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Giant bilateral scrotal lipoma with abnormal somatic fat distribution: A case report

Yu Chen, Xiu-Ning Li, Xian-Lin Yi, Yong Tang

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Yu Chen, Xiu-Ning Li, Xian-Lin Yi, Yong Tang, Department of Urology, Wuming Hospital of Guangxi Medical University, Nanning 530199, Guangxi Zhuang Autonomous Region, China

Corresponding author: Yong Tang, MD, Chief Doctor, Department of Urology, Wuming hospital of Guangxi Medical University, No. 26 Yongning Road, Wuming District, Nanning City, Guangxi Zhuang Autonomous Region, China. yong_tang_md@hotmail.com

Abstract

BACKGROUND

Scrotal lipoma is exceedingly rare, so its origin is still unknown. Injury is suggested as a potential factor, but the cause remains unclear. It is difficult to determine the origin of these tumours. Previous studies have suggested that these tumours may be congenital or that they originate from small fatty particles around the cord. Other studies have suggested that these tumours originate from testicles or the tunica.

CASE SUMMARY

A 66-years elderly male with giant scrotal mass. B-ultrasound, computed tomography and magnetic resonance imaging examinations are typical lipoma-like changes, which were confirmed by postoperative pathological analysis. Abnormal somatic fat distribution was confirmed by images. no recurrence after follow-up for 2 years. Previously published English-language literature was reviewed, and a history of inguinal or pelvic surgery was reported in 6 studies (total 21 cases). To our knowledge, this is the heaviest bilateral scrotal lipoma in the English-language literature, and it has the longest postoperative follow-up time. More importantly, the origin of these tumours is reviewed and discussed.

CONCLUSION

Giant bilateral scrotal lipoma in elderly may as part of the symptoms of abnormal somatic fat distribution.

Key Words: Lipoma; Crotum; Bilateral; Extratesticular tumour; Fat distribution; Case report

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Core Tip: A case of giant bilateral scrotal lipoma was reported, and the literature was reviewed. A 66-year-old male with a giant scrotal mass was evaluated. Surgical treatment was performed, and scrotal lipoma were confirmed by postoperative pathological analysis. This is the heaviest bilateral scrotal lipoma in the English-language literature, and it has the longest postoperative follow-up time. More importantly, the origin of these tumours is reviewed and discussed.

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INTRODUCTION

In 1780, Pelletan described a fatty tumour of the cord[1]. In 1883, Roswell Park reported a case of intrascrotal lipoma and concurrently reviewed three reported cases[1,2]. Cecil[1] reported a case of intrascrotal lipoma in 1927.

Scrotal lipoma is exceedingly rare, so its origin is still unknown[2,3]. Injury is suggested as a potential factor, but the cause remains unclear. It is difficult to determine the origin of these tumours. Previous studies have suggested that these tumours may be congenital[4] or that they originate from small fatty particles around the cord. Other studies have suggested that these tumours originate from testicles or the tunica[2].

These tumours are very large. A 75-cm lipoma from the scrotum to the knee was reported by Kocher [1]. Regarding weight, Brossard reported a tumour that weighed 9 pounds, and Bonney reported a 20-pound fibrolipoma in 1930[2]. However, no pure lipoma was observed[1]. A study published in 1930 reported a giant scrotal lipoma weighing 480-1100 g[2,5]. Seidu *et al*[5] reported a large unilateral scrotal mass that weighed 1100 g in 2020.

Herein, a large bilateral scrotal lipoma with abnormal accumulation of body surface fat was reported. To our knowledge, this is the heaviest bilateral scrotal lipoma in the English-language literature, and it has the longest postoperative follow-up time. More importantly, the origin of these tumours is reviewed and discussed.

CASE PRESENTATION

Chief complaints

Progressive enlargement of bilateral scrotum for more than one year.

History of present illness

At first, the bilateral scrotal tumours were small (approximately the size of peanuts); then, they became larger. The patients reported slight itching, but no pain or other discomfort. Both sides of his scrotum were obviously enlarged, approximately 13 cm in diameter, and the skin of the scrotum was tight, with no redness or varicose veins.

History of past illness

The patient had undergone electroresection of the prostate and bladder lithotripsy for benign prostatic hyperplasia three years ago in our clinic.

Physical examination

It was failure to touch spermatic cord and testes with negative light transmission test (Figure 1A).

Laboratory examinations

Serum beta-human chorionic gonadotropin, alpha-fetoprotein and lactate dehydrogenase levels were normal. Abnormally decreased platelets were shown from the first operation (Table 1). A bone marrow test was performed, and immune thrombocytopenia was diagnosed.

Imaging examinations

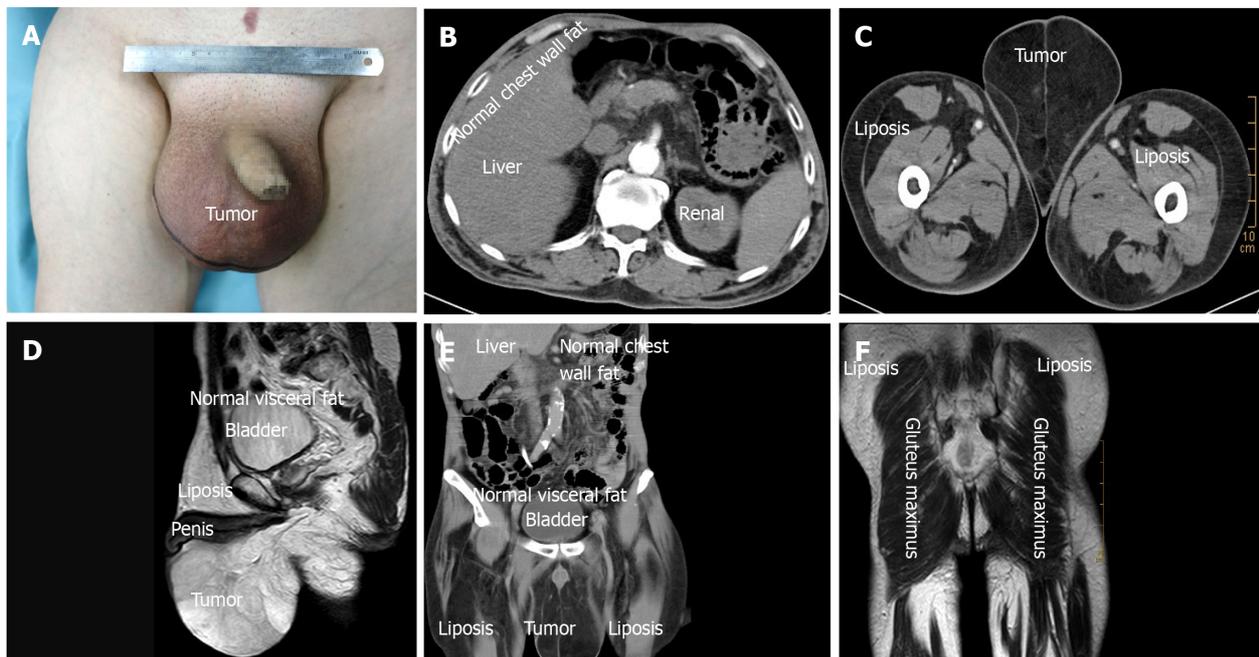
Scrotal ultrasonography showed a slightly higher echogenic mass. The computed tomography (CT) scan showed diffuse fat accumulation in the scrotum, and its density was not uniform. The CT value range was approximately -66 to -94 Hu. The testicles on both sides were normal in size and compressed by the

Table 1 Laboratory test results before first and second surgery¹

| Test | First operation (3 yr ago) | Current operation | Normal reference range |
|-----------------------------|----------------------------|-------------------|------------------------------|
| CRP | < 5 | < 5 | 0-10 mg/L |
| hs-CRP | 2.74 | 3.56 | 0-3 mg/L |
| Hemoglobin | 136 | 130 | 131-172 g/L |
| Red blood cell count | 3.95 | 3.62 | 4-5.5 × 10 ⁹ /L |
| White blood cell count | 3.38 | 2.7 | 4-10 × 10 ⁹ /L |
| Platelets | 93 | 58 | 100-300 × 10 ⁹ /L |
| Cholinesterase | 3223 | 2587 | 5320-12920 |
| Glutamytransferase | 233 | 256 | 8-73 |
| LDH | 360 | 366 | 120-250 g/L |
| Myoglobin | 29.3 | 22.4 | 25-58 |
| Glutamate dehydrogenase | 41 | 25 | 0-5 |
| Triglyceride | N/A | 1.38 | 0.48-1.7 |
| Apolipoprotein-A1 | N/A | 1.97 | 1-1.6 |
| Thyroid stimulating hormone | 13.52 | 8.39 | 0.27-4.2 |
| Ferritin | N/A | 942 | 30-400 µg/L |

¹N/A, not applicable.

CRP: C-reactive protein; hs-CRP: High-sensitivity C-reactive protein; LDH: Lactate dehydrogenase.



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Figure 1 Bilateral scrotal lipoma imaging examination findings. A: Preoperative scrotal lipoma image; B-D: The computer tomography images showed liposis of the lower abdomen, perineum and thigh but no liposis in the chest wall or pelvic cavity; E and F: Magnetic resonance imaging image showing the same findings.

scrotal wall (Figure 1B-D). A magnetic resonance imaging (MRI) scan showed bilateral patchy abnormal signals on both scrotum, high signals on T1 weighted imaging and T2 weighted imaging (T2WI) scans, a low signal on a T2WI lipid-pressing sequence, no obvious diffusion-restricted signal changes on diffusion weighted imaging and apparent diffusion coefficient, and no obvious abnormal enhancement on an enhanced scan (Figure 1E and F).

FINAL DIAGNOSIS

Giant bilateral scrotal lipoma with abnormal somatic fat distribution.

TREATMENT

Surgical treatment was performed. The tumour squeezed the bilateral testis, epididymis and spermatic cord tightly against the inner wall of the scrotum, and the boundary between the tumour and the testis was obvious. The capsules of both tumours were intact, lobulated, light yellow, and soft (Figure 2A-D). The cut surface was off-white and slightly tough. The total weight of bilateral scrotal tumours reached 995 g (Figure 2E). Bilateral scrotal lipomas were confirmed by postoperative pathology (Figure 2F). follow-up only postoperative, no radiotherapy and chemotherapy.

OUTCOME AND FOLLOW-UP

The patient was followed up for two years and no recurrence was found.

DISCUSSION

Scrotal lipoma is very rare, and only approximately 20 cases have been reported[3,6]. In most cases, the aetiology and origination are still unknown. Some patients are young[7], and the cause is suggested to be congenital[4]. However, some patients were older than 60 years, as shown in Table 2. An elderly patient with abnormal fat somatic distribution was reported herein, and its origin was discussed in this study.

Florante *et al*[8] used the term "extratesticular" to describe scrotal tumours that do not directly affect the testes themselves. While 95% of testicular tumours are malignant, most paratesticular tumours, including scrotal lipoma, are benign[9].

Large scrotal lipomas often present with scrotal enlargement and discomfort[10-12]. A large right scrotal mass that weighed 1100 g was reported[5]. Yamamichi *et al*[13] reported a case of scrotal lipoma with a maximum diameter of 14 cm combined with liposarcoma (weight 250 g). The lesion described in the current report is the heaviest bilateral scrotal lipoma in the English-language literature[10-12], which was 995 g in weight (Figure 1D).

Scrotal lipomas can be divided into three types[14]: (1) Originating from the posterior spermatic cord and spreading into the scrotum; (2) Originating from the inside or outside of the spermatic cord, and (3) originating from fat lobules of the scrotal dartos tunica. The latter lipomas are called primary scrotal lipomas, and they usually occur in young individuals[4].

However, abnormal somatic fat distribution may be an important influencing factor in the current case. The CT and MRI results of this patient showed liposis of the lower abdomen, perineum and thigh but no liposis in the chest wall or pelvic cavity (Figure 1B-F). Excess fat around the penis was shown on MRI (Figure 1D). A fat test was performed, and only apolipoprotein-A1 was slightly increased (Table 1). Multiple metabolic enzyme abnormalities were also shown, which lasted for three years in this case (Table 1). These results showed that bilateral scrotal lipoma in elderly individuals may be a symptom of abnormal somatic fat distribution caused by metabolic diseases. Because the scrotal tissue is loose and extensible, which is more suitable for fat accumulation, bilateral scrotal lipoma developed. Recently, a giant bilateral scrotal lipoma along with multiple lipomas was also reported[3]. Indirect evidence can also be provided by many patients with obesity[15].

The aetiology of scrotal lipoma is still unclear. In addition to congenital factors[4], local pluripotent cells develop into adipocyte lines[15]. Moreover, injury may be a factor when the lesion originates from the spermatic cord or inguinal canal in elderly individuals[2]. We reviewed the English-language literature, and a history of inguinal or pelvic surgery was reported in 6 patients, including the current patient (21 patients total, Table 2). However, a small mass similar to a peanut was observed before this patient's first operation three years ago. There was one case of contralateral inguinal surgery in the literature[8]. However, these results suggest that inguinal or pelvic surgery is an accelerating factor, if not an initiating factor.

Blood diseases may also play a role in the tumorigenesis of scrotal lipoma. This current case was diagnosed as primary thrombocytopenia due to decreased platelets for more than 3 years. Szmigielski *et al*[16] reported a case of a large scrotal lipoma that arose after venous thrombosis and pulmonary embolism. The scrotal mass in the 67-year-old patient was approximately 9 cm × 11 cm after taking oral anticoagulants for 3 mo.

Ultrasonography and MRI play an important role in the evaluation of scrotal lipoma[11]. Ultrasound is the first choice for an investigation tool. MRI is the most sensitive method to distinguish a benign

Table 2 Literature review

| Ref. | Age (yr) | Place (side) | Size (cm) | Weight (g) | Symptom | Presumably origination | Midical history (yr) | Operation history | Follow-up (mo) | Outcome/prognosis |
|-------------------------------------|----------|--------------|----------------------------------|------------|-------------------------------|-------------------------|----------------------|----------------------------------|----------------|-------------------|
| Cecil[1] | 44 | Left | 10.5 × 9 × 7.5 | N/A | Hard lumb | Spermatic cord | 8 yr | Fractured rib | N/A | N/A |
| Livermor[2] | 75 | Left | 16.5 × 8.89 | 225 | Weight and pressure | Spermatic cord | 1 yr | Prostate surgery | N/A | N/A |
| Mccullough[20] | 49 | Left | Two 2.0 × 1.5 × 1.5 | N/A | Pressure | Spermatic cord | 5 yr | Inguinal surgery | N/A | N/A |
| Florante <i>et al</i> [8] | 20 | Right | 5 × 3.5 × 2 | N/A | Symptomless mass | Perineum | N/A | Contralateral inguinal surgery | N/A | No recurrence |
| Florante <i>et al</i> [8] | 76 | Right | 3 × 2 | N/A | Symptomless mass | Perineum | 2 mo | Prostate surgery | N/A | N/A |
| Fujimura and Kurokawa[4] | 19 | Right | 6.5 × 6 × 5 | 41 | Symptomless mass | Scrotum (tunica dartos) | 2 yr | N/A | N/A | No recurrence |
| Kryvenko <i>et al</i> [19] | 37 | Left | 26 × 14 (scrotum) | N/A | N/a | Scrotal wall | 18 mo | N/A | N/A | N/A |
| Kryvenko <i>et al</i> [19] | N/A | N/A | N/A | N/A | Inguinal and scrotal swelling | Inguinal canal | N/A | N/A | N/A | N/A |
| Szmiigielski <i>et al</i> [16] | 67 | Both | 17 × 16 × 11 | N/A | Symptomless mass | Scrotal wall | 2 yr | Pulmonary embolism | N/A | N/A |
| Edelstein[15] | 48 | N/A | 7 × 6 | N/A | Scrotal swelling | Spermatic cord | 8 yr | Inguinal surgery | N/A | N/A |
| Kim <i>et al</i> [21] | 1 mo | Midline | 3 × 1.5 | N/A | N/A | Scrotal wall | Congenital | N/A | N/A | N/A |
| Sakorafas and Polychronopoulos [22] | 67 | N/A | N/A | N/A | Mild discomfort | Scrotal wall | 6 yr | N/A | N/A | No recurrence |
| Kaplanoglu <i>et al</i> [12] | 64 | Left | 10 × 9 × 5 | 550 | Painless swelling | Intrascrotal lipoma | 10 yr | N/A | 6 | No recurrence |
| Fabiani <i>et al</i> [9] | 22 | Left | 3 × 2 | N/A | Painful nodule | Intrascrotal lipoma | 3 mo | N/A | N/A | N/A |
| Creta <i>et al</i> [11] | 54 | Midline | 8 × 10 × 12 | 600 | Swelling | Scrotal wall | N/A | N/A | N/A | N/A |
| Srivastava <i>et al</i> [7] | 29 | Left | 15 × 10 | N/A | Increasing lump | Scrotum (tunica dartos) | N/A | N/A | N/A | No recurrence |
| Yamamichi <i>et al</i> [13] | 58 | Left | 14 × 6 | 250 | Swelling and discomfort | Scrotal wall | 46 yr | N/A | 6 | No recurrence |
| Vignot <i>et al</i> [23] | 47 | Left | 17 × 11 × 6 | 460 | Large left scrotal mass | Scrotal wall | 10 yr | N/A | N/A | No recurrence |
| Zheng <i>et al</i> [3] | 47 | Both | Right 9.9 × 4.5, left 10.8 × 5.6 | N/A | Progressively enlarging lumps | Scrotal wall | 8 mo | N/A | 5 | No recurrence |
| Seidu <i>et al</i> [5] | 28 | Right | 21 × 7 × 9 | 1100 | Inguinoscrotal swelling | Inguinal canal | 3 yr | N/A | N/A | N/A |
| Current case | 66 | Both | 13 × 11 × 10 | 995 | Swelling | Inguinal canal | 3 yr | Thrombocytopenia; cystolithotomy | 24 | No recurrence |

N/A: Not applicable.

lesion from a malignant lesion. High T1 signal strength is a characteristic of fat-containing tumours. Nevertheless, it is difficult to distinguish low-grade liposarcoma from benign lipoma based on MRI findings alone[17]. Complete removal of a tumour by surgery and pathological examination can confirm lipoma[11]. Lipoma is homogenous, and its CT values are between -50 and -150 Hounsfield units; this



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Figure 2 Bilateral scrotal lipoma specimen and pathology. A: Incision of the scrotum: the testis and spermatic cord were squeezed, the boundary between the tumour and the tumour was clear, and slight adherence was evident; B: Right scrotal lipoma; C: Left scrotal lipoma; D and E: Bilateral scrotal lipoma postoperative specimen and weighing (approximately 995 g); F: Hematoxylin-eosin staining (40 ×).

information can help in the identification of liposarcoma[16].

If lipomas are excluded, more than 50% of spermatic cord tumours are malignant[18]. If the tumour grows rapidly beyond 10 cm, liposarcoma should be considered in the differential diagnosis[19]. To our knowledge, this is the longest reported postoperative follow-up time. Yamamichi *et al*[13] reported a case and follow-up for six months[13]. Kaplanoglu *et al*[12] reported a case of intrascrotal lipoma (weight 550 g) with a diameter of 10 cm[12]. No tumour recurrence was observed after six months of follow-up. The main limitation of this study is that it is a case report, and there are no genomic data.

CONCLUSION

To our knowledge, this is the heaviest bilateral scrotal lipoma and the longest postoperative follow-up time in English-language literature. Bilateral scrotal lipoma in elderly maybe as part of the symptoms of abnormal somatic fat distribution, which caused by metabolic diseases. Inguinal or pelvic surgery is an accelerating factor, if not an initiating factor. Blood system diseases may also play a role in the tumorigenesis.

FOOTNOTES

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Country/Territory of origin: China

ORCID number: Yu Chen 0000-0001-6920-4982; Xiu-Ning Li 0000-0003-0376-6100; Xian-Lin Yi 0000-0002-3615-3784; Yong Tang 0000-0001-9214-4412.

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