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Pocket-size mobile echocardiographic device screening for thoracic aortic aneurysm in asymptomatic hypertensive patients

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Topic(s):  
Aortic Disease: Echocardiography

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Background: Patients with hypertension may develop thoracic aortic aneurysm (TAA) that can be asymptomatic but potentially life-threatening. We sought to assess the prevalence of asymptomatic TAA among hypertensive patients and define the effectiveness of a TAA point-of-care screening program using pocket-size mobile echocardiographic (PME) devices.

Methods: We prospectively performed transthoracic echocardiography for TAA screening using a PME device on 1529 hypertensive patients (age, 62y [30y to 85y], 824 men) who attended our hypertension specialist clinic between June 2016 and July 2018. Measurement of the dimensions of the aortic sinus, sinotubular junction, ascending aorta, aortic arch, and descending thoracic aorta were obtained through multiple standard echo views.

Results: The prevalence of TAA (defined as maximum aortic diameter of ≥4.5cm and/or >50% diameter of the adjacent aorta) in our study population was 7.3% (111/1529), with distal ascending aorta as the most frequent location (Figure). Multiple logistic regression analysis identified male gender, older age, and presence of heart valve disease as independent factors associated with TAA (all p<0.05).

Conclusions: Asymptomatic TAA is common among asymptomatic hypertensive patients. Point-of-care use of PME device is effective in detecting TAA in a clinic setting. Such approach may be useful for early detection of TAA among at-risk patients allowing aggressive blood pressure control and early surgical intervention to prevent catastrophic complications such as aortic dissection or rupture.
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Figure 1

Aortic imaging by PME

Locations of TAA

Proximal ascending

Distal ascending

Aortic arch

Aortic sinus

Sinotubular Junction

Descending Thoracic

3.61±0.38cm

3.27±0.34cm

5 (7.7%)

38 (58.5%)

4 (6.2%)

27 (41.5%)

1 (1.5%)

3 (4.6%)

3.27±0.34cm

2.86±0.33cm

2.48±0.30cm

3.48±0.41cm

2.67±0.35cm

3.16±0.38cm

2.86±0.33cm

2.48±0.30cm