

**KORELASI END PLATE DEFECT VERTEBRA LUMBAL DENGAN
DEGENERASI DISCUS VERTEBRA LUMBAL PADA PASIEN LOW
BACK PAIN DEGENERATIF BERDASARKAN PEMERIKSAAN
MAGNETIC RESONANCE IMAGING**

INTISARI

Pendahuluan : *Low Back Pain* (LBP) penyebab utama kecacatan pada individu lebih dari 50 tahun. Sumber potensial LBP termasuk *discus intervertebralis*, sendi *facet*, vertebra, struktur saraf, otot, ligamen, dan *fascia*. *End plate* vertebra terdiri dari lapisan tulang trabekular dengan struktur berpori, *end plate* vertebra memberikan nutrisi ke *discus intervertebralis*. Degenerasi *discus intervertebralis* lumbal dianggap sebagai faktor risiko yang signifikan untuk *low back pain*. Degenerasi *discus* dapat terjadi di setiap vertebra, paling sering terjadi di vertebra lumbal. *Magnetic resonance imaging* (MRI) adalah modalitas pencitraan yang paling umum digunakan untuk diagnosis degenerasi *discus* dan *end plate defect*. Dengan terus berkembangnya teknologi *Magnetic Resonance Imaging* (MRI), hubungan antara *end plate*, degenerasi *discus*, dan LBP telah mendapat banyak perhatian.

Metode Penelitian : Penelitian ini merupakan penelitian observasi analitik menggunakan rancangan penelitian *cross sectional* dengan pendekatan retrospektif.

Tujuan : Mengetahui korelasi *end plate defect* dengan degenerasi *discus* pada pemeriksaan MRI vertebra lumbal.

Bahan dan Cara : Subjek penelitian yaitu pasien klinis *low back pain* degeneratif yang dilakukan MRI vertebra lumbal dan terdapat *end plate defect* dengan degenerasi *discus*. Data citra dari Instalasi Radiologi RSUP Dr. Sardjito Januari 2017 – Juni 2020, kemudian dilakukan penilaian derajat *end plate defect* dan degenerasi *discus* dengan MRI 1,5 Tesla yang tersimpan pada *Digital Imaging and Communication in Medicine* (DICOM) dan ditampilkan pada monitor komputer *Picture Archiving and Communication System* (PACS). Kemudian, uji hipotesis dianalisis menggunakan piranti lunak *Special Package for Social Science* (SPSS).

Hasil : Uji *Spearman* menunjukkan korelasi cukup yang bermakna pada vertebra L1-L2, L2-L3, L5-S1 dengan $r=0,299$, $r=0,363$, $r=0,491$ dan $p=0,007$, $p=0,001$, $p=0,0001$. Korelasi kuat yang bermakna vertebra L4-L5 dengan $r=0,609$ dan $p=0,0001$.

Kesimpulan : Terdapat korelasi yang bermakna *end plate defect* dan degenerasi *discus* pada pasien *low back pain* degeneratif berdasarkan pemeriksaan MRI.

Kata kunci : *Low back pain*, *end plate defect*, degenerasi *discus*, *Magnetic Resonance imaging*.

CORRELATION OF LUMBAR SPINE END PLATE DEFECT WITH DISC DEGENERATION OF THE LUMBAR SPINE IN LOW BACK PAIN DEGENERATIVES BASED ON MAGNETIC RESONANCE IMAGING

ABSTRACT

Introduction : Low Back Pain (LBP) is the main cause of disability in individuals over 50 years of age. Potential sources of LBP include the intervertebral discs, facet joints, vertebrae, neural structures, muscles, ligaments, and fascia. The vertebral end plates consist of a layer of trabecular bone with a porous structure, where the vertebral end plates provide nutrition to the intervertebral discs. Lumbar intervertebral disc degeneration is considered a significant risk factor for low back pain. Disc degeneration can occur in any vertebra, most commonly in the lumbar spine. Magnetic resonance imaging (MRI) is the most commonly used imaging modality for the diagnosis of disc degeneration and end plate defects. With the continued development of Magnetic Resonance Imaging technology, the relationship between end plate, disc degeneration, and LBP has received much attention.

Research Methods: This research is an analytic observational study using a cross sectional research design with a retrospective approach.

Objective: Knowing the correlation of end plate defects with disc degeneration on MRI examination of the lumbar spine.

Materials and Methods: The research subjects were clinical patients with degenerative low back pain who underwent MRI of the lumbar spine and had an end plate defect with disc degeneration. Image data from the Radiology Installation of RSUP Dr. Sardjito January 2017 – June 2020. Assessed the degree of end plate defect and disc degeneration with a 1.5 Tesla MRI stored in Digital Imaging and Communication in Medicine (DICOM) and displayed on the Picture Archiving and Communication System (PACS) computer monitor. Then, the hypothesis test was analyzed using the Special Package for Social Science (SPSS) software.

Results: Spearman's test showed a significant correlation in the L1-L2, L2-L3, L5-S1 vertebrae with $r=0.299$, $r=0.363$, $r=0.491$ and $p=0.007$, $p=0.001$, $p=0.0001$. Significant strong correlation between L4-L5 vertebrae with $r=0.609$ and $p=0.0001$.

Conclusion : There is a significant correlation between end plate defects and disc degeneration in degenerative low back pain patients based on MRI examination.

Keywords: Low back pain, end plate defect, disc degeneration, Magnetic Resonance imaging.