Disturbances in bone and mineral metabolism are common in patients undergoing hemodialysis and often continue after successful kidney transplantation. Vitamin D deficiency following kidney transplantation is a common problem and is usually due to a high prevalence of vitamin D deficiency at the time of transplantation, avoiding direct sun exposure because of the high risk of skin cancer due to immunosuppressive therapy, inadequate dietary calcium and vitamin D intakes, insufficient graft functioning, and side effects of drugs using after kidney transplantation. In the current issue of the *Iranian Journal of Kidney Diseases*, Savaj and Ghods revealed that vitamin D deficiency was a common complication among kidney transplant patients (45%), which matches with the results reported by Stavroulopoulos and coworkers who found a 46% prevalence of hypovitaminosis D in long-term among kidney transplant recipients. In one study, low 1,25-dihydroxyvitamin D3 levels persisted up to 18 months after kidney transplantation. In a series of 61 kidney recipients, low levels of 1,25-dihydroxyvitamin D3 were reported in 46% of patients 6 months following kidney transplantation. Querings and colleagues showed a significantly lower serum 25-hydroxyvitamin D3 levels in kidney transplant recipients when compared to a control group. In addition, vitamin D deficiency was more likely to occur in recipients with higher
serum parathyroid hormone (PTH) levels and those who had kidney allograft impairment. Vitamin D deficiency is also prevalent problem in Danish kidney transplant recipients and is associated with decreased serum 1,25-dihydroxyvitamin D concentrations and increased levels of PTH. Vitamin D deficiency can lead to enhanced T cell reactivity and subsequent higher risk of graft rejection.

Although concentrations of PTH usually tend to decline after kidney transplantation, PTH levels remain elevated in half of the patients 2 years after the transplant surgery, and this trend is persistent for more than 5 years after kidney transplantation. Savaj and Ghods showed a very high prevalence of hyperparathyroidism (76%) after kidney transplantation. In addition, PTH values are notably higher in the transplant patients with worse kidney function, similarly to Savaj and Ghods’ study results; they found a significant correlation between hyperparathyroidism and serum creatinine. It is of interest that Savaj and Ghods reported lower BMD at the cortical bone compared with trabecular skeletal sites (45.5% femoral neck versus 12.5 % lumbar spine), which matches with that of other studies. On the other hand, vertebral fractures are more likely to be occurred than cortical bone sites. The incidence of bone fracture was approximately 5% to 44%, which is 4-fold greater than that before kidney transplant. Most of kidney transplant recipients receive corticosteroids, which may cause more bone loss at trabecular sites. In addition, cyclosporine induces bone loss through increases bone resorption. In our previous study, the cumulative prednisone dose and the cumulative cyclosporine dose were significantly correlated with spinal and femoral bone loss.

Savaj and Ghods did not find a gender effect on bone loss in multivariable analysis, although there is an increased risk of low BMD among females, particularly postmenopausal state possibly relating to a greater loss of bone in the presence of estrogen deficiency. In our previous study, female gender was a risk factor for low BMD.

Finally, bone and mineral disturbances are very common problems following kidney transplantation; hence, early screening and management of this high risk group is essential.

CONFLICT OF INTEREST
None declared.

REFERENCES
Commentary


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Is Management of Angiomyolipoma Different After Kidney Transplantation?

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Angiomyolipoma (AML) is a common benign lesion of various organs, which was first described by Morgan and colleagues. Despite its benign behavior and no reportedly metastasis, it can