

POSTER PRESENTATION

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The relative contribution of intervertebral disc and vertebral wedging to the development of thoracic kyphosis and lumbar lordosis in asymptomatic adolescents

Wen Zhang^{1,3}, Zhen Liu^{1,3}, Shi Lin^{2,3}, Winnie Chu⁴, Tsz-ping Lam^{2,3}, Zezhang Zhu^{1,3}, Jack CY Cheng^{2,3}, Yong Qiu^{1,3*}

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Objective

To analyze the contribution of the intervertebral disc and vertebral wedging to thoracic kyphosis and lumbar lordosis in different growth stages of asymptomatic adolescence.

Methods and materials

A retrospective study of 170 asymptomatic adolescent volunteers was performed and all of them had the standing whole-spine lateral radiography. All subjects were divided into 3 groups by age: Group A (10-12 years), Group B (13-15 years), and Group C (16-18 years). Four different radiographic parameters were measured: lumbar lordosis (LL, L1-L5), thoracic kyphosis (TK, T4-T12), wedging angle of each disc and vertebra between T4 and L5. In addition, the percent of the sum of T4-T12 disc/vertebral wedging angle in the TK and the sum of the L1-L5 disc/vertebral wedging angle in the LL were calculated.

Results

The LL increased by 5.1° from group A to Group C ($P=0.028$), followed by an increasing contribution of the lumbar disc wedging from 90.0 percent in Group A to 96.4 percent in Group C ($P=0.025$) and a decreasing contribution of the lumbar vertebral wedging from 9.0% in Group A to 2.9 percent in Group C ($P=0.02$). As for the thoracic spine, the TK increased by 5.8° from Group A to Group C ($p=0.021$), but no significant differences in the

contribution of both disc and vertebral wedging to TK were found among the three groups.

Conclusions

In the different growth stages of asymptomatic adolescences, an increasing contribution of the disc wedging and a decreasing of the vertebral wedging to the LL are results of age-associated process. However, the contribution of the disc and vertebral wedging to the TK remains stable in different growth periods.

Authors' details

¹Spine Surgery, Affiliated Drum Tower Hospital of Nanjing University Medical School, Nanjing 210008, China. ²Department of Orthopaedics and Traumatology, Chinese University of Hong Kong, Hong Kong, China. ³Joint Scoliosis Research Center of the Chinese University of Hong Kong & Nanjing University, Nanjing, China. ⁴Department of Radiology, Chinese University of Hong Kong, Hong Kong, China.

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¹Spine Surgery, Affiliated Drum Tower Hospital of Nanjing University Medical School, Nanjing 210008, China

Full list of author information is available at the end of the article