



Factors associated with lumbar intervertebral disc degeneration in the elderly

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**BACKGROUND CONTEXT:** Lumbar intervertebral disc degeneration (DD) precedes degenerative diseases of the lumbar spine. Various factors in addition to normal aging are reported to be associated with DD, and recently atherosclerosis and risk factors for cardiovascular diseases (cardiovascular risk factors) have received much attention; however, the links between these risk factors and DD are unclear. **PURPOSE:** By correlating magnetic resonance images (MRI) with suspected degenerative disc risk factors such as obesity, cardiovascular risk factors, and atherosclerosis, we hope to clarify the factors associated with DD. **STUDY DESIGN/SETTING:** An observational study. **PATIENT SAMPLE:** Two hundred seventy adults (51-86 years old) who participated in a health promotion program. **OUTCOME MEASURES:** DD evaluated based on the signal intensity of MR T2-weighted mid-sagittal images of the lumbar spine. **METHODS:** Age, gender, body mass index (BMI), low-density lipoprotein cholesterol (LDLc), triglyceride (TG), glycosylated hemoglobin (HbA(1c)), brachial-ankle pulse wave velocity (baPWV) as an index of atherosclerosis, osteo-sono-assessment index (OSI) calculated from quantitative ultrasound assessment of the calcaneus as an index of bone mineral density (BMD), history of low back pain (LBP), smoking and drinking habits, and physical loading related to occupations and sports were assessed. The univariate relationships between DD and the variables were evaluated, and finally, odds ratios (OR) and 95% confidence intervals (CI) for the associations of each factor with DD were calculated using logistic regression at each disc level. **RESULTS:** Aging correlated significantly with DD of L1/2 (OR, 2.14), L2/3 (OR, 3.56), L3/4 (OR, 2.84), and L4/5 (OR, 3.05); high BMI, with L2/3 (OR, 2.98), L3/4 (OR, 3.58), L4/5 (OR, 2.32), and L5/S1 (OR, 3.34); high LDLc, with L4/5 (OR, 2.65); occupational lifting, with L1/2 (OR, 4.25); and sports activities, with L5/S1 (OR, 3.36).

**CONCLUSIONS:** Aging, high BMI, high LDLc, occupational lifting, and sports activities are associated with DD. The results of this study raise our index of suspicion that cardiovascular risk factors and particular physical loading may contribute to DD; however additional studies are required to further investigate associations between DD and these factors.

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