Body Surface Area Estimation In Girls With Turner Syndrome: Implications For Interpretation Of Aortic Sized Index

A. Fletcher 1, L. McVey 2, G. Filho 3, L. Hunter 3, S. Marinii 2, R. Santoro 4, A. Mason 1, SC. Wong 1

1 Developmental Endocrinology Research Group, Royal Hospital for Children, Glasgow, United Kingdom
2 Department of Paediatric Endocrinology, State University of Campinas, Sao Paulo, Brazil
3 Department of Paediatric Cardiology Royal Hospital for Children, Glasgow, United Kingdom
4 Department of Paediatric Cardiology, State University of Campinas, Sao Paulo, Brazil

Background

Aortic size index (ASI) defined as aortic root size/body surface area (BSA) is used to calculate the risk of aortic dissection in girls with Turner Syndrome. There are multiple formulae for estimating BSA, with no accepted gold standard. The impact of using different formulae for estimation of BSA and therefore on ASI calculation is unknown.

Aims

- Evaluate the limits of agreement of ASI in TS when BSA are estimated using five commonly used equations compared with Dubois

Methods

114 girls with TS managed in the Glasgow Turner Syndrome clinic (1970-2013) were included in the analysis on agreement of BSA estimation. 130 different girls and women with TS from Brazil with aortic root measurements on echocardiogram were included in the analysis on agreement of ASI.

Agreement of BSA estimation

All formulae demonstrated good agreement with Dubois. All formulae tended to overestimate BSA especially with increasing BSA.

Agreement of ASI calculation using different BSA estimation

ASI calculated using all five BSA equations underestimate ASI compared to Dubois. Up to 2% of TS in the high risk ASI will be re-classified as moderate risk. Up to 8% of TS in the moderate risk will be re-classified as low risk.

Conclusion

Whilst the limits of agreement between five equations for estimation of BSA compared with Dubois is high, aortic dissection risk (ASI) may be underestimated in some TS girls simply by using the other BSA estimation formulae.