

Bone Mineral Density and Related Factors in Renal Transplant Recipients, in the North of Iran

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Introduction. Renal transplantation can lead to or be associated with Low bone mineral density (BMD). The aim of this study is evaluation of BMD and related factors in our renal transplant patients.

Methods. In this descriptive cross-sectional analytical study, 148 kidney transplant patients from university hospital, were enrolled. BMD of hip and lumbar spine was measured by dual-energy X-ray absorptiometry (DXA) and patients were divided into 3 groups: normal, osteopenia, and osteoporosis; according to T-score. Laboratory parameters and a series of variables were investigated, and the results were compared with BMD findings.

Results. In this study, 73 patients (49.3%) had osteopenia and 28 patients (18.9%) were osteoporotic. BMI was significantly lower in the osteoporosis group compared with the normal group ($P < .05$). Cumulative dose of prednisolone and calcium supplement were higher in osteoporotic group compared with normal group.

Conclusion. According to our results, osteoporotic and osteopenia groups have lower BMI that is associated with lower BMD. This can lead to increased risk of bone fractures in the future. Early discontinuation or reduction of prednisolone dose can improve BMD.

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INTRODUCTION

ESRD patients are known to have a spectrum of bone diseases, ranging from high to low-turnover bone disease.¹ Renal transplantation is the definitive treatment for many metabolic abnormalities of uremic patients.² After transplantation, disturbances of bone and mineral metabolism are among the long-term side effects of kidney recipients. These disorders cause significant morbidity in renal transplant patients.^{3,4} Osteopenia-osteoporotic syndrome, along with bone fractures represent the bone complication most closely related to renal transplantation.^{2,5,6} Specific factors that have been suggested to have a role in the pathogenesis of osteoporosis after

transplantation include high daily and cumulative dosage of corticosteroids, cyclosporine, tacrolimus, persistent hyperparathyroidism, and preexisting bone disorders.^{2,5,7} Steroid therapy is the most common cause of osteoporosis in kidney transplant patients.⁸ Even low doses of steroids (5 or 7.5 mg/d) can reduce bone mass regardless of age, sex, and menopause.⁹

The most critical period of bone loss following transplantation appears to be the first 6 months, with the most dramatic reduction occurring in the first 3 months. Trabecular (cancellous) bone of the spine appears to be the most at risk, with vertebral fractures occurring most often. Therefore, kidney transplant should be followed by densitometric