**ASSESSMENT OF ASCENDING AORTIC DIAMETER BY TRANSTHORACIC ECHOCARDIOGRAPHY: AGE AND SEX SPECIFIC REFERENCE VALUES IN ADULTS WITH AND WITHOUT SYSTEMIC HYPERTENSION**

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*Background*: Ascending aortic diameter is an important parameter in trans-thoracic echocardiography (TTE). Whilst there are published reference ranges for sinus of Valsalva, sinotubular junction and proximal ascending aorta diameter using TTE, there are no published standardized measurements for the mid ascending aorta diameter (MAAD). MAAD has therapeutic and prognostic importance in patients with aortopathies such as those associated with bicuspid aortic valve disease, hypertension and syndromes including Marfan and Loeys Dietz, where dilatation may also occur above the proximal ascending aorta. We sought to characterize MAAD reference values by age, sex and body surface area (BSA) in a large practice-based cohort.

*Methods*: All unique TTEs performed with documented MAAD from January 2004 to December 2009 were identified, and medical records were reviewed. Patients with bicuspid aortic valves, aortic stenosis, aortic prostheses, congenital heart disease and known aortic dilatation (>40 mm) were excluded. MAAD was obtained in a standardized manner by two-dimensional echocardiography using a leading edge to leading edge technique. Two group comparisons were performed using Student's t test. Overall age and gender-specific relationships of the 5th and 95th percentile with BSA and MADD were evaluated using quantile regression.

*Results*: 59,981 unique patients (51.1% female, median age 64.2 years) were identified. Hypertension was present in 49.3%. Females had smaller median MAAD than males (32 vs 35 mm; p<0.0001). Figure 1A and Figure 1B demonstrate the predicted 5th and 95th percentiles of MAAD in males and females respectively, as a function of age and body surface area. In subjects with a history of hypertension, there was a small but statistically significant difference in MAAD (32.4 vs 34.1 mm; p<0.0001).

*Conclusion*: MAAD is predominantly affected by sex, age, and body surface area, and to a lesser extent by presence of hypertension. These nomograms may serve as a useful reference for patient management.

