Cholesterol granuloma of the paratesticular tissue: A case report

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Abstract

A 38-year-old man was admitted to our clinic with an enlarging right scrotal mass that had been present for 7 years. Right radical inguinal orchiectomy was performed and a histopathological diagnosis confirmed a very rare case of cholesterol granuloma of the paratesticular tissue. It can be very difficult to preoperatively distinguish testicular tumours from cholesterol granulomas of the testis or epididymis. Cholesterol granuloma should be kept in mind in patients with large and non-tender scrotal masses.

Introduction

Cholesterol granuloma is a benign, non-specific inflammatory fibrogranulomatous lesion that develops secondary to a foreign body reaction to cholesterol crystals.[1] Although it usually affects the middle ear and paranasal sinuses, it can develop anywhere in the body.[2] We present a very rare case of cholesterol granuloma of the paratesticular tissue.

Case report

A 38-year-old man was admitted to our clinic with right scrotal mass that had been present for 7 years. The patient had no voiding symptoms, fever, or signs of acute infection. The patient's medical history was unremarkable with respect to tuberculosis, sarcoidosis, syphilis, and fungal infections. He had no history of recent trauma or sexual intercourse. Physical examination revealed a 12-cm hard, non-tender scrotal mass that was difficult to separate from the right testicle and did not exhibit transillumination. Laboratory examination revealed normal levels of testicular tumour markers (beta subunit of human chorionic gonadotropin, alpha-fetoprotein and lactate dehydrogenase) and serum and urine tests, except a mild increase in serum cholesterol levels (cholesterol 230 mg/dL, triglycerides 191 mg/dL, low-density lipoprotein 152 mg/dL.). A scrotal colour Doppler ultrasonography revealed a 102 × 83 × 79-mm smooth, solid mass of minimal heterogeneity. A computed tomography revealed a 9-cm right scrotal mass with central cystic areas with peripheral calcifications and right testis compressed by mass; no lymphadenopathy was observed (Fig. 1). A scrotal magnetic resonance image revealed a 138 × 95 × 80-mm semisolid mass that almost filled the right hemiscrotum. The mass was covered by a hypointense thick capsule and appeared hyperintense in all sequences (Fig. 2).

Based on these findings, we decided to perform a radical inguinal orchiectomy. During the surgery, the right testicle could not be palpated easily. However, soft tissue that was almost impossible to separate from the mass was palpated on the inferior border of the mass. This tissue was thought to be the atrophic right testicle. The mass was completely resected.

Macroscopically, the mass contained a 12-cm cyst with brown gelatinous contents; the testicle was constricted distally and measured 3 × 3 cm. A histopathological examination revealed a cystic lesion in the paratesticular region that contained many hemosiderin-laden macrophages and an area of cystic degeneration containing broken, digested fibrinoid material surrounded by longitudinal muscles (Fig. 3). Cholesterol clefts formed by cholesterol crystals were diffusely present within the fibrinoid material (Fig. 4) and between lymphocytes, which were the predominant component of the inflammatory infiltrate clusters. Hemosiderin-laden macrophages were seen around the area of cystic degeneration. Based on these findings, the final diagnosis was a cholesterol granuloma of the paratesticular tissue.

Fig. 1. Right scrotal mass with central cystic areas and peripheral calcifications.

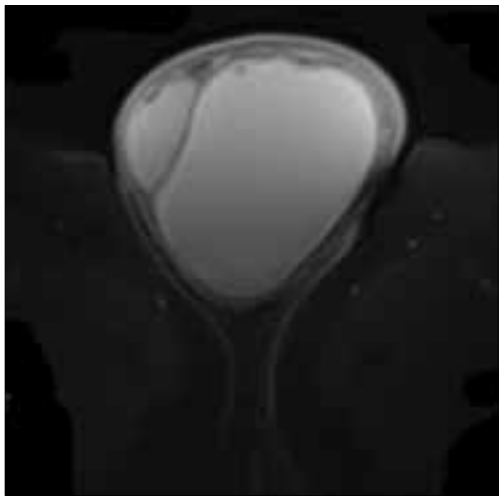

Fig. 2. A semisolid mass that almost filled the right hemiscrotum. The mass was covered by a hypo-intense thick capsule.

Discussion

Cholesterol granuloma is a fibrogranulomatous lesion that develops secondary to a foreign body reaction to cholesterol crystals and exhibits the accumulation of foreign body giant cells.[1] It usually develops in the air-filled spaces of the middle ear region of the temporal bone;[1] however, it has also been reported in the testis,[3] tunica vaginalis,[4-6] tunica albuginea,[7] epididymis,[8] and kidney.[9]

Our search of the English literature revealed that the first case of an epididymal cholesterol granuloma was reported by Nistal and colleagues.[8] However, the authors did not describe the clinical presentation of this rare disease entity. Their specimens were obtained from autopsy or surgical specimens with clinical suspicion of a tumour. Spajic and colleagues[10] reported a case involving a 31-year-old man with acute scrotum in whom emergency scrotal exploration revealed a cholesterol granuloma of the epididymis.

Although the exact pathogenesis of cholesterol granuloma is unknown, it is believed that a non-infectious local reaction induces ischemic necrosis, granulomatous reaction, and scarring. Blood containing cholesterol, fibrin, and hemosiderin extravasates from vessels that rupture due to the ischemic condition. The presence of cholesterol crystals results in a foreign body reaction involving giant inflammatory cells, and granulomatous tissue finally develops.[8,10] Chun-Yeung and colleagues[1] reported that cholesterol granuloma of the testis is indistinguishable from

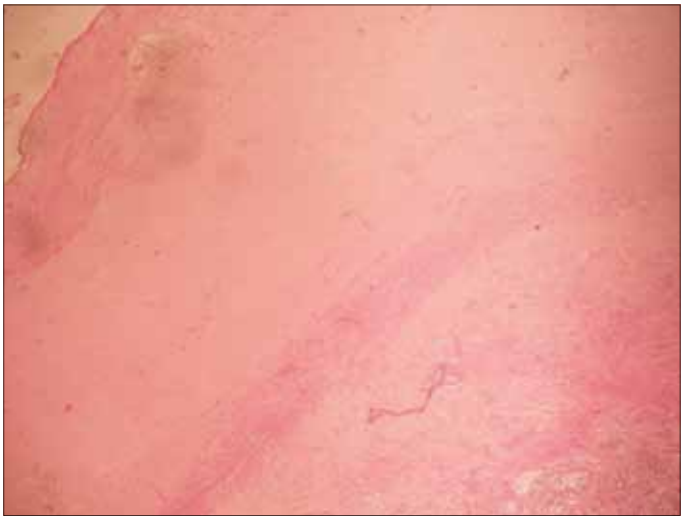

Fig. 3. Area of cystic degeneration, fibrinoid material surrounded by longitudinal muscles. Seminiferious tubules are seen at the right inferior of the figure (hematoxylin and eosin stain 4×).

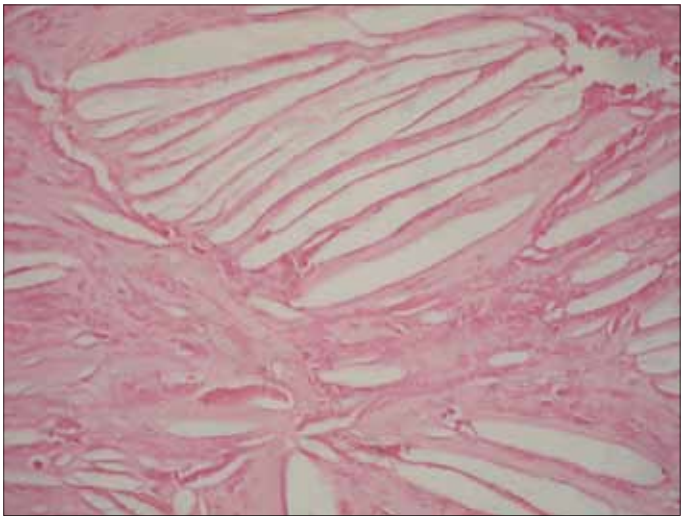

Fig. 4. Cholesterol clefts formed by cholesterol crystals were diffusely present within the fibrinoid material (hematoxylin and eosin stain 40×).

carcinoma of the testis. They concluded that if in doubt, surgical exploration and histopathologic examination are absolutely necessary.

Our patient had a slowly growing scrotal mass. Testicular tumour markers were negative in his preoperative assessment. Neither our patient's medical history nor physical examination revealed any suspicion of a malignant lesion. Magnetic resonance images of our patient revealed high fat content of the mass, although this was not a sole evidence of cholesterol granuloma. Although our patient had mildly elevated serum cholesterol levels, we did not think that this mild elevation was directly related to cholesterol granuloma. Radiological examination also revealed a probably atrophic testis in this case. These preoperative data, although not definitive, led us to think that this mass was benign. Clinical and radiological assessment did not reveal any particular characteristics of a cholesterol granuloma. During surgery, we found it impossible to dissect the mass from atrophic testis thus we preferred to perform a radical inguinal orchiectomy.

Testis-sparing surgery is effective to treat benign and small malignant masses in selected patients. This approach prevents unnecessary surgery, without compromising oncological and functional outcomes. We recommend that cholesterol granuloma should be kept in mind in large and non-tender scrotal masses with high fat content in magnetic resonance images. Although it was not possible and necessary in our case, testis-sparing surgery should be carefully considered in the management of these cases.

Conclusion

Cholesterol granuloma of the paratesticular tissue is a very rarely seen benign clinical condition. It can be very difficult to preoperatively distinguish testicular tumours from cholesterol granulomas of the testis or epididymis. Cholesterol granuloma of the paratesticular tissue should be kept in mind in patients with large, non-tender scrotal masses.

Competing interests: The authors declare no competing financial or personal interests.

This paper has been peer-reviewed.

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