A case of polyarteritis nodosa with periurethral aseptic abscesses and testicular lesions

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ABSTRACT

We describe a 54-year-old man presenting with cutaneous ulcerations, livedo reticularis*, numbness of the legs, and skin histological findings compatible with the diagnosis of polyarteritis nodosa (PAN). Initial treatment with 50 mg/day of prednisolone (PSL) was effective. However, the symptoms and signs recurred, and the patient developed multiple periurethral aseptic abscesses, urethra-cutaneous fistula, and testicular lesions after tapering of PSL therapy. The condition improved with PSL and cyclophosphamide administration. Since penile and testicular vasculitis could be associated with PAN, although rarely, we should carefully distinguish such an involvement from infection and malignancy.*

Introduction

Polyarteritis nodosa (PAN) is a necrotizing inflammation of medium-sized or small arteries, without glomerulonephritis or vasculitis in the arterioles, capillaries and venules (1). Although the testis is found to be frequently involved at autopsy, clinical presentation suggestive of testicular involvement is uncommon (2). We report a case of PAN with periurethral aseptic abscesses, urethra-cutaneous fistula, and masses in the testis.

Case report

A 54-year-old man was referred to our hospital in May 2003 with a 2-year history of cutaneous ulcerations, *livedo reticularis* and numbness of the legs. Skin biopsy from the planta pedis revealed necrotizing vasculitis (leukocyte infiltration and fibrin deposition in the arterial wall) of medium-sized arteries in the lower part of the dermis. He was diagnosed as having PAN, since presence of *livedo reticularis*, mononeuritis multiplex and histological findings of the skin fulfilled the diagnosis criteria of PAN according to the American College of Rheumatology (3). The initial treatment with 50 mg of oral prednisolone (PSL) daily was effective. However, since leg ulceration recurred after tapering of PSL to 10 mg/day in March 2004, it was considered that the disease had relapsed, and then low-dose of oral methotrexate (5 mg/week) was added to the 10 mg/day PSL. Three months later, the patient noticed penile swelling. Antibiotic treatment (levofloxacin 300mg/day) was not effective. Penile centesis revealed aseptic abscess, with negative tests for bacterial and tuberculosis culture and DNA-polymerase chain reaction for tuberculosis. Magnetic resonance imaging (MRI) of the pelvis showed multiple high-intensity areas in the periurethra and both testes on T2-weighted images (Fig. 1). However, he did not have any symptoms with testis. In August 2004, spontaneous disintegration of the abscesses and the appearance of a urethra-cutaneous fistula were noted. The patient also reported reappearance of numbness of legs, resulting in readmission to the hospital in October 2004.

Physical examination showed *livedo reticularis* and purpura on both legs and ulcers on the right knee, left heel, and hallux. The penile fistula was noted and neurological examination showed paresthesia along the distribution of the right lateral sural nerve. Laboratory tests showed leukocytosis (12,000/ml, segmented cells 84%, lymphocytes 13%,

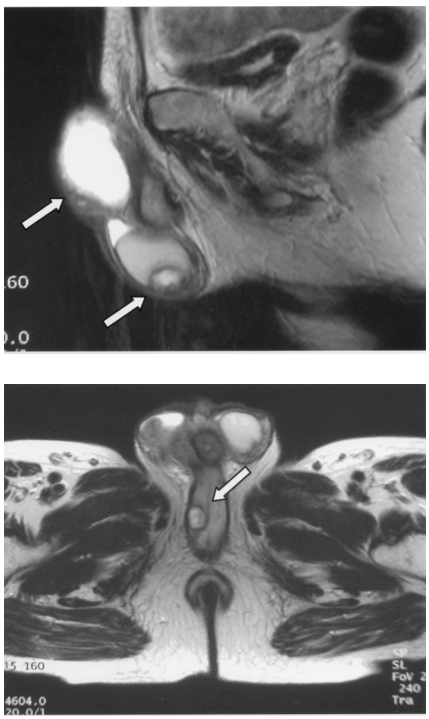

Fig. 1. T2-weighted MRI findings before admission (July 2004). Arrows indicate multiple high-intensity areas in the periurethra and testes.

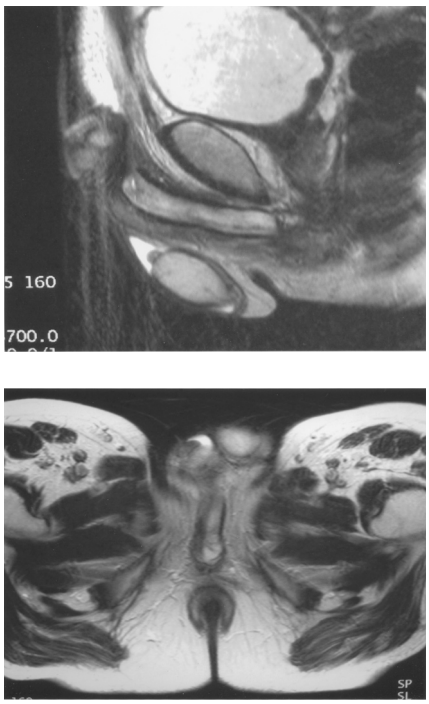

Fig. 2. T2-weighted MRI findings after treatment (January 2005). Note the disappearance of high-intensity areas in the periurethra and testes.

monocytes 2%), erythrocyte sedimentation rate of 66 mm/hr, and C-reactive protein (CRP) of 3.4 mg/dl. Tests for autoimmune antibodies, including antinuclear antibodies and anti-neutrophil cytoplasmic antibodies, and hepatitis B surface antigen were negative. Urine culture and abscess fluid were negative for microorganisms. Chest x-ray and abdominal computed tomography showed no abnormalities.

Since periurethral aseptic abscesses and masses in the testis appeared with lower limb ulcers and paresthesia, we considered all clinical features might be caused by recurrence of vasculitis. Intravenous pulse cyclophosphamide (750 mg/day) was administered. However, CRP continued to increase to 9.3 mg/dl together with deterioration of leg ulceration and severe pain. The PSL dose was increased to 50 mg/day from 10 mg/day, which resulted in overall clinical improvement. Oral cyclophosphamide (50 mg/day) was added in January 2005 and PSL was tapered. T2-weighted MRI of the pelvis in January 2005 showed disappearance of the high intensity areas in the periurethral region and testes (Fig. 2). PSL was gradually tapered to 5 mg/day without recurrence of vasculitis. Oral cyclophosphamide was switched to azathioprine (50mg/day) in August 2006, and PSL (5mg/day) was continued. In September 2007, since ulcers of right toe skin appeared, administration of azathioprine was changed to cyclosporine (100mg/day). After that, clinical symptoms improved and the patients remained asymptomatic. The appropriate consent for this report was obtained from the patient.

Discussion

Penile involvement in PAN is very rare. To our knowledge, only two such cases have been reported (4, 5). Present case developed periurethral aseptic abscesses and urethra-cutaneous fistula, which are the first reported findings of PAN. Moreover, the involvements were improved by immunosuppressive therapy.

Testicular involvement in PAN was first reported by Monckeberg in 1905 (6). Autopsy series demonstrated testicular vasculitis in 60 to 86% of PAN patients (2), however, only 2 to 24% of patients were symptomatic (2, 3, 7). Up to now, seventeen cases with symptomatic isolated testicular vasculitis (8-22), and eleven cases who had initially symptomatic testicular vasculitis, following systemic involvement (7, 23-29), were reported. The main complaints of testicular involvement are testicular swelling, pain and testicular tumor. In twenty-two cases out of the 28 patients, testectomy or epididymectomy was performed, mostly based on suspicion of malignant testicular tumor (7-8, 10-12, 14-20, 22-23, 25-27, 29). These findings point to the difficulty in differentiating PAN testicular involvement from malignancy. Both isolated testicular vasculitis and systemic PAN show similar histological characteristics, including panarteritis, periarteritis, acute and chronic inflammation, and fibrinoid necrosis of the vessel wall, although testicular infarcts in systemic PAN were more frequent (8). In isolated testicular vasculitis, 14 patients were treated by testectomy or epididymectomy (8, 10-12, 14-22), while 3 received PSL or other immunosuppressants (13-14, 16). In patients with systemic vasculitis, 8 were treated with PSL or other immunosuppressants (23-29), and treatment was not described in 3 (7). All patients responded well to the treatment.

In summary, PAN could be associated with vasculitis of the penile and testicular arteries. We need to carefully distinguish such an involvement from infection and malignant tumors.

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