

## Does the aortic valves correspond to a stable anatomical landmark ?

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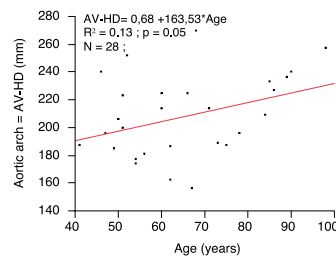
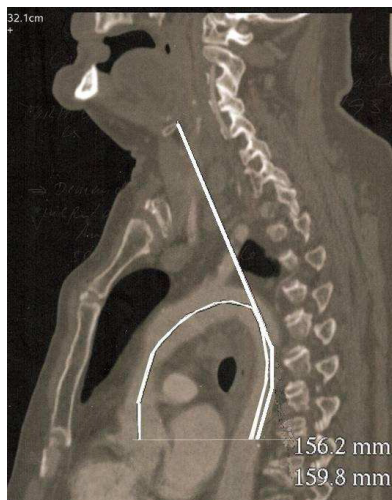
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**Purpose:** In order to determine if the height of a subject could be a reliable surrogate variable to determine the pulse wave travelling distance within the aorta, we investigated the anatomical distance between the aortic valve nidus and the hyoid bone.

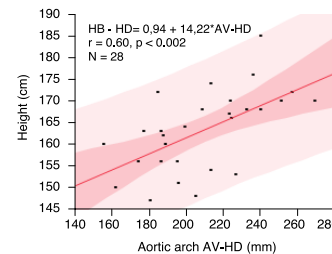
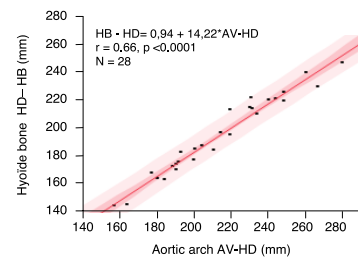
**Methods:** Using 28 patient's chest CT-scans regardless to there diagnosis. From Multiplan reconstructed oblique plans we measured :

- 1) the length of the aortic arch from the aortic valve (AV) to the intercept of an horizontal line passing through the aortic valves and crossing the descending aorta at mark HD (see Fig. 1),
- 2) the distance between the HD mark to the Hyoid Bone (HB).



◀ Fig. 1: Measurement in semicircle of the aortic arch (AV-HD) = 156,2 mm, and 159,8 mm distance to the hyoid bone (HD-HB).

▶ Fig 2: Correlation between aortic arch length and age, Aortic arch and distance to the hyoid bone and to height.



**Results:** There was a correlation between the aortic arch (AV-HD) distance and the HD-HB distance (non parametric spearman  $r = 0.66$ ,  $p < 0.0001$ ) and the AV-HD distance was positively correlated to the height of the subjects ( $r = 0.60$ ,  $p < 0.002$ ). Aortic arch length was correlated to age  $R^2=0.13$ ;  $p=0.055$ .

### Conclusion:

- The Aortic nidus projects to a constant anatomical landmark (i.e. the hyoid bone).
- The size of this arterial arch is significantly correlated to the height of the subjects. These preliminary results could be useful for a more accurate determination of the pulse wave travelled distance.