Quantitative Morphometric Analysis of Vertebral Fracture Severity in Healthy Thai (Women and Men)

Wanna Trivitayaratana¹, Pichit Trivitayaratana¹, Narong Bunyaratave²

1 Department of Radiological Technology, Faculty of Medical Technology, Mahidol University
2 Department of Orthopaedic Surgery, Faculty of Medicine Siriraj Hospital, Mahidol University

Abstract

The vertebral morphometry and severity of fracture were studied in normal healthy Thais (602 women and 74 men) Their mean (±SD) age was 41.4 (± 8.7) years, ranging from 20-81 years. A standard lateral thoraco-lumbar (T-L) spine radiograph was done by centering the X-ray at L1. Vertebral heights (anterior: Ha, middle: Hm and posterior: Hp), disc height (Hd) and 4 vertebral ratios (anterior wedging: Ha/Hp, central wedging: Hm/Hp, vertebral body index: Hm/Hd and spine score: Hm/Ha) of T10-L3 were assessed. Degree of severity of anterior and central wedging fracture was derived to mild, moderate and severe fracture ratios (0.80-0.89, 0.70-0.79 and < 0.70, respectively). In Thai females, anterior and central wedging significantly changed at T11 after the 40-49 age group, while spine score markedly declined at L2-L3 after the 30-39 age group. The change of vertebral body index was not seen. The overall (T10-L3 ) mean of all ratios of omen aged <50 years were more than that of those aged > 50 years (p<0.05). No statistical change of the above ratios was seen at any levels of the spine in males (p>0.05). The prevalence of mild and moderate degree of anterior vertebral fracture was 22.76% and 0.50% in females and 25.68 and 0% in males. Percentage of mild and moderate degree of central vertebral fracture was 66.61 and 1.00 in females and 68.92 and 1.35 in males. The prevalence of anterior and central compression fracture in females and males who were aged >50 years were higher than those aged <50 years. No severe degree of anterior and central vertebral fracture was detected in both sexes. 407 young adults mean (20-40 years) of the 4 ratios at T10-L3 were also surveyed and calculated for Thai reference databases. The prevalence of the 4 ratios below young adult mean 1, 1.5, 2, 2.5 and 3 SDs in males were greater than in females. In the older age groups, the percentage of females and males who had a mean ratio below young adult mean was much more than that in the younger age groups. In screening of spinal osteoporosis, the authors suggested that the age after 40 years of populations should be x-rayed and spinal radiograph should have an observed focus at T11, L2 and L3.

Keyword : Quantitative analysis, Morphometric analysis, Vertebral fracture

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