変形性股関節症患者における骨盤股関節形態と歩行の関係
The relationship between radiographic parameters and gait parameters in patients with hip osteoarthritis

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Abstract

Hip osteoarthritis is a disease that causes destruction of the joint structures, resulting in abnormal gait patterns. This study was aimed to investigate the relationship between radiological parameters of the hip joint and gait parameters in patients with hip osteoarthritis.

Thirty hip joints of 24 patients with hip osteoarthritis (6 bilateral) were included in this study. The pelvic inclination angle (PIA), head lateralization index (HLI), head vertex index (HVI), and acetabular head index (AHI) were measured using anterior-posterior radiography of the hip joint. We used a 3D motion analysis system and two force plates for gait analysis to calculate the maximum hip joint angle and moments of flexion, extension, adduction, and abduction at the hip joint during the three phases of stance (initial double, single, and terminal double stances). Pearson's correlation coefficient was used for statistical analysis ($p<0.05$).

The results of the radiographic study revealed that in patients with hip osteoarthritis, the pelvis is tilted forward and the femoral head is shifted upwards and laterally. PIA demonstrated a significant correlation with hip adduction moment during the terminal double stance ($r=0.364$, $p<0.05$). HLI demonstrated a significant correlation with the hip extension moment during the initial double stance ($r=-0.468$, $p<0.01$) and single stance ($r=-0.372$, $p<0.05$). AHI demonstrated a significant correlation with the hip extension moment during the single stance ($r=0.400$, $p<0.05$).

This study suggests the tendency for the hip extension moment during the early stance phase to decrease as the femoral head shifts laterally in patients with hip osteoarthritis.

Key words : Hip osteoarthritis, Radiography, Gait analysis