

- Literature. Nephro-UrolMon. 2011;4:252-7.
8. Haichao Yuan SZ, Liangren Liu, Ping Han, Jia Wang, Qiang Wei. The efficacy and safety of tubeless percutaneous nephrolithotomy: a systematic review and meta-analysis. urol res. 2011;39:401-10.
  9. Maghsoudi R. Outcomes of tubeless percutaneous nephrolithotomy in patients with chronic renal insufficiency. Iran J Kidney Dis. 2012;3:216-8.
  10. Akman T, Binbay M, Aslan R, et al. Long-term outcomes of percutaneous nephrolithotomy in 177 patients with

chronic kidney disease: a single center experience. J Urol. 2012;187:173-7.

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## Unusual Site of Kaposi Sarcoma After Kidney Transplantation

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Kaposi sarcoma (KS) is the most common cancer after kidney transplantation in the Middle East countries.<sup>1</sup> The prevalence of KS in comparison with other tumors is also quite higher in Iranian recipients.<sup>1,2</sup> However, squamous cell carcinoma of the skin is the most common posttransplant malignancy in other reports.<sup>1,3,4</sup> Its incidence following kidney transplantation has steadily increased due to the long-term use of potent immunosuppressive drugs for prevention of allograft rejection.<sup>1,3,5</sup> The prevalence of posttransplant KS varies in different geographic areas, most cases reported from Mediterranean descent, suggesting the importance of ethnic or environmental factors in its development.<sup>1,3,6</sup> Several investigators have found that the higher levels of anti-human herpesvirus-8 antibodies in the Middle East region where there is a higher prevalence of KS.<sup>1</sup>

In the current issue of the *Iranian Journal of Kidney Diseases* a solitary laryngeal KS in a kidney transplant recipient is reported by Taheri and coworkers as an unusual involvement.<sup>7</sup> The patient who was a 40-year-old man presented with severe hoarseness after 21 months of his transplantation. It is important to note that 90% of kidney transplants with KS have skin lesions, mucosal lesions, or both. The oropharyngeal and conjunctival mucosa may be affected. Purely visceral involvement happens in 10% of recipients and their clinical manifestations are unusual.<sup>1</sup> Visceral disease predominantly affects the lymph nodes, gastrointestinal tract, and

lungs.<sup>8</sup> It is of interest that visceral involvement is less frequent in kidney transplants as compared to other solid organ transplants.<sup>8</sup>

Male recipients are about 1.5 to 3 times more likely to develop posttransplant KS than female recipients.<sup>7</sup> In addition, in all other forms of KS, the disease is much more common in men. Posttransplant KS tends to occur in younger patients; the mean age at the time of diagnosis is 43 years.<sup>1</sup> Kaposi sarcoma usually develops early (a mean interval of 12 to 20 months from transplantation).<sup>1,3,5</sup> The onset in the reported case has been documented 21 months after transplantation.<sup>7</sup> Although cytomegalovirus immunoglobulin M antibody was reported to be positive in this case,<sup>7</sup> there is no relationship between developing KS and cytomegalovirus serologic status before transplantation.<sup>3</sup>

Taheri and coworkers reported that surgical removal of the tumor combined with chemotherapy and conversion of cyclosporine and mycophenolate mofetil to sirolimus resulted in complete remission of the KS with no recurrence during a 3-year follow-up.<sup>7</sup> It is important to note that the mainstay of the treatment of KS after kidney transplantation is reduction or withdrawal of immunosuppressive drugs,<sup>1</sup> especially cyclosporine, because it may have direct oncogenic potential.<sup>9</sup> Interestingly, reduction or withdrawal of immunosuppressive agents in recipients with KS resulted in an acceptable remission with preserved kidney allograft function in the majority of patients.<sup>10</sup> Conversely, a discontinuation or reduction of such

therapy in kidney transplant recipients leads to the loss of the graft in approximately half of the patients.<sup>11</sup> Thus, it is recommended that conversion of cyclosporine to sirolimus is logical and the risk of rejection may be reduced. In addition, sirolimus has anti-angiogenic and antiproliferative activities linked with impaired production of the vascular endothelial growth factor and limited proliferative response of the endothelial cells to stimulation by the vascular endothelial growth factor, and therefore, inhibiting the progression of KS.<sup>1</sup> The first complete regression of KS after conversion to sirolimus was reported by Campistol and colleagues.<sup>12</sup> In a series of 15 recipients with skin-limited KS, all of the patients had a complete cure after switching from cyclosporine to sirolimus.<sup>13</sup> Nonetheless, none of the cases had visceral involvement. Mohsin and associates reported regression of KS with both skin and visceral lesions in a kidney transplant patient after switching from cyclosporine to sirolimus.<sup>14</sup> Lebbe and coworkers demonstrated that KS was improved in 14 patients by conversion from a calcineurin inhibitor-based to a sirolimus-based immunosuppression regimen.<sup>15</sup>

In summary, KS is a common tumor following kidney transplantation. Although, the skin is the most frequently involved organ in this disease, visceral sites should be examined for diagnosis of unusual sites of KS.

# CONFLICT OF INTEREST

None declared.

# REFERENCES

- Einollahi B. Kaposi sarcoma after kidney transplantation. *Iran J Kidney Dis.* 2007;1:2-11.
- Nafar M, Einollahi B, Hemati K, Gholi FP, Firouzan A. Development of malignancy following living donor kidney transplantation. *Transplant Proc.* 2005;37:3065-7.
- Einollahi B, Lessan-Pezeshki M, Nourbala MH, et al. Kaposi's sarcoma following living donor kidney transplantation: review of 7,939 recipients. *Int Urol Nephrol.* 2009;41:679-85.
- Chiang YJ, Chen CH, Wu CT, et al. De novo cancer occurrence after renal transplantation: a medical center experience in Taiwan. *Transplant Proc.* 2004;36:2150-1.
- Lessan-Pezeshki M, Einollahi B, Khatami MR, Mahdavi M. Kidney transplantation and Kaposi's sarcoma: review of 2050 recipients. *Transplant Proc.* 2001;33:2818.
- Frances C. Kaposi's sarcoma after renal transplantation. *Nephrol Dial Transplant.* 1998;13:2768-73.
- Taheri S, Afsharmoghdam N, Berjis N, Okhovat A. Solitary laryngeal Kaposi sarcoma in a kidney transplant patient. *Iran J Kidney Dis.* 2012;3:222-4.
- Euvrard S, Kanitakis J, Claudy A. Skin cancers after organ transplantation. *N Engl J Med.* 2003;348:1681-91.
- Hojo M, Morimoto T, Maluccio M, et al. Cyclosporine induces cancer progression by a cell-autonomous mechanism. *Nature.* 1999;397:530-4.
- Firoozan A, Hosseini Moghaddam SM, Einollahi B, et al. Outcome of Kaposi's sarcoma and graft following discontinuation of immunosuppressive drugs in renal transplant recipients. *Transplant Proc.* 2005;37:3061-4.
- Antman K, Chang Y. Kaposi's sarcoma. *N Engl J Med.* 2000;342:1027-38.
- Campistol JM, Gutierrez-Dalmau A, Torregrosa JV. Conversion to sirolimus: a successful treatment for posttransplantation Kaposi's sarcoma. *Transplantation.* 2004;77:760-2.
- Stallone G, Schena A, Infante B, et al. Sirolimus for Kaposi's sarcoma in renal-transplant recipients. *N Engl J Med.* 2005;352:1317-23.
- Mohsin N, Budruddin M, Pakkyara A, et al. Complete regression of visceral Kaposi's sarcoma after conversion to sirolimus. *Exp Clin Transplant.* 2005;3:366-9.
- Lebbe C, Euvrard S, Barrou B, et al. Sirolimus conversion for patients with posttransplant Kaposi's sarcoma. *Am J Transplant.* 2006;6:2164-8.

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