

Teraguchi et al⁷ examined the associations between LBP and combinations of DD, endplate signal change (ESC) and Schmorl node (SN) in a cross-sectional study of 975 patients (324 men, 651 women, aged 21–97 years) in Japan. Participants were recruited from the Research on Osteoarthritis/Osteoporosis against Disability (ROAD) cohort and included in this study after agreeing to a whole-spine MRI. T2-weighted images were obtained for all subjects used to assess DD, ESC and SN from L1–L2 to L5–S1. A board-certified orthopedic surgeon, who was blinded to the background of the participants, classified the degree of DD and the presence of ESC and/or SN. Kappa analysis to describe intraobserver and interobserver variability was completed for scoring of two orthopedic surgeons for DD, ESC and SN. LBP was diagnosed based on a standardized question asked by board-certified orthopedic surgeons. The overall prevalence of DD alone (30.4%) was highest compared to ESC alone (0.8%), SN alone (1.5%), DD and ESC (26.6%), DD and SN (12.3%), SN and ESC (0.6%) and DD, ESC and SN (19.1%). A combination of DD, ESC and SN was significantly associated with LBP (OR 2.17, 95% CI 1.2–3.9; $p < 0.01$). Additionally, significant associations with LBP were found in a combination of DD, ESC and SN at L1–L2 (OR 6.00, 95% CI 1.9–26.6; $p < 0.005$), L4–L5 (OR 2.56, 95% CI 1.4–4.9; $p < 0.005$) and L5–S1 (OR 2.85, 95% CI 1.1–2.3; $p < 0.05$) as well as a combination of DD and ESC at L3–L4 (OR 2.43, 95% CI 1.5–4.0; $p < 0.05$), L4–L5 (OR 1.82,

95% CI 1.2–2.8; $p < 0.01$) and L5–S1 (OR 1.60, 95% CI 1.1–2.3; $p < 0.05$). The authors concluded that although DD alone is not associated with LBP, a combination of DD and ESC, with or without SN, was significantly associated with LBP. Although there were some limitations to the methodology as only T2 images were available, the work group did not find this sufficient reason to downgrade the study. This study provides Level II evidence that a combination of degenerative changes shows high correlation to LBP.

Wiikeri et al⁸ studied the relationship between lumbar DD and LBP in 295 Finnish concrete workers aged 19–64 years. After each participant was radiologically examined, a radiologist and an orthopedic surgeon evaluated each participant's radiograph and graded lumbar DD as none, slight (12%), moderate (23%) or severe (9%). After adjusting for age, there was a weak association between history of LBP and DD ($p < 0.01$). There was also a weak association between history of sciatica and DD ($p < 0.001$). The authors concluded that there is a weak association between lumbar DD and LBP or sciatica, independent of age. This study provides Level IV evidence that lumbar degeneration has a weak correlation with LBP.



Future directions for Research

The work group recommends separation between radicular pain and LBP groups, inclusion of an asymptomatic reference group and inclusion of a reference standard in a well-powered study.

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