The same level of brachial systolic blood pressure causes much stronger cardiac load for older than younger people

Tokyo Medical University Hachioji Medical Center   *Tokyo Medical University


Central Blood Pressure (cBP)

cBP can now be measured noninvasively and simply, and its usage has spread widely in recent years. Since cBP is the ascending aortic pressure at the outlet of the left ventricle, it is a measure of the direct load (afterload) of the ejecting left ventricle.

cBP has a greater predictive value for cardiovascular and renal outcomes than bBP. Different blood pressure-lowering drugs differentially affect cBP despite similar effects on bBP.

Background

bSBP has been used to evaluate the cardiac load during exercise stress test. cSBP is thought to be a more direct measure of cardiac load while exercising.

Purpose

The object of this study is to determine the difference between bSBP and cSBP immediately after exercise stress test.

Methods

Treadmill exercise stress test was performed on 105 patients from May 2009 to October 2010. Using Bruce Protocol, patients were made to exercise to:

(i) achieve 85% of age predicted maximum heart rate
(ii) complete symptom limited protocol

Patients were divided into 3 groups by age.

(i) younger group (n=35, mean age 48±14y.o.)
(ii) middle group (n=35, mean age 63±6y.o.)
(iii) older group (n=35, mean age 72±4y.o.)

bSBP and cSBP were measured by HEM-9000AI (Omron Healthcare, Japan) at rest and 1min after exercise.

Results

Blood pressures at rest

Even if bSBP is the same, cSBP of older people becomes higher than that of younger people.

Blood pressures immediately after exercise

Even if bSBP shows the same level, cSBP of older people is higher than that of younger people after exercise. Therefore older people have a higher cardiac load after exercise, which is not readily assessed by brachial systolic pressure.

Conclusion

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