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An autopsy study on aortic annular measurements at the sinutubular junction in adult Sri Lankans

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The present study was undertaken to determine the aortic root diameter at the sinutubular (ST) junction at autopsy in normal adult Sri Lankans and to find out a definable relationship between the measurements obtained with demographic data of an individual. 320 fresh autopsied non-diseased adult hearts were obtained from the Judicial Medical Officer, National Hospital of Sri Lanka. The circumference of the aortic root was measured at its ST junction and the diameter was calculated.

The aortic root circumference at ST junction ranged from 41 to 90 mm (mean = 59.86 mm; SD = 7.7). In males, it ranged from 46 to 90 mm (mean = 61.19 mm; SD = 7.2) and in females, it ranged from 41 to 71 mm (mean = 52.98 mm; SD = 6.2). The aortic annular diameter ranged from 13 to 29 mm (mean = 19.06 mm; SD = 2.4). In the males, the mean diameter was 19.49 mm ± 2.3 (range = 15 – 29 mm) and that of females was 16.87 mm ± 2.0 (range = 13 – 23 mm). There was a statistically significant difference between the mean circumference in males and females ($p < 0.001$). Correlation of the circumference with demographic data showed a statistically significant positive correlation between the age and ST junctional aortic root circumference ($r = 0.74$ with a $p < 0.001$). A regression model was fitted between aortic root circumference versus the demographic data of the person and a significant ($p < 0.05$) equation was achieved: Aortic root circumference at ST junction = 52.3 + 0.365 age - 7.22 sex. This study brings into focus the aortic root diameter at ST junction in Sri Lankans, which has not been reported. Mean aortic annular circumference is smaller in Sri Lankans compared to Caucasians. This knowledge is of importance in the echocardiographic interpretation and manufacture of prosthesis similar to native valve. Our findings of significant differences between circumference and sex and a wide range of distribution related to aging substantiate the documented data in other racial groups. A large scale study needs to be designed where the echocardiography could be done prior to the autopsy to revalidate our findings and to establish ethnic-specific, gender-specific and age adjusted echocardiographic reference values for the Sri Lankan population.

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