Kaposi Sarcoma of the Ureter After Liver Transplant: Case Report and Literature Review

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Abstract

Kaposi sarcoma after an organ transplant is rare and infrequently involves internal organs. There are 2 reported cases in the English literature of Kaposi sarcoma originating from the transplant ureter after kidney transplant. We report a case of Kaposi sarcoma that occurred in the native ureter of the liver transplant recipient. Initially, the patient refused any further investigation and management and 2 years subsequent, had to undergo a left radical nephroureterectomy owing to the loss of renal function and distending pain. He recovered very well and no recurrence was detected at 47 months' follow-up. To our knowledge, it is the first report in English. We review the literature on this topic and explore the therapeutic principles and histologic features of this sarcoma.

Key words: *Kaposi sarcoma, Ureter, Liver transplant, Radical nephroureterectomy, Sirolimus*

Introduction

We report a case of Kaposi sarcoma occurring in the native ureter after a liver transplant. Kaposi sarcoma is known as a multiple idiopathic hemorrhagic sarcoma. Recently, more cases have been reported owing to the increasing number of organ transplants. Most of the lesions reported appear on the skin, but there have been reports of Kaposi sarcoma after a solid organ transplant occurring in other locations.[1] Two cases of Kaposi sarcoma originating from the transplant ureter after a kidney transplant have been reported.[2, 3] However, to the best of our knowledge, none has been reported in the native ureter.

Case Report

A 49-year-old man with end-stage posthepatitis B cirrhosis received an orthotopic liver transplant in April 2002 and was put on a triple immunosuppressive regimen consisting of tacrolimus, mycophenolate mofetil, and prednisone for half a year. Subsequently, only tacrolimus was used, and the dosage was adjusted according to blood trough concentrations. The patient was discharged with normal hepatic and renal function. His liver graft functions were normal at 3 years' follow-up. In 2005, an ultrasound examination demonstrated left hydronephrosis. Approximately 1 year later, he developed intermittent visual hematuria, and magnetic resonance imaging showed dilation of the proximal ureter and hydronephrosis of left kidney; a mass measuring 2.7 cm × 1.3 cm × 1.5 cm was in the left middle ureter that was suspected of being a left ureteral tumor. A urinalysis showed granulation tissue necrosis with a large amount of infiltration of multinuclear giant cells. A ureteroscopy was performed that found the tumor was located about 10 cm proximal to the left ureter orifice; it was 5 cm long and 0.8 cm in diameter with a cylindric, polypoid shape. The mass was smooth, movable, and pink. A biopsy and ureter stenting were done to verify the nature of the lesion. The pathological result demonstrated a malignant vascular tumor with strong, positive staining of vimentin on immunohistochemistry. Additionally, no Kaposi sarcoma at the other site was detected and serologic examinations showed that anti-HIV and

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cytomegalovirus-Ag were negative. However, the patient refused any further investigation and management.

Subsequently, he underwent a left radical nephroureterectomy in January 2007 owing to pain of distension and loss of renal function. The gross and microscopic appearances are in Figures 1A and 1B. The tumor was composed of well-defined nodules of spindle-shaped cells and slitlike vascular spaces associated with intracellular and extracellular red cells, which is in accord with the histologic characteristics of Kaposi sarcoma. Moreover, immunohistochemistry showed that the lining cells of vascular spaces were positive to vimentin and vascular marker CD31, while the spindle cells were positive to vimentin and negative to CD31. The histopathologic presentations confirmed the diagnosis of Kaposi sarcoma and differentiated it from angiosarcoma. Tacrolimus was discontinued from the operation day and continued on day 4. The patient's postoperative recovery was uneventful. In 47 months' follow-up, the patient's hepatic function was normal, and his serum creatinine was maintained at the postoperative level (approximately 250 μmol/L). No recurrence within the urinary system or other organs was observed.

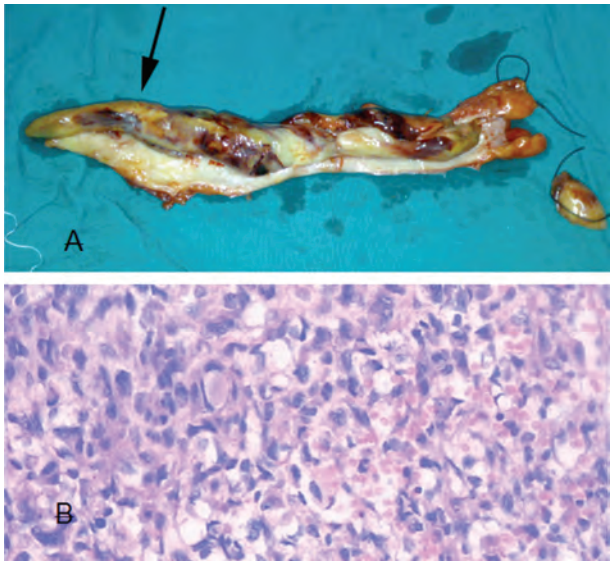

Figure 1A. The specimen was grey-yellow with a smooth surface and columniform with a length of 15 cm. The mass filled almost the entire ureter lumen with 3 thin pedicles, 0.2 to 0.4 cm wide, connected to the wall, with no invasiveness outside or on the wall.
Figure 1B. Section showing a nodular proliferation of spindle-shaped cells and slitlike vascular spaces associated with intracellular and extracellular red cells. Nuclear atypia and mitotic figures were present (hematoxylin and eosin; original magnification ×400).

Discussion

Kaposi sarcoma is a rare vascular neoplasm composed of endothelium-lined vascular spaces and spindle-shaped cells. A steadily increasing tendency of Kaposi sarcoma has emerged during recent decades partly because of the increase in organ transplants. It is usually classified as 4 types: classic, Africa, AIDS-related, and iatrogenic. The latter is primarily referred to as those related to immunosuppressive therapy and in transplant recipients. Though the epidemiology and clinical manifestation of various types Kaposi sarcoma are different, the histology is similar. The characteristic changes (also essential for diagnosis) are (1) angioid structure with fissures or typical capillary formation; and less so, (2) spindle cell proliferation in the early stage as dense bundles, interlaced, or radiated shape in the late stage with atypical cells.[5, 6]

Kaposi sarcoma generally involves the skin and rarely disseminates or occurs in internal organs, especially the urinary system.[4] Both previously reported cases of ureteral Kaposi sarcoma were located in the allograft ureter, so our case is most likely the first one in which Kaposi sarcoma developed in the native ureter of a liver transplant recipient.

Transplant-related Kaposi sarcoma has been observed mostly in kidney transplant recipients and less so in liver transplant recipients. One reason may be the lower dosage of immunosuppressants after liver transplant. However, Serraino[7] reported that the risk of Kaposi sarcoma in liver transplant patients was 2.7 times more than it is for kidney transplant patients. The degree of immunosuppression for a heart transplant is stronger than it is for a kidney transplant, while the incidence of Kaposi sarcoma in heart transplant recipients is lower than it is for other organ transplant recipients.[8] The pathogenesis of Kaposi sarcoma is related to the immune state, but it has not been clearly elucidated. Another important factor was HHV-8 virus, which is related to incidence and can be seen in all types of patients with Kaposi sarcoma.[9] In our case, the anti-HIV was negative when Kaposi sarcoma appeared and was diagnosed as iatrogenic.

In this case, the tumor grew fast and led to occlusion of the urinary tract and the loss of renal function. Kaposi sarcoma rarely affects the urinary system. Generally, the diagnosis of Kaposi sarcoma

is based on medical history, skin lesion, and cause. If Kaposi sarcoma was suspected in visceral form, some special examination, such as ultrasound, computed tomography, or magnetic resonance imaging would be necessary. The ureteroscopy is the best means of observing the tumor in ureteral Kaposi sarcoma and acquiring tissue directly for biopsy. However, we should be mindful of multiple organ involvement or multiple masses in a single organ.

Treatment strategies of various Kaposi sarcomas differ. For transplant recipients, the primary cause of Kaposi sarcoma is systemic immunosuppression, which leads to a treatment dilemma. Some researchers believe that immune therapy plays an important role in the progress of this tumor and recommend reducing or discontinuing immune drugs as a treatment for posttransplant Kaposi sarcoma. When the diagnosis of Kaposi sarcoma is confirmed, immunosuppressants should be reduced by half as a first step. If the tumor size does not diminish, the dosage should be further reduced or withdrawn.[10] Unfortunately, about half of all kidney transplant patients experience irreversible rejection and allograft function loss owing to this adjustment. Renal transplant recipients could return to dialysis if their allografts' functioning fails; however, graft loss is deadly for liver transplant recipients, and agent modulation should be considered cautiously.

Some recent studies show sirolimus is useful for posttransplant patients for antirejection and preventing tumors of the Kaposi sarcoma type.[11-13] This dual role may be important in some cases. In our case, the dosage of tacrolimus was already low. Therefore, a radical nephroureterectomy was performed, with a 4-day withdrawal of tacrolimus. Follow-up showed no unexpected influence on the function of the transplanted liver.

In summary, attention should be paid to posttransplant Kaposi sarcoma, especially the internal organs or systems that could be involved by it. Surgical resection of the involved organ is a reliable treatment in some cases apart from reduction or discontinuation of immunosuppressant and chemotherapy.

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