Mobility and Muscular Power of Lower Limbs in Elderlies with Radiographic Moderate Knee Osteoarthritis (OA) but No Knee Pain was Inferior to That of Those in Elderlies with Radiographic Primary Knee Osteoarthritis (OA) but No Knee Pain – A Population-Based Cohort Study “Sportology Core Study 2”

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Purpose: Pain is the major reason why individuals seek medical attention from early-through endstage knee OA, and is also a major determinant for the loss of joint function. The prevalence of knee osteoarthritis (OA) in women in eighties is reported to be >80% regardless of the presence or absence of knee pain. There are a plenty of elderlies who don't have knee pain but show the several different stages of radiographic knee OA. However, it is unclear whether the mobility and muscular power of the lower limbs in subjects who show the advanced-stage knee OA but do NOT have knee pain is different from that of those in subjects who show the early-stage knee OA but do NOT have knee pain.

Methods: This cross-sectional study was conducted by analyzing data of the “Sportology Core Study 2” in Juntendo University Graduate School of Medicine, which was started at 2015. This study is conducted to find out the associations between metabolic syndrome and motor organ diseases, such as osteoporosis and OA, of the elderlies aged 70 years old or older. 325 subjects (F/M: 138/187, 73.2 y on average) who didn't have any symptoms for knee pain, which is needed to consult medical institution and experience any traumatic episodes for the knee joints, were enrolled in this study. A written informed consent was obtained all participants of this study. A standing, extended antero-posterior view radiograph of both knees were taken at the time of study entry. The muscular power of the lower limbs was measured using BIODEX. A walking speed, 3m timed up-and-go (TUG) test, and grip power were also measured. Pain was evaluated by a pain and stiffness subcategory of the Japanese Knee Osteoarthritis Measure (JKOM-pain). A p value <0.05 was considered to be statistically significant.

Results: 274 of 325 (84.3%) subjects showed the early-stage knee OA or no knee OA, while remaining 51 (15.7%) subjects showed advanced- or end-stage knee OA. 249 of 274 showed early-stage knee OA, while 38 of 51 subjects showed advanced-stage knee OA. No significant differences of both age and BMI between early-stage knee OA group and advanced-stage knee OA group were observed. Age, BMI and gender adjusted analysis showed that the radiographic medial knee joint space width of advanced-stage knee OA group was significantly smaller in comparison to that of early-stage knee OA group (p<0.0001), while no significant differences of the

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FTA between advanced-stage knee OA group and early-stage knee OA group were observed ($p=0.063$). Age, BMI and gender adjusted analysis also showed that the TUG of advanced-stage knee OA group was significantly longer in comparison to that of early-stage knee OA group ($p<0.0001$), while no significant differences of the grip power between advanced-stage knee OA group and early-stage knee OA group were observed ($p=0.252$). Age, BMI and gender adjusted analysis showed that the weight-adjusted muscular power of the lower limbs for knee joint extension of advanced-stage knee OA group was significantly smaller in comparison to that of early-stage knee OA group ($p<0.01$).

Conclusions: The results of the present study suggest that it is important to elucidate the pathophysiological process from early- to advanced-stage knee OA for the elderlies even though they do not have knee pain. In conclusion, among elderlies who were 70 years or older who did not need to consult medical institution for knee pain, most of the subjects showed early-stage knee OA group. The subjects who showed advanced-stage knee OA were disabled in comparison to those who showed early-stage knee OA.

Key words: mobility, muscular power, knee osteoarthritis, JKOM