Case report

Idiopathic calcinosis of scrotum: A case report and review of the literature

Lin Feng, Guo Shulin*, Wu Jinhua, Liao Zhongxiang, Liu Peiyan, Wang Yanhua, Xie Jiangping

Department of Male Clinic, Ganzhou People's Hospital (Ganzhou Hospital Affiliated to Nanchang University/Nanfang Medical University), Ganzhou, 341000, Jiangxi Province, China

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ABSTRACT

We report a case of 57-year-old male patient with extensive scrotal idiopathic calcium salt deposits with multiple masses fused into a mass occupying 2/3 of the scrotal area. The scrotal mass was completely removed surgically and the postoperative pathology was consistent with idiopathic calcium deposits in the scrotum. In this article, we report this case of idiopathic calcium salt deposits in the scrotum and review the literature to provide some experience for clinical practitioners.

1. Case

Before we conducted this study, the patients was asked to sign an informed consent statement agreeing to the study. A 57-year-old man was admitted with multiple scrotal masses for 10 years, which started to appear 10 years ago without any obvious cause, as multiple nodules of different sizes with smooth surface, hard texture and occasional itching. In the past 5 years, the nodules were gradually increased and enlarged, and some of them fused with the surrounding nodules to form a mass, the larger one was about the size of a fava bean, covering 2/3 of the scrotal surface area, and the appearance seriously affected the patient's life (Figure 1 A-C). He had a history of hypertension for 5 years, usually took amlodipine besylate tablets and candesartanate tablets, and his blood pressure was under control. He denied metabolic diseases, no history of parathyroid disease, no family history of similar diseases, no history of trauma to the scrotum, and no history of testicular epididymitis. Physical examination: multiple nodules of peanut rice to bean size were seen on the surface of scrotum, protruding from the skin, partially fused into a lobulated composition, hard texture on palpation, smooth surface, gritty feel, mobility check, no tenderness, intact skin, no ulcers. Laboratory auxiliary tests: blood and urine routine, blood phosphorus, blood calcium, uric acid and alkaline phosphatase were within normal range. Chest X-ray and electrocardiogram did not suggest abnormalities. On May 15, 2021, he underwent lumbar anesthesia for simple focal resection plus scrotoplasty. Postoperative pathology revealed subepidermal collagen fiber hyperplasia of the scrotum with clear borders and no surrounding cystic wall, between which were seen numerous blue-stained homogeneous amorphous material, surrounding lymphocytic infiltration and scattered multinucleated giant cells, as idiopathic calcium salt deposition of the scrotum (Figure 2 A-C). The diagnosis was: scrotal idiopathic calcium salt deposits. One week after operation, the patient recovered well (Figure 1 D-E). The incision healed well with no recurrence at one year postoperative follow-up, which is continuing.

2. Discussion

Cutaneous calcium salt deposits are hard papules and nodules formed by the deposition of insoluble calcium salts in the skin tissue of the body and are classified as idiopathic cutaneous calcium deposits, medically induced or injurious cutaneous calcium deposits, metastatic cutaneous calcium deposits and dystrophic cutaneous calcium deposits. Idiopathic cutaneous calcinosis lesions are usually distributed in the extremities, most of them develop at a young age, and those occurring alone in the scrotum are rare clinically [1]. Lewinski [2] first described the disease in 1883, but it was not reported until 1970 by Shapiro et al. [3], and first proposed the "idiopathic calcium deposits of the scrotum". Their pathological analysis of the tissue did not reveal the cystic wall, mucosal epithelial tissue, or lipid-like components, so the disease is clinically difficult to diagnose and the condition requiring pathology for diagnosis is defined as idiopathic, which is different from multiple sebaceous cysts or adenomas, hence the name idiopathic calcium salt deposits of the scrotum. To the best of our knowledge, 18 literatures of idiopathic calcinosis of the scrotum having been reported from 1970 to the present in the literature (Table 1) [3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20]. The table compares the clinical features of 18 literatures, of which only 3 cases had histological findings epithelial lining. The pathology of our reported case did not reveal any cyst wall, mucosal epithelial tissue, or lipid-like components, which supports the idea of

* Corresponding author.
E-mail address: 81403081@qq.com (G. Shulin).

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idiopathic calcium deposits in the scrotum. However, whether it is "idiopathic" remains controversial, and even some scholars believe [10, 21] that idiopathic calcium deposits in the scrotum is actually a misnomer and that the underlying cause is calcification of pre-existing epidermal cystic components, most of which originate from epithelial inflammation secondary to excessive collagen synthesis around blood

Figure 1. (A–C) Pre-operative: Multiple, variable-sized nodules are seen on the surface of the scrotum, hard, with smooth, unbroken, well-defined borders and partially fused into a mass. (D–E) Recovery after 2 weeks of treatment.

Figure 2. (A) The epidermis is hyperkeratotic, collagen fibers are hyperplastic, and a large number of blue-stained homogeneous amorphous foci of calcification are seen in the dermis, with no obvious cystic wall (HE,*40). (B–C) Peripheral lymphocytic infiltration and scattered multinucleated giant cells are seen (HE,*100).
vessels and adipose tissue. Excessive collagen synthesis, which undergoes rupture and calcification leading to calcium salt deposition, or even extraneous calcification caused by nanobacteria through microscopic skin trauma [20].

At present, the pathogenesis of idiopathic calcinosis of the scrotum is not clear. Possible pathogenesis includes parasites, foreign bodies, and malnutrition leading to calcification, but most scholars still support the idiopathic view because the exact cause cannot be found in most patients. The disease needs to be clinically differentiated from multiple lipodystrophies of the scrotum, angikeratomas, calcified epithelial tumors, and epidermoid cysts [1, 18, 22]. Among them, the most confusing one is scrotal multiple lipocystic tumor, which is often associated with a family history and has a rubbery hardness with an oily sebum-like substance inside. In contrast, scrotal idiopathic calcium salt deposits are multiple nodules of scrotal skin with no cause, hardness, no family history, and skin rupture that can discharge cheese like gravel particles. Therefore, when taking medical history, we should understand the patient's family history and condition, and improve serum calcium, phosphorus, creatinine, parathyroid hormone and other tests, and the presence of endocrine diseases and autoimmune diseases. For the treatment of idiopathic calcium salt deposition in scrotum, there are currently medication, follow-up observation, laser or cryotherapy, and surgery. Among them, conservative treatments such as medication and follow-up observation are ineffective, and laser or cryotherapy are prone to recurrence [23]. Therefore, surgical treatment is more often used to excise the diseased tissue intact, and direct suturing, transfer of tipped flaps, and free skin pieces can be chosen according to the skin defect [15, 19, 24]. In this case, the lesion was large and multiple hard nodes were fused into a block, but the lesion was located in the middle and upper part of the scrotum, and the lower part of the skin was intact and the scrotal skin was more extensible, so direct suture was used to close the skin. Since the disease lacks a large number of clinical history reports, and the etiology and pathogenesis are still unclear, further in-depth research is needed.

Declarations

Author contribution statement

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Data will be made available on request.

Declaration of interests statement

The authors declare no conflict of interest.

Additional information

No additional information is available for this paper.
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