THE INFLUENCE OF LIFESTYLE-RELATED DISEASE RISK FACTORS ON THE AORTIC STIFFNESS IN FITNESS CLUB USERS
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BACKGROUND and PURPOSE: Aortic stiffness measured by the pulse wave velocity (PWV) of a whole body increases with aging. It is also known that PWV tends to increase when the number of lifestyle-related disease risk factors (LSRDRF) increases. Several studies reported that the increase in PWV was restrained by the habitual aerobic exercise in adults. This result implies that exercises could be effective to maintain low PWV in people’s lives. In our cross sectional study, we examined the influence of the number of LSRDRF on PWV in middle-aged Japanese women who were fitness club users and who were not fitness club users. METHODS: Nine hundred twenty-three Japanese middle-aged women participated in this study. We divided subjects into four groups. These groups were as follows: fitness club users in their 50s (Group 1) and 60s (Group 2), and not fitness club users in their 50s (Group 3) and 60s (Group 4). Subjects in Group 1 and 2 exercised with licensed fitness instructors. In addition, the questionnaire survey was used in order to investigate the number of LSRDRF that subjects have. Based upon the results of its survey, each group was divided into three, such as subjects having 0 LSRDRF (Risk0), 1 LSRDRF (Risk1) and more than 2 LSRDRF (Risk 2). In addition, we defined LSRDRF as the following, a body mass index (BMI) of more than 25, high blood pressure, hyperlipemia and diabetes. RESULTS: PWV was not influenced by the numbers of LSRDRF in Group 1. However, PWV was significantly increased in Group 2, 3 and 4 with the increases in the numbers of LSRDRF(Group1; Risk0: 1271±173cm/s, Risk1: 1318±216, more than Risk2: 1535±194, Group2; Risk0: 1367±165, Risk1: 1439±203, more than Risk2: 1557±270, Group3; Risk0: 1322±171, Risk1: 1301±196, more than Risk2: 1466±225, Group4; Risk0: 1435±241, Risk1: 1455±226, more than Risk2: 1622±284). Nevertheless, even though subjects had more than two LSRDRF, fitness club users (Group 1 and 2) showed significant low PWV as compared to subjects who were not fitness club users (Group 3 and 4). CONCLUSION: PWV increased with aging. Also, the increase in PWV was seen in subjects having more than two LSRDRF, especially in non-fitness club users. However, even though subjects had more than two LSRDRF, they could maintain PWV at low levels by going to a fitness club and exercising with licensed fitness instructors. Therefore, our results implied that middle-aged women could maintain PWV at low levels by engaging in exercise regularly. Moreover, people need to exercise appropriately with licensed fitness instructors in order to keep PWV at low levels and prevent or restrain arteriosclerosis. Keywords: Pulse Wave, Exercise