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Abstract

Arterial Stiffness in Geriatric Medicine

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Arterial aging is known to be more advanced in the elastic arterial wall (aorta) compared to the muscular artery. We examined the structure and aging of the aortic wall with morphological method. The aortic wall was characterized by presence of the elastic laminar layers in the media and its number was about 30 in the thoracic aorta, but it decreased gradually to the abdominal aorta. The striking change of layers with aging was flattening of the waved structure. The circumference of the aorta also increased with aging and it was especially outstanding in the central artery.

Measurement of brachial-ankle pulse wave velocity(baPWV) was developed in Japan 10 years ago. Comparison was made between baPWV and cfPWV(carotid-femoral PWV) which was considered gold standard measuring arterial stiffness. We conducted a multicenter study involving 2,287 subjects who were examined simultaneously with cfPWV and baPWV. There was a significant positive relationship between cfPWV and baPWV($r=0.73$). Average baPWV was 20% higher than cfPWV. We also conducted a population-based study with baPWV. The subjects were 414 community-dwelling older adults(mean age 77yrs). During 3-years follow-up there were 31 deaths (13 from cardiovascular origin). High baPWV was significantly associated with all-cause and cardiovascular mortality after adjustment for age, sex and antihypertensive medications. The results suggest that baPWV may be an independent predictor for cardiovascular event in the elderly.