorous metabolism among patients with ISC; (2) study the effect of treatment with topical steroid and topical vitamin A on nodule recurrence.

METHODS: There were 18 patients with a mean age of 20 years (range, 18-55 years). Six of the patients reported that the nodules were asymptomatic; 12 reported symptoms of itching, heaviness in the scrotum, secondary infection in the lesions, and discharge. Evaluation included patient history, physical examination, and serum levels of calcium, phosphorous, and alkaline phosphatase. Lesions were excised. Patients in group 1 (n = 10) were treated with a long-term topical steroid for 2 weeks, followed by topical vitamin A for 6 months. Patients in group 2 (n = 8) received no topical treatment. Patients were reevaluated every 6 months for 3 years.

RESULTS: Serum levels were within the normal range for calcium (mean = 9.5 mg/dL; SD = 3.5) and phosphorous (mean = 3.2 mg/dL; SD = 0.7), but higher than normal for alkaline phosphatase (mean = 135 U/L; SD = 35). No nodule recurrence was observed in patients receiving the topical treatments. There were 4 reports of recurrence among patients receiving no topical treatments, occurring after 8, 13, 16, and 24 months.

CONCLUSION: The pathogenicity of ISC is not clear. It might be idiopathic, caused by dystrophic calcification, the result of inflammation of epidermal cysts or minor trauma, or due to degeneration and necrosis of dartos muscle. Diagnosis is solely confirmed by surgical excision and histopathologic examination. In the present study, the authors found no anomalies of calcium and phosphorous metabolism except an increase in alkaline phosphatase level. Recurrence was only seen among patients who did not receive topical treatment after surgical excision. Therefore, the authors suggest the use of local treatment of steroids and vitamin A to prevent probable recurrences. However, further studies are needed to reach a more definitive conclusion.

KEYWORDS: Idiopathic scrotal calcinosis; Calcium and phosphorous metabolism anomalies; Alkaline phosphatase

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INTRODUCTION

Idiopathic scrotal calcinosis (ISC) is a rare benign medical condition characterized by multiple and typically asymptomatic nodules on the scrotal skin wall (Figure 1). The nodules are deposits of calcium and phosphorous in the scrotal skin [1]. Idiopathic scrotal calcinosis occurs mainly in childhood or early adulthood [2]. The pathogenesis has not been clearly elucidated.

Although various theories for the etiology and pathogenesis of ISC have been proposed, none has been widely accepted. In the present study, the authors present 18 cases of idiopathic scrotal calcinosis. The calcium and phosphorus metabolism of these patients is described. The role of topical treatment with steroids and vitamin A after surgery in the prevention of recurrences is assessed.

METHODS

Participants

The participants were 18 male patients with ISC. Their mean age was 20 years (range, 18-55 years). Six of the patients reported that the nodules were asymptomatic; 12 reported symptoms of itching, heaviness in the scrotum, secondary infection in the lesions, and discharge. Lesions included both single and multiple firm nodules in the scrotum.

Figure 1. Multiple, Asymptomatic Nodules.

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Fifteen patients had the lesions for many years; 3 patients had the lesions < 3 months. In 1 patient, the onset of the lesion was acute. In 14 patients, the lesion originated from dilated epidermal cysts. The remaining 4 patients did not have epithelial cysts near the lesions. These histological findings are portrayed in Figure 2.

Procedures

The study was approved by the university ethnics committee. A detailed history was obtained and physical examination was performed. The history was summarized in a report that was confirmed by each patient.

Serum levels of calcium, phosphorous, and alkaline phosphatase (ALP) were measured. For patients with small and limited nodules, only the lesions were excised. For patients with diffuse lesions, parts of the skin were excised with the lesions. In 2 cases, skin grafts were needed due to large cutaneous defects.

After excision of the lesions, patients were divided into 2 groups. Patients in group 1 (n = 10) were treated with a long-term topical steroid for 2 weeks, followed by topical vitamin A for 6 months. Patients in group 2 (n = 8) received no topical treatment. Patients were reevaluated every 6 months for 3 years.

RESULTS

Table 1 contains the serum levels of alkaline phosphatase, phosphorous, and calcium for the patients in the study, along with normal ranges. Results indicated that patient levels of calcium and phosphorous were within the normal range. However, alkaline phosphatase levels were elevated (mean = 135 U/L; SD = 35).

Figure 2. Histopathologic Findings (N = 18).

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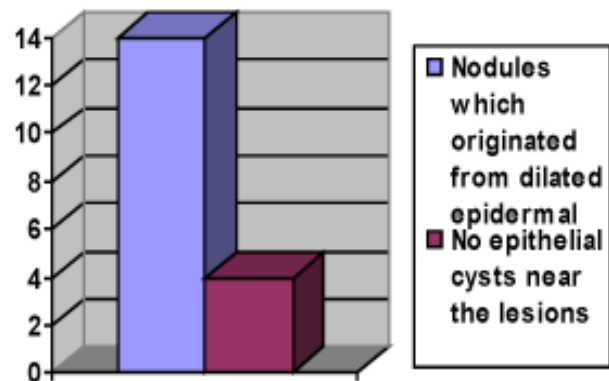


Table 1. Blood Test Results (N = 18).

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Variable	Normal Range	Current Study	
		Mean	SD
Alkaline phosphatase (U/L)	53-128*	135	35
Calcium Total (mg/dL)	8.4-10.2	9.5	3.5
Phosphorous (mg/dL)	2.7-4.5	3.2	0.7

*Range for males.

The patients in group 1 (treated with topical steroid and topical vitamin A) had no recurrence during the 3 years. Four patients in group 2 (no treatment) had recurrences, occurring after 8, 13, 16, and 24 months. No other complications were detected.

DISCUSSION

The first case of idiopathic scrotal calcinosis was described by Lewinski in 1883, and the disorder was named by Shapiro et al in 1970 [2]. The nodules have been described as marble-like (Figure 3), solitary or multiple, polypoidal, firm, and easily palpable. The disorder is benign and usually asymptomatic. The reason for a medical consult is typically cosmetic. Nevertheless, in some cases, symptoms such as heaviness and itching of the scrotum, secondary infection, and discharge from the calcified masses may be reported [3].

The pathogenicity of the disease is not clearly recognized. It might be idiopathic or due to dystrophic calcification of preexisting epidermal cysts [4]. Saad and Zaatari [5] reported that scrotal calcinosis might result from inflammation of epidermal cysts, followed by dystrophic calcification within the

keratin of the cyst or dermis adjacent to a ruptured cell wall. Veress and Malik [6] and Feinstein et al [7] found that minor trauma stimulates the initiation of this pathology. They also reported degeneration and necrosis of dartos muscle. Some cases can be considered truly idiopathic, because there is no epithelial or glandular structure found in the pathology [8].

No convincing evidence of biochemical alteration or endocrinologic, metabolic, or systemic disorder has been found to be the cause of ISC [1]. In the present study, no anomalies of calcium and phosphorous metabolism were found except for an increase in alkaline phosphatase level. ALP is found in almost all tissues of the body and in high concentration in the osteoblasts of bone, liver, placenta, kidney, intestinal wall, and lactating mammary glands. Raised ALP levels are often reported in bone or liver disease [9]. In the present study, a subtle increase in serum level of ALP was noted which could be due to unknown endocrine problems. Further investigations are necessary.

Diagnosis is only confirmed by surgical excision (Figure 4) and histopathologic examination. The excision is limited to scrotal skin because the nodules are localized in the dermis of the scrotum [10]. In some studies, surgery was believed to be a solution; others reported a high probability of recurrence following surgery [11,12].

Topical use of vitamin A actively repairs skin. Improvement in roughness, dysplasia, atypia, and reduction in wrinkling are some of its effects [13]. Topical steroids represent the treatment of choice for many types of inflammatory dermatoses. Despite the extensive use of this class of drugs as first-line therapy, the mechanism of their action is uncertain. However, they can act as powerful anti-inflammatory agents [14].

Figure 3. Marble-like, Multiple, Polypoidal, Firm Nodules.

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Figure 4. Surgically Excised Nodules, Used to Confirm Diagnosis.

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In the present study, recurrence was seen only in patients who were not treated with local steroids and vitamin A after surgical excision. Therefore, the authors suggest the use of these local treatments to prevent probable recurrence. However, further studies are needed to reach a more definitive conclusion.

Conflict of Interest: None declared

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