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# Cytokines and Lumbosacral Nerve Root Compression in Patients Undergoing Lumbar Microdiscectomy: A Cross-sectional Study

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Lumbar disc herniation (LDH) is intervertebral disc protrusion leading to spinal nerve compression causing pathological changes in lumbosacral nerves and initiating neural-immune cascades generating pain. The aim of the study was to investigate the association between selected cytokines and different levels of lumbosacral nerve root compression. A cross-sectional study was conducted in patients (n=33), diagnosed with LDH and undergoing microdiscectomy. Magnetic resonance imaging interpretations of the lumbar region were used to extract details regarding the involvement of selected lumbosacral nerve roots (L4, L5, S1 and cauda equina). Serum levels of tumor necrosis factor alpha (TNF-$\alpha$), interleukin-6 (IL-6), and interleukin-8 (IL-8) were quantified using enzyme-linked immunosorbent assay. Cytokine levels were categorized as "very high" or "above upper limit of normal" based on the cutoff values indicated in the literature. Chi-square test was employed using Python 3.10 to investigate the association between cytokines and lumbosacral nerve root compression. Nerve root compression at L5 was predominant (57.6%) and low at L4 (18.2%). An equal number presented with had cauda equina and S1 nerve root compression (42.4%), and Chi square test results indicated a statistically non-significant association ($p>0.05$) between cytokines IL-6, IL-8, and TNF- and the specific nerve root compressions assessed (L4, L5, S1, and cauda equina). Though a statistically significant association with the subjected nerve root compression related to LDH was not observed, comprehensive studies with larger sample sizes and assessments of neurogenic factors are recommended.

**Keywords**: *lumbar disc herniation, IL-6, IL-8, TNF-$\alpha$*