

OSTEOPOROSIS THERAPY WITH DENOSUMAB IN PATIENTS AFTER SOLID ORGAN TRANSPLANTATION

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OBJECTIVES

The transplantation-associated osteoporosis became an increasingly important problem with the better survival of patients after the solid organ transplantation (Tx). Adequate vitamin D intake, calcium supplementation and bisphosphonates therapy are currently recommended for osteoporosis treatment. However bisphosphonates may be limited with patients' impaired renal function. Denosumab use is the possible option but till now only a little data exist in solid organ transplant population.

METHODS

We investigated 46 patients (M 19, F 27) mean age 56.2 y after solid organ transplantation and mild renal impairment treated with Denosumab inj. 60 mg every 6 months in years 2012-2015 with the mean duration of therapy 1.25 years. The osteoporosis was diagnosed with densitometry (DEXA) using Lunar Prodigy apparatus. Simultaneous pancreas and kidney Tx had 13 patients, liver transplantation 15 patients, solitary kidney Tx 16 patients and 2 patients underwent heart Tx. History of fracture had 15/46 (32.6%). We have also measured on the plain CXR the clavicle bone index (BI) which is the ratio of cortical bone width to total bone width at the midpoint of the shaft. BI <0.5 represents osteoporosis. Osteoporosis of L spine was present in 34/46 patients (74%), hip osteoporosis in 23/46 patients (50%) and in distal radius in 23/46 patient (50%).

RESULTS

The bone density of L spine improved in 33/34 (97%) with mean increase in BMD 9.8%, BMD of hips improved in 23/23 patients with osteoporosis, with mean increase 8.0%. Only in two patients with hips osteopenia BMD decreased. BMD of distal radius improved in 28/44 (64%) patients and decreased in 16/44 (36%) patients. Clavicle - Cortical Bone Index (measured in 30 patients) was 0.367 and did not change significantly. The therapy with Denosumab was well tolerated and we did not register any complications.

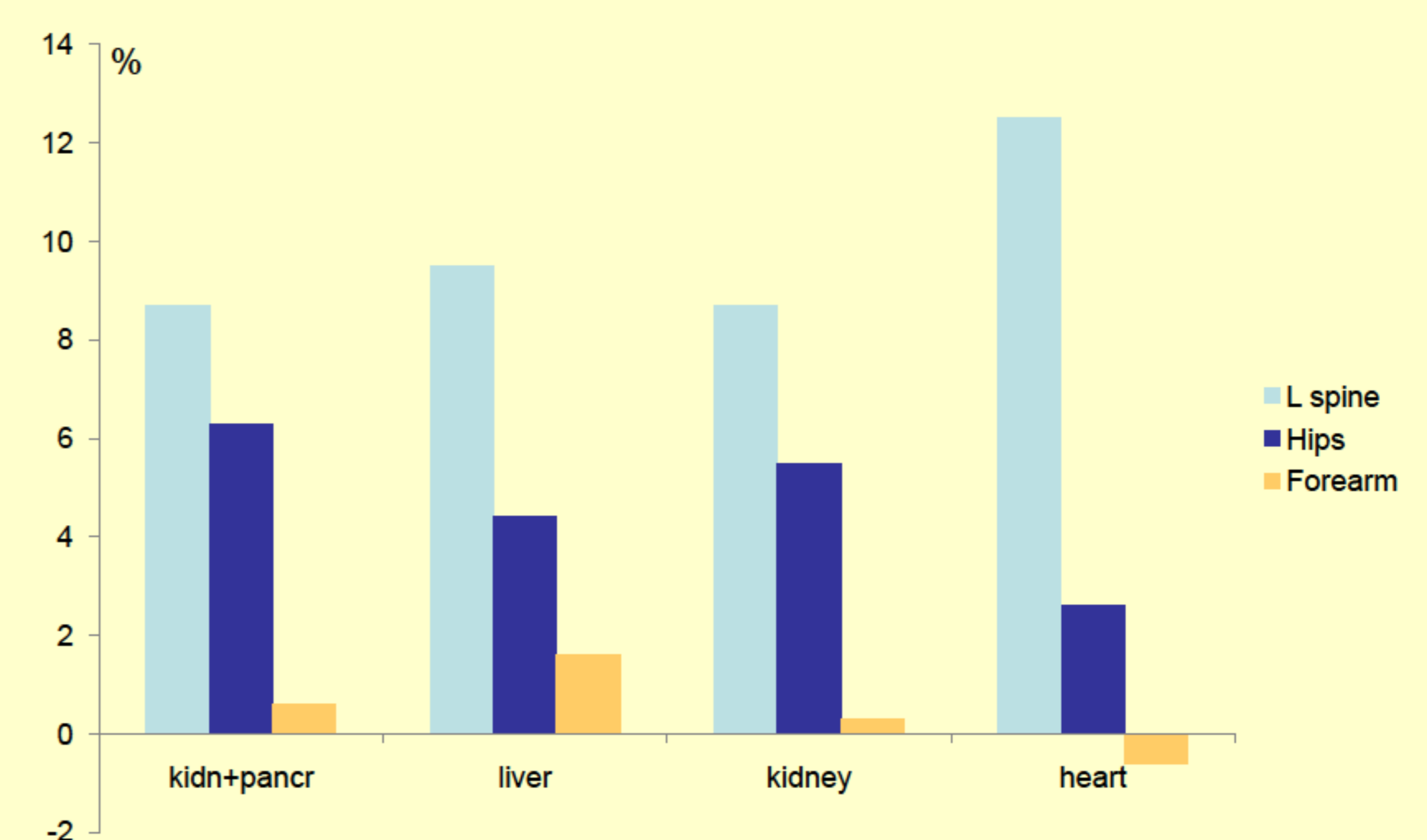
Characteristics of patients after Tx treated with Denosumab

Patients after Tx	Age (years)	After Tx (years)	Creat μ mol/l	L spine % OP	Hips % OP	Forearm % OP
Kidney+pancr N=13	54.2	11.7	222.5	38% T -3.2	92% T -3.1	69% T -3.9
Liver N=15	59.3	7.8	124.6	87% T -3.1	40% T -2.9	40% T -3.5
Kidney N=16	54.7	7.0	168.8	94% T -2.7	37% T -2.8	56% T -2.9
Heart N=2	58.5	5.0	133.1	100% T -2.85	0% T -2.85	0% T -2.85
Total N=46	56.2	8.5	162.2	74% T -2.9	50% T -2.9	50% T -3.4

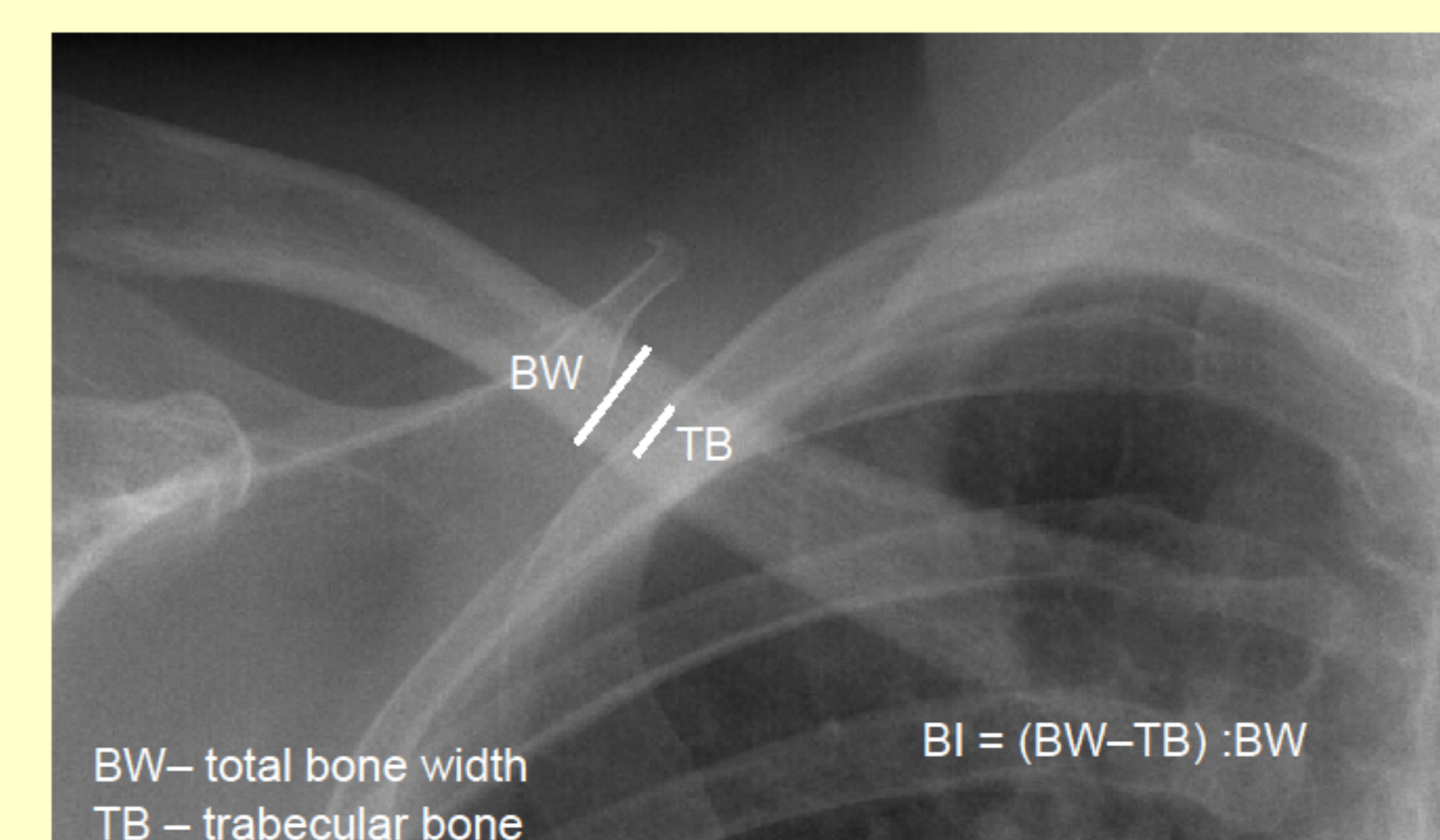
BMD changes in different transplanted organs (in total and in osteoporotic localization)

Tx	L spine	L spine OP	Hips	Hips OP	Forearm	Forearm OP
Kidn+pancr N=13	8.7 %	9.7 % N=5	6.3 %	7.0 % N=12	0.6 %	-1.7 % N=9
Liver N=15	9.5 %	10.7 % N=13	4.4 %	8.7 % N=6	1.6 %	6.05 % N=6
Kidney N=16	8.7 %	8.8 % N=15	5.5 % N=6	7.6 %	0.3 %	0.9 % N=9
Heart N=2	12.5 %	12.5 % N=2	2.6 %		-0.6 %	

Changes of BMD after the Denosumab therapy in transplanted patients



The measurement of cortical bone index



CONCLUSIONS

Denosumab therapy improved bone density in osteoporotic patients after solid organ transplantation and was well tolerated. Bone mineral density increased mainly in osteoporotic bone, in spine by 9.8% and in hip 8%. The measurement of Cortical Bone Index on plain CXR can be used in the screening for osteoporosis.