Cartilage Intermediate Layer Protein and Asporin Polymorphisms are Independent Risk Factors of Lumbar Disc Degeneration in Male Collegiate Athletes

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Objective:
Lumbar disc degeneration (LDDG), recently reported to have strong genetic determinants, is a major cause of discopathy and lower back pain. However, most studies have only evaluated the effects of a single susceptibility polymorphism. Our purpose was to examine the effect of two susceptibility polymorphism for LDDG in Japanese collegiate athletes.

Design:
We investigated 2 susceptibility genes for LDDG—cartilage intermediate layer protein (CILP) and asporin (ASPN)—in 516 collegiate athletes, and genotyped the risk allele of CILP (1184T/C) and ASPN (D14). LDDG was evaluated using T2-weighted magnetic resonance imaging.

Results:
By using logistic regression analysis, we found that the ASPN D14 allele and CILP genotype were associated with an increased risk of LDDG in male but not female athletes [CILP CT: odds ratios (OR), 1.77; 95% confidence interval (CI), 1.07–2.93; CILP CC: OR, 4.38; 95% CI, 1.42–13.54; ASPN D14: OR, 2.17; 95% CI, 1.10–4.28]. We also found that CILP C and ASPN D14 were independent variable. The ORs with more than 2 risk alleles were largely increased.

Conclusions:
The CILP and ASPN polymorphisms are independent genetic risk factors for LDDG in male but not female Japanese collegiate athletes.

Key words: Disc degeneration, Polymorphisms, Athlete, CILP, ASPN