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BRIEF REPORT

Scrotal Calcinosis: Analysis of 5 Cases

Asuman Kilitci [1], Zeliha Kaya [2], Emine Müge Acar [3], Ömer Faruk Elmas [4]

[1] Ahi Evran University Medical Faculty, Dept of Pathology, Kırşehir, Turkey

[2] Ahi Evran University Education and Research Hospital, Dept of Pathology, Kırşehir, Turkey

[3] Ahi Evran University Education and Research Hospital, Dept of Dermatology, Kırşehir, Turkey

[4] Ahi Evran University Medical Faculty, Dept of Dermatology, Kırşehir, Turkey

ABSTRACT

Idiopathic scrotal calcinosis (ISC) is an uncommon benign process, characterized by solitary or multiple, painless, strict scrotal nodules in the lack of systemic metabolic disorder. Its nature and reason have remained unknown and theories of origin contain idiopathic calcification arising within normal scrotal collagen, dystrophic calcification of inflamed scrotal epidermoid cysts, eccrine duct milia or dartoic muscle, and secondary to minor trauma. A total of 5 cases were found for ISC in our department of pathology. All patients underwent surgical excision of the lesions with overlying skin. Age range was from 25 to 49 years with a mean age of 31.4 years. Three of the patients with multiple lesions (3/5). The common appearance of the masses were hard, slowly growing, semi-mobile, lobulated, and well-circumscribed subcutaneous nodules. Diameter of the lesions ranged 0.7cm to 3cm. Grossly, there were firm, white with chalky and gritty areas. H&E stains revealed basophilic masses in dermis with foreign body giant cell reaction in 4 cases. No recurrences were noted. ISC is a rare, benign, disease of the scrotal skin that is characterized by calcium depositions of various sizes surrounded by a granulomatous reaction. In spite of the debate about the origin of this entity, surgery still seems to be the treatment of option and provides a good clinical outcome.

Keywords: idiopathic, scrotum, calcinosis, dermis, histopathology

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Correspondence:

Asuman Kilitci, Dr.

Address: Ahi Evran University Medical Faculty, Dept of Pathology, Kırşehir, Turkey

Email: dr.asuk@gmail.com

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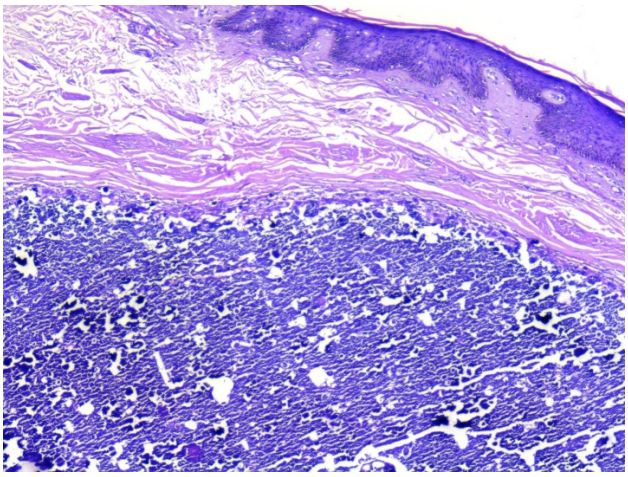
INTRODUCTION

Scrotal calcinosis (SC) is an uncommon benign process, characterized by multiple, painless, firm scrotal nodules in the absence of a systemic metabolic disorder. Calcinosis of the scrotum was first reported in 1883 by H.M. Lewinski and thereafter in 1888 by Hutchinson. However the ethiopathogenesis has remained unknown and theories of origin include idiopathic calcification arising within normal scrotal collagen, dystrophic calcification of inflamed scrotal epidermoid cysts, eccrine duct milia or dartoic muscle, and calcification secondary to minor trauma of the scrotum [1-8].

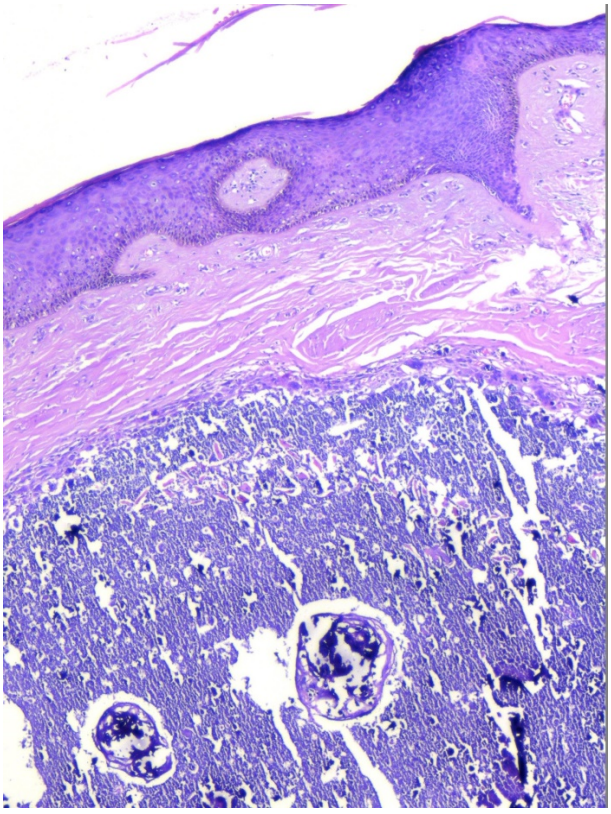
Cases

We analyzed 5 patients who were histopathologically diagnosed as idiopathic SC in Ahi Evran University Education and Research Hospital, retrospectively. The data such as patients' age, size and number of the lesions, biochemical evaluation, pathological features, recurrence rate were collected from patients' pathology reports. After the clinical information of the patients were compiled, data analysis was performed.

The age of the patients ranged from 20 to 49 years with a mean age of 31.4 years and 3 (60%) cases occuring in twenties. Three of the patients had multiple lesions (3/5), and the lesions were solitary in two patients (2/5). The masses were clinically hard, slowly growing, semi-mobile, lobulated, and well-circumscribed subcutaneous nodules and cysts. Minimum diameter of the lesions measured was 0.7 and maximum diameter was 3 cm. All cases were treated with surgical excision. The lesions adhered to skin were excised with the overlying skin. In one of the patients, maximum size of the excised scrotal skin measured 13x4 cm and multipl nodular elevations were present on the skin surface in covering an area of 11x2.5 cm. Histologically, the lesions were well-demarcated and lobulated, and located in the dermis. On cut sections, firm, white with chalky and gritty areas were observed. H&E



(a)



(b)

Figure 1. a,b) Calcified intradermal nodules composed of amorphous basophilic material (H&E,x50; H&E,x50)

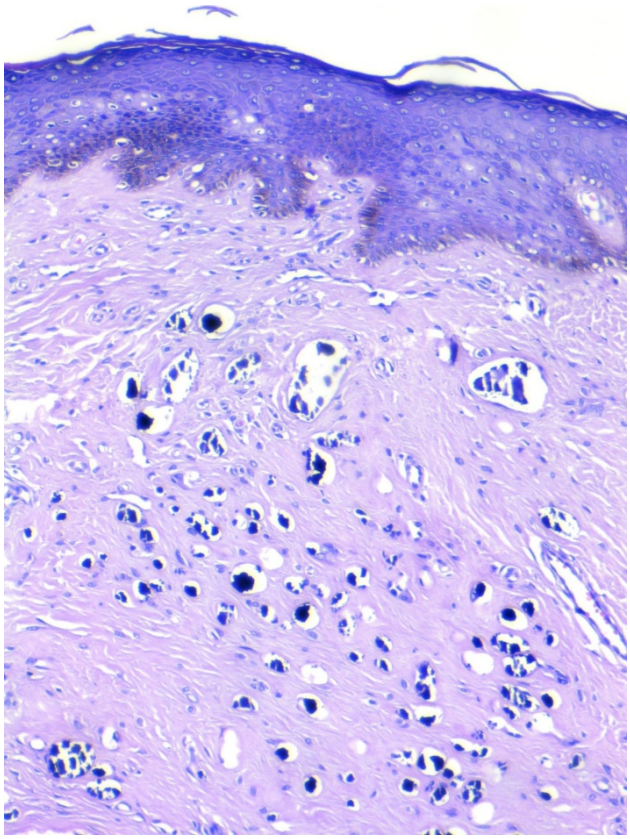


Figure 2. Multiple calcified intradermal nodules lacking an epithelial lining (H&E,x100)

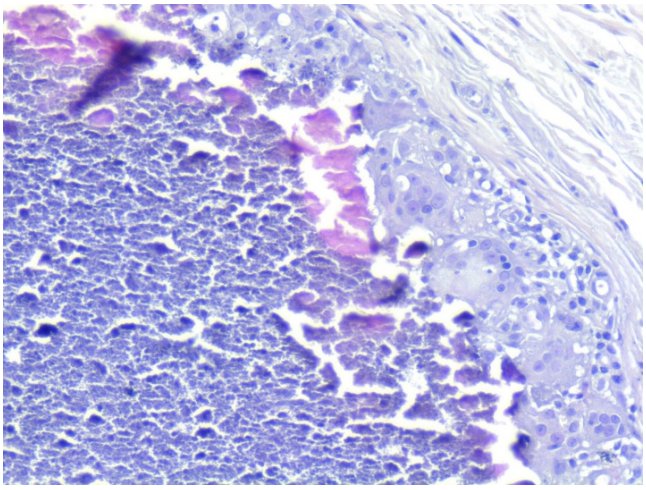


Figure 3. Higher magnification displaying foreign body giant cell reaction around the basophilic deposits (H&E,x200)

stains revealed basophilic masses in dermis with foreign body giant cell reaction in 4 cases (Figure 1-3). No recurrences were noted. The demographic and clinical characteristics of our patients are presented in Table 1.

DISCUSSION

SC begins in childhood and adolescent period. It has been reported that a majority of the patients present between 20 and 40 years of age [4]. The mean age of the patients in this study was 31.4 years with 4 (80%) patients younger than 40 years of age.

Most patients are asymptomatic. Few patients may present with swelling, heaviness, pruritis, ulceration and white chalky discharge [9]. SC is a benign lesion of the skin however it may mimic epidermal inclusion cyst, steatoma or other benign tumors, such as solitary neurofibroma, lipoma and fibroma [10]. In study by Andola, which included 9 patients, the majority of the cases presented with scrotal swelling (8/9) and were clinically diagnosed with sebaceous cysts (7/9). Two of them gave a history of white chalky

Table 1. The demographic and clinical features of patients

Case no	Age	Clinical presentation	Clinical diagnosis	Number of nodules	Max.Size (cm)	Coexisted lesions	Blood calcium level (mg/dl)
1	49	nodular lesion	calcinosis	single	1 cm	-	10
2	25	nodular lesion	calcinosis	single	0.7 cm	Folliculitis	9.7
3	20	nodular lesion	calcinosis	multiple	1.5 cm	-	9.5
4	38	nodular lesion	calcinosis?,tumor?	multiple	3 cm	Condyloma accuminatum	8.9
5	25	nodular lesion	calcinosis	multiple	1 cm	-	9.1

discharge from the nodules. 5 of the cases presented with single nodules, ranging in size from 0.5 to 3 cm (mean 1.89 cm) [10]. In our study, 3 of the cases presented with multiple nodules (60%) and the largest nodule measured 3 cm in diameter.

Many theories about the pathogenesis of ISC have been suggested, but the precise pathogenesis remains unclear. It has been proposed that ISC is a late presentation of epidermal inclusion cysts that have undergone dystrophic calcification [5]. Shapiro et al. established idiopathic scrotal calcinosis as a distinct entity in 1970. They showed the presence of phosphate, carbonate, calcium, and traces of magnesium in the dermal masses by chemical analysis, but all patients' blood tests of the patients revealed normal serum calcium, phosphorus and alkaline phosphatase levels. They considered that the calcinosis was idiopathic in nature, rather than dystrophic or metastatic [4]. Our patients' biochemical tests were also within normal limits.

Swinehart and Golitz suggested that scrotal calcinosis resulted from inflammation and calcification of scrotal epidermoid cysts [5]. Dystrophic calcification of the dartos muscle, eccrine ducts or the dermis following minor trauma or an impacted foreign body has also been proposed as a contributing factor to calcification [11]. The positive reaction with CEA seen in the lesion suggested that lesions were formed by eccrine ducts [6]. Feinstein et al. presented a patient with calcinosis and vitiligo of the scrotum, who worked as a farmer and was continuously on a tractor; this was thought to be the result of recurrent trauma [8]. A history of recurrent or prominent trauma preceding the lesions could not be detected in any of our patients.

A definitive diagnosis of scrotal calcinosis can be only made on the basis of histology, with the confirmation of the presence of calcified masses in the dermis with von Kossa [3]. H&E stain is usually enough to demonstrate calcific deposits within the dermis [12]. On microscopy, basophilic calcified material is seen in the dermis. Lymphocytes, histiocytes and foreign body giant cells can be found around the basophilic masses in the absence of squamous epithelium [9]. Wright et al. performed immunohistochemical study for keratin in 63 lesions from 9 patients with scrotal calcinosis and detected that no epithelial lining of calcified nodules is present, concluding that ISC is truly idiopathic [13]. In this series, any special staining except H and E, was not applied. No evidence of cystic structure was found around the calcified material.

ISC is a rare, benign disease of the scrotal skin that presents with solitary or multiple nodules. It is typically characterized with asymptomatic calcified nodules on the scrotum. Histologically, ISC is characterized by calcium depositions of various sizes that are surrounded by a granulomatous reaction. We must rule out malignant process, disorders of calcium and phosphorus metabolism, renal insufficiency in our patients for diagnosis of the disease. In spite of the controversy about the origin of this entity, surgery still seems to be the treatment of option and provides a good clinical outcome.

Declaration of interest: The authors report no conflicts of interest.

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