



Indentification of the lumbar 1-4 and lumbar 2-4 bone mineral density in women

Hongyu Shao, Wei Yu, Guiying Du, Pengtao Sun

Department of Radiology, Peking Union Medical College Hospital, Chinese Academy of Medical Sciences & Peking Union Medical College, Beijing, China



Introduction

Osteoporosis is a major bone disease among postmenopausal women. ISCD recommended that posteroanterior L1-4 as the spine region of interest for BMD measurement. However, both L1-4 and L2-4 are used in the clinical and epidemiological studies. The aim of our study was to evaluate whether the differences of BMD between L1-4 and L2-4 would exist.

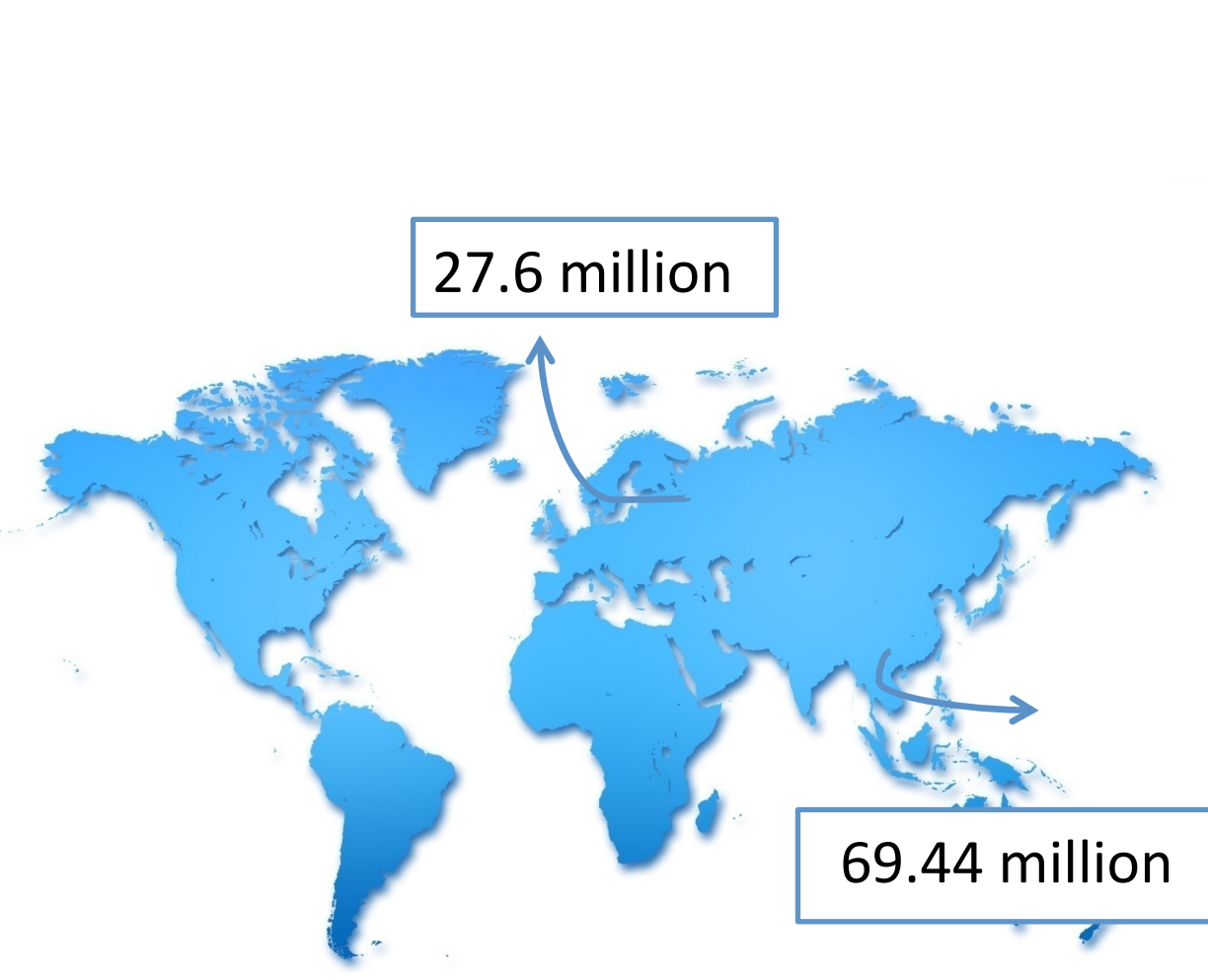


Fig.1. Osteoporosis distribution

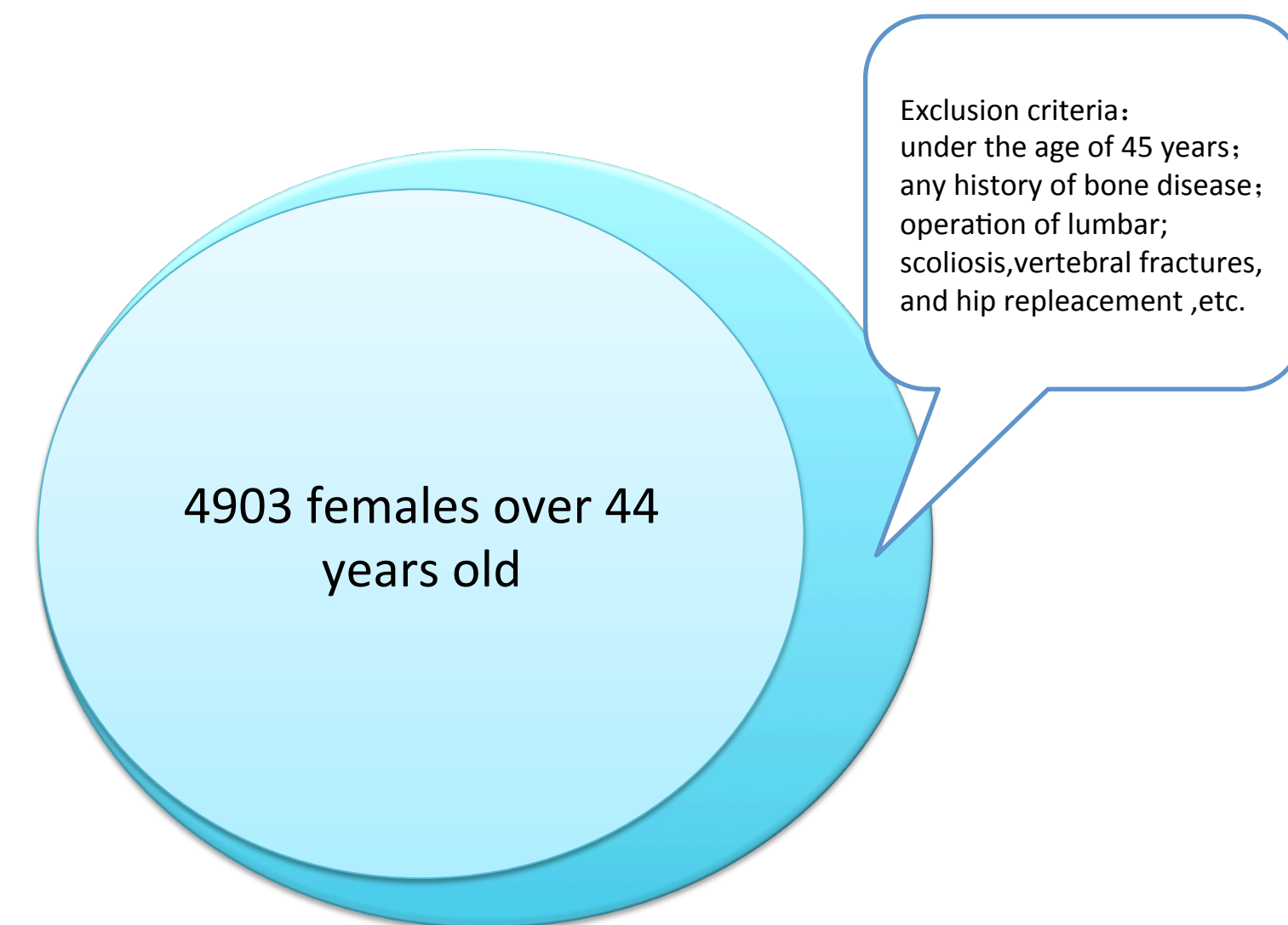


Fig. 2. Research objects



Fig. 3. Dual energy X-ray absorptiometry equipment

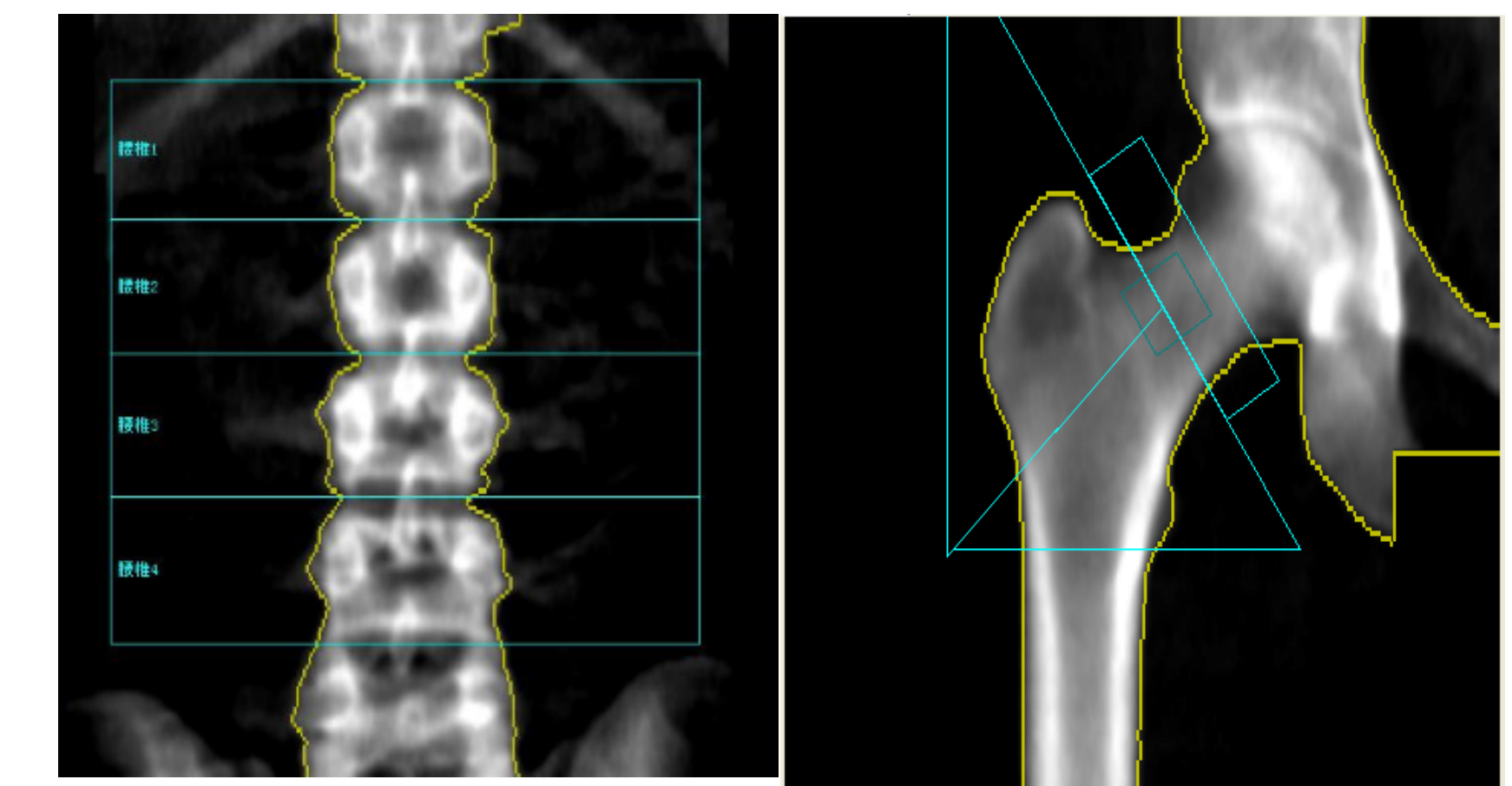


Fig.4. Region of interest of the lumbar and right neck of femur

Results

1. There were significant differences of BMD and *T*-score between both lumbar areas ($p = 0.000$). What's more, lumbar 1-4 were lower than lumbar 2-4 counterparts.

2. With age, bone mineral density and *T*-score of lumbar were decreased before 70 years while hip showed in all groups. The largest degree were declined in 50 to 55 group and there were no obvious differences between lumbar 1-4 and lumbar 2-4.

3. After 70 years, there was a rebound tendency in lumbar BMD and *T*-score, especially lumbar 2-4.

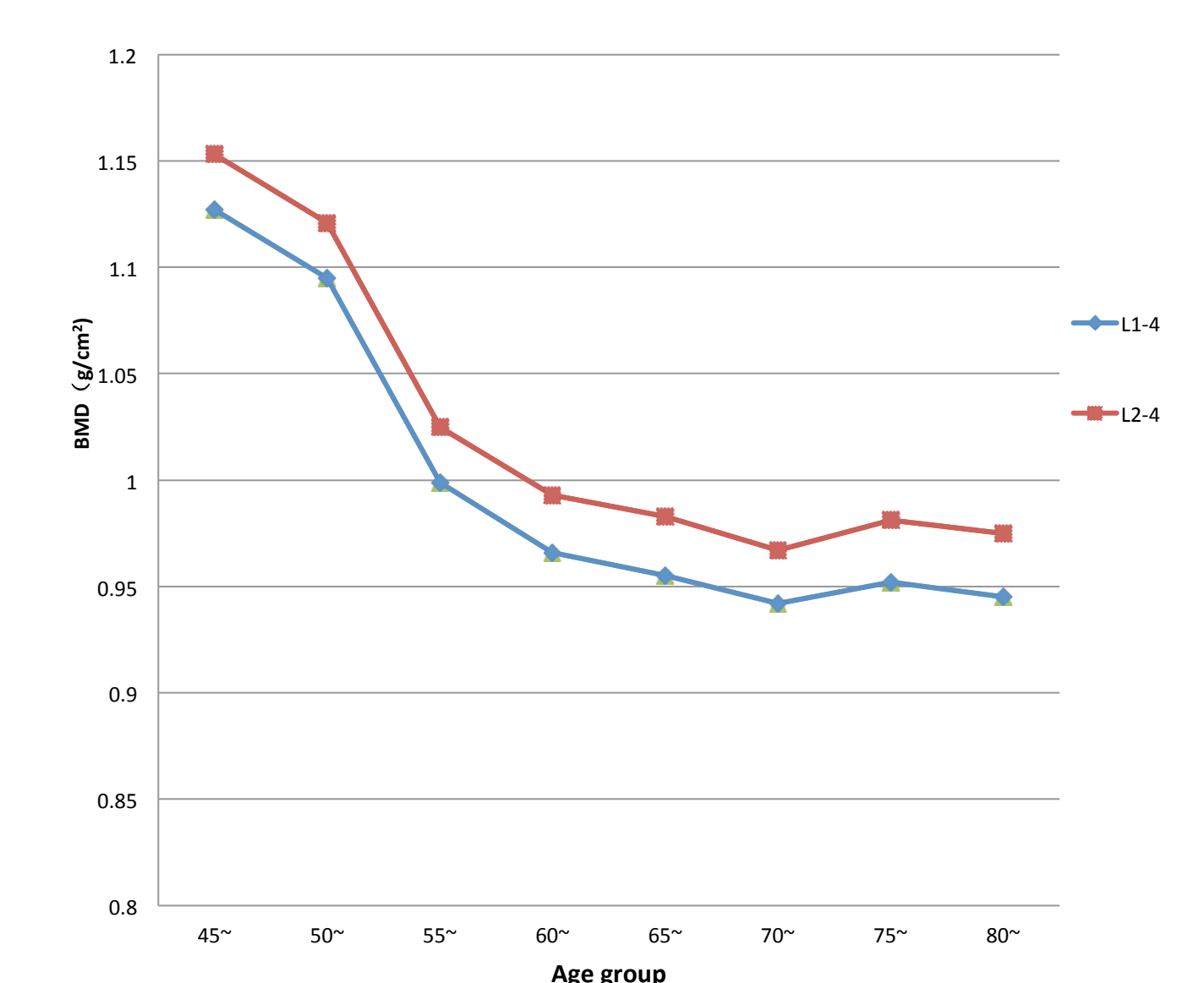


Fig.5. Characteristics of BMD in L1-4 and L2-4 with age

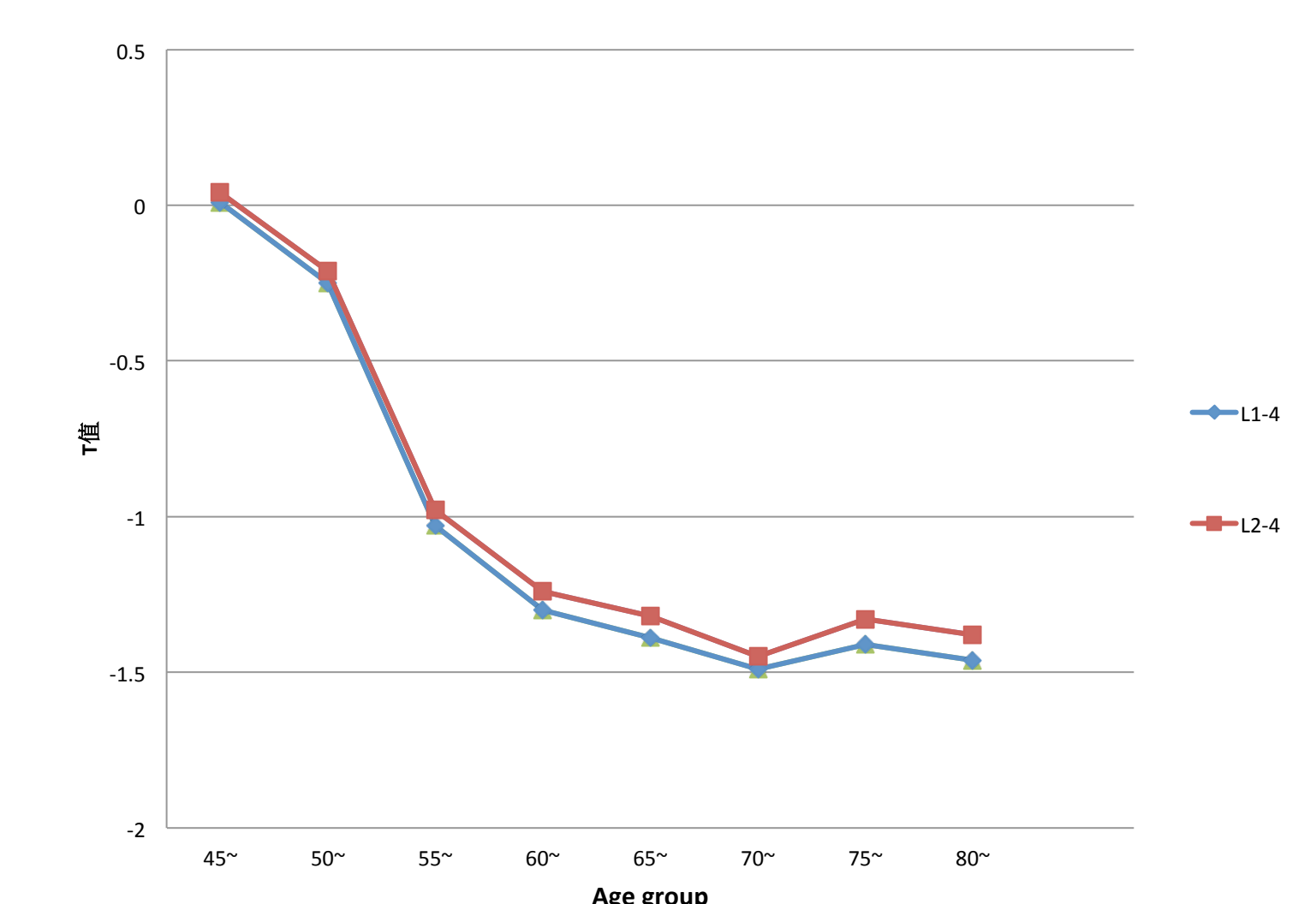


Fig.6. Characteristics of *T*-score in L1-4 and L2-4 with age

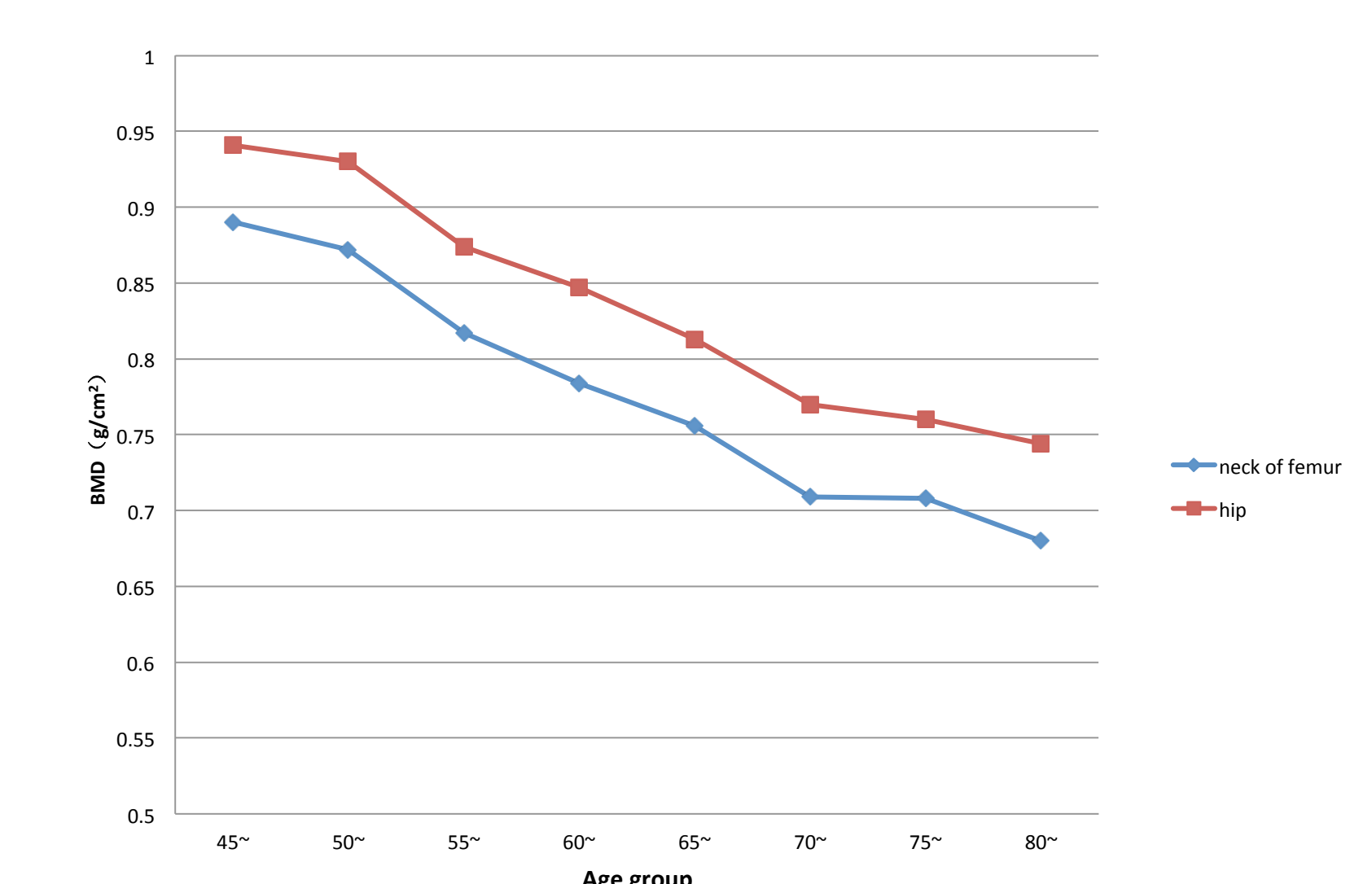


Fig.7. Characteristics of BMD in right neck of femur with age

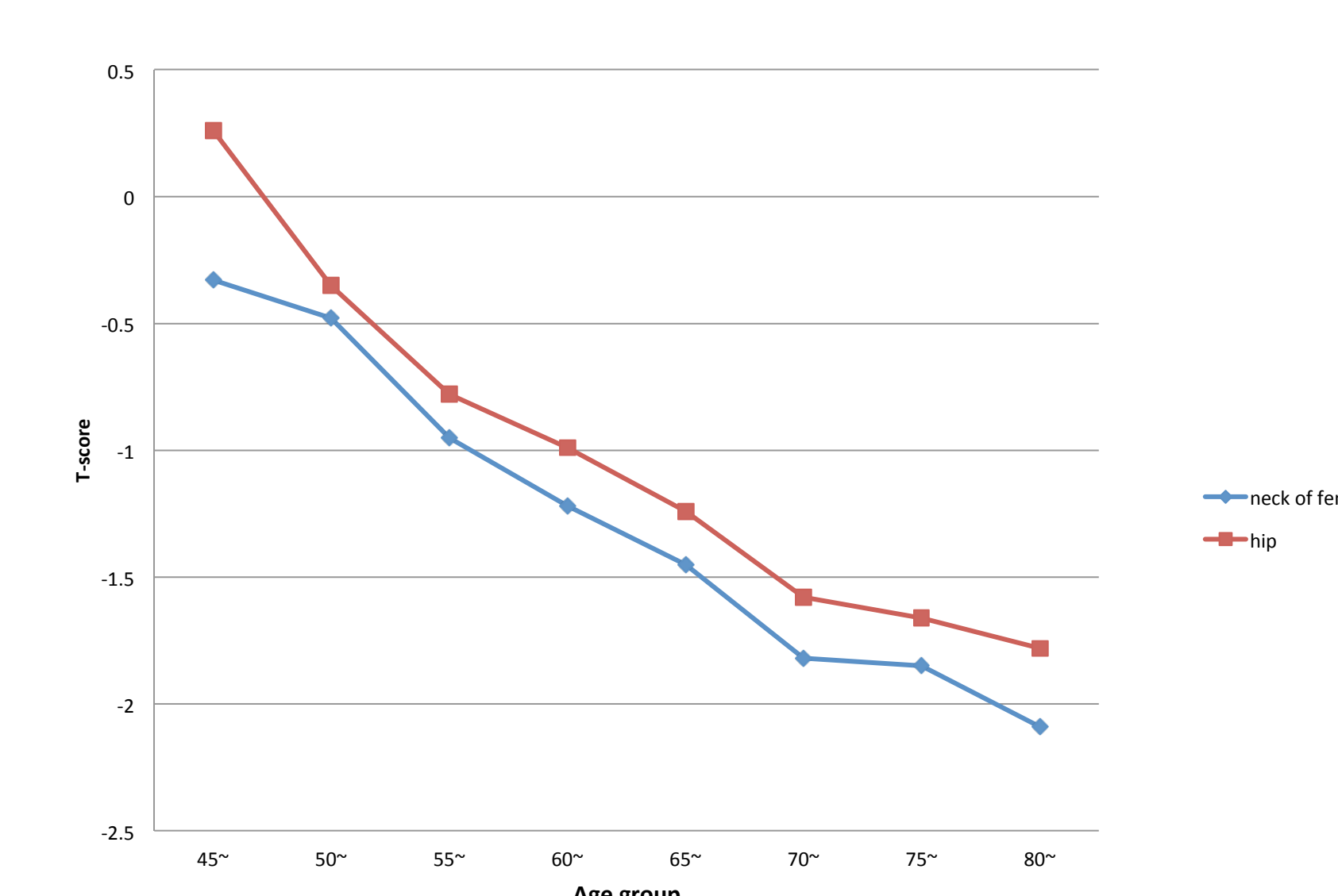


Fig.8. Characteristics of *T*-score in right neck of femur with age

Point of discussion

Is there any differences between lumbar 1-4 and lumbar 2-4 in DXA measurement?

Conclusions

1. Skeletal sites, spinal degenerative joint diseases (DJD) and abdominal aortic calcification have influenced the lumbar results of DXA measurement.
2. Bone mineral density and *T*-score of L1-4 are lower than L2-4 counterparts.
3. L2-4 are more likely to be affected by spinal degenerative joint diseases and abdominal aortic calcification.

We declare that we have no conflict of interest.