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Effect of ankle brachial index measurement on central aortic blood pressure in patients with peripheral artery disease

Backgrounds:Ankle brachial index (ABI) measurements are useful for detecting peripheral artery disease (PAD) as a screening test. In general, ABI examinations are contraindicated in patients with aortic aneurysm. Although no case has been reported that ABI examinations caused aortic aneurysm rupture, little is known whether ABI measurement raise central aortic blood pressure (CBP).Methods:From June 2018 to July 2019, we prospectively analyzed 40 patients who were performed catheterization through femoral approach and divided into PAD (ABI<0.9; N=19) and non-PAD (ABI>0.9; N=21). We inserted 4 or 5Fr pigtail catheter into central aortic positions (ascending [Asc], thoracic [Tho], abdominal [Abd]) and recorded baseline CBP (systolic and mean) at rest. Subsequently, we recorded each CBP (Asc, Tho, Abd) during ABI, respectively. We compared baseline CBP(BL-CBP) and CBPs during ABI(ABI-CBP) at 3 locations in each group (PAD, non-PAD). Results:BL-CBP were similar at Asc (systolic: p=0.46, mean: p=0.98), Tho (systolic: p=0.51, mean: p=0.86), Abd (systolic: p=0.49, mean: p=0.91) between both groups. There were no significant ABI-CBP elevation in ABI-CBP at Asc and Abd between both groups. Although ABI-CBP at Tho was significantly higher than BL-CBP [PAD: BL-CBP vs. ABI- CBP (systolic/mean) = 156/99 vs. 158/101mmHg; $p < 0.05$, non-PAD: BL-CBP vs. ABI-CBP (systolic/mean) = 150/99 vs. 153/100mmHg; $p < 0.05$], there was no case with malignant systolic CBP increase more than 20mmHg during ABI in both groups. No event occurred after ABI. Conclusion:ABI measurement did not give serious impact on CBP in not only PAD but non-PAD patients.