Thigh circumference can be used as a simple screening tool for sarcopenia in community-dwelling elderly women

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key words  thigh circumference · sarcopenia · community-dwelling elderly women

[Purpose] In recent years, calf circumference has been attracting attention as a surrogate marker for the diagnosis of sarcopenia. However, calf circumference is likely to be affected by edema depending on measurement time, nutritional status, and standing time, which may affect the results eventually. The purpose of this study was to investigate the possibility of using thigh circumference for sarcopenia screening.

[Methods] A total of 116 community-dwelling elderly women who applied for the public recruitment for an event of physical fitness assessment were enrolled. Measurement items included height, body weight, dominant leg of thigh and calf circumferences, grip strength, and walking speed, and Short Physical Performance Battery test were performed. Participants were divided into two groups, the non-sarcopenia group and the sarcopenia group, and the measured values were compared between the two groups. The area under the ROC curve was calculated to determine thigh circumference and calf circumference of the dominant leg, and the cut off values of each circumstance were determined by the presence or absence of sarcopenia. This study was approved by the Human Ethics Review of Tokyo University of Technology (approval number : E15HS-025).

[Results] Of all the subjects, non-sarcopenia patients accounted for 91.4% (n=106), and sarcopenia patients 9.4% (n=9.4%). Thigh circumferences of the dominant leg of the non-sarcopenia subjects and the sarcopenia subjects were 41.1 ± 4.0 (cm) and 37.4 ± 2.8 (cm), respectively. Cut-off value of thigh circumferences of the dominant legs was 40.3 cm (sensitivity : 57.3%, specificity : 90.0%, AUC : 0.783), while that of the calf circumference of the dominant legs was 32.8 cm (sensitivity : 73.0%, specificity : 80.0%, AUC : 0.792).

[Discussion] Our results showed that thigh circumferences in addition to calf circumference can also be used as a screening tool for sarcopenia.