Cureus

Magnetic Resonance Imaging Atlas of Developing Lumbar Intervertebral Discs in Children

Tang-Fen Liu [1], Hua Shan [2], Zhong-Yuan Wan [3], Jun Zhang [4], Yi Wan [5], Hai-Qiang Wang [6]

1. Institute of Integrative Medicine, Shaanxi University of Chinese medicine, Xi'an, CHN 2. Institute of Integrative Medicine, Shaanxi University of Chinese Medicine, Xi'an, CHN 3. Department of Orthopedics, Seventh Medical Center of Chinese PLA General Hospital, Beijing, CHN 4. Department of Orthopedics, Baoji Municipal Central Hospital, Shaanxi, CHN 5. Department of Health Services, Fourth Military Medical University, Xi'an, CHN 6. Spine Surgery, Queen Mary Hospital, University of Hong Kong, Hong Kong, HKG

Corresponding author: Tang-Fen Liu, spine10042969@163.com

Categories: Pain Management, Radiology, Orthopedics
Keywords: mri- magnetic resonance imaging, lumbar intervertebral discs, children

How to cite this abstract
Liu T, Shan H, Wan Z, et al. (August 04, 2021) Magnetic Resonance Imaging Atlas of Developing Lumbar Intervertebral Discs in Children. Cureus 13(8): a578

Abstract

Apart from linking and stabilizing the spine, intervertebral discs support the action and pressure for the spine. Therefore, detailed understanding of developing lumbar intervertebral discs (IVDs) in children is essential for unraveling its functional architecture. In this study, by observing a relative large amount of lumbar MRI in children, we depicted the image atlas of developing lumbar IVDs. For T2-weighted sagittal MRI, children and young adolescents (aged below 14 years) display “eccentric sign” of NP and AF distribution: white NP in the front part and black AF in the back part of intervertebral space. In comparison, older adolescents and adults show centric distribution of NP and AF: black annulus fibrosus homogeneously surrounding white nucleus pulposus. Additionally, the results show that eccentric sign of children was seen in six years old initially, and the eccentric segments of the lumbar was commonly found at L4/5. Eccentric sign is developing gradually from distal disc to proximal disc. What’s more, the angle of the lumbar lordosis in children under 14 years of age increased continually with age in our observation. The termination of the conus medullaris always locate above L2, principally at the lower third of L1(53.6%) or the level of T12/L1(16.96%). We demonstrated the “eccentric sign” of NP and AF distribution in the lumbar spine of children and young adolescent for the first time. The image atlas enriches the knowledge of the developing lumbar IVDs in this unique age group it makes a valuable contribution to the further lumbar IVDs studies of children.

Open Access
Abstract
Published 08/04/2021