Abstract: P5301

Impacts of lifestyle behavior and shift work on visceral fat accumulation and progression of atherosclerosis in middle-aged workers

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Topic(s):
Obesity

Citation:

Background:
Work style, and particularly shift work, can affect an individual’s health through disrupting circadian rhythms. Moreover, lifestyle habits including dietary and exercise routines might be altered by irregular shift hours. We thus hypothesized that an individual’s lifestyle including working habits could influence the prevalence of visceral fat obesity and the progression of atherosclerosis.

Purpose:
The present study investigated how lifestyle and shift work affect the accumulation of visceral fat and the progression of subclinical atherosclerosis in middle-aged workers.

Methods:
This study enrolled employees undergoing their periodic health check-up (n = 10883). The Cardio-Ankle Vascular Index (CAVI) was measured to assess arterial stiffness, followed by ultrasound examination and computed tomography imaging to measure carotid intima-media thickness (IMT) and visceral fat area (VFA), respectively. Lifestyle was evaluated by the following items: 1) eating breakfast, 2) nighttime eating, 3) regular exercise, 4) habitual drinking, 5) habitual smoking, 6) sleeping hours, and 7) working hours. With regard to work factors, subjects were categorized into fixed daytime workers or shift workers (including subjects working with an irregular schedule, outside of daytime hours, or at nighttime).

Results:
Among all subjects enrolled, 6820 subjects were fixed daytime workers and 4063 subjects were shift workers. Most of the employees engaged in fixed daytime work were clerical workers, while the employees engaged in shift work were mainly physical workers in this company. Fixed daytime workers had significantly greater VFA than shift workers, but the prevalence of metabolic syndrome, CAVI values, and carotid IMT were similar between groups. Reduced regular exercise, long sleeping hours, and fixed daytime work were independently associated with visceral fat accumulation by both multivariate regression and logistic regression analyses. However, the logistic regression analysis with the presence of metabolic syndrome as the endpoint revealed that skipping breakfast, reduced regular exercise, long sleeping hours, and short working hours were independent determinants of metabolic syndrome. On the other hand, univariate and multivariate regression analysis showed that habitual smoking, but not shift work, were significantly associated with CAVI and carotid IMT. Logistic regression analysis with the endpoint of carotid atherosclerosis (presence of plaque) showed that habitual smoking was an independent determinant of carotid atherosclerosis.

Conclusions:
Reduced regular exercise, long sleeping hours, and fixed daytime work were significantly associated with visceral fat accumulation, while habitual smoking has a consistent association with the progression of
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