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U.T. Medical School, MSB 3.301

Evaluation of Recurrence Risks for Left-Sided Cardiac Lesions

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It is widely accepted that hypoplastic left heart syndrome (HLHS), aortic valve stenosis with or without bicuspid aortic valve (AS/BAV) and coarctation of the aorta (CoA) occur in families more commonly with each other than with any other CHD. However, genetic counseling for this group of CHDs, termed left-sided lesions (LSLs), is currently based on empiric risk estimates derived from data collected on all types of CHDs as well as LSLs specifically. Utilizing family history data from 757 probands recruited between 1997 and 2007 from The Children’s Hospital of Philadelphia, this study reassessed the pre/recurrence risks for LSLs specifically. Sibling pre/recurrence risks for HLHS (5.5%, 95% CI: 3.1%-8.9%), CoA (4.0%, 95% CI: 2.1%-6.7%), and AS/BAV (6.0%, 95% CI: 3.3%-9.8%) were higher than currently quoted risks based on all CHDs and LSLs specifically. Additionally, the prevalence of bicuspid aortic valve in 202, apparently unaffected, parents of 134 probands was assessed by echocardiography. BAV, which occurs at a frequency of 1% in the general population, was found to occur in approximately 10% of parents of LSL probands. Lastly, among affected first-degree relative pairs (i.e. siblings, parent-offspring), the majority (65%-70%) were both affected with a LSL. Defect specific concordance rates were highest for AS/BAV. Together, these findings suggest that over the past 20 years with changing diagnostic capabilities and environmental/maternal conditions (eg. folic acid fortification, maternal diabetes, maternal obesity) recurrence risk estimates have increased, as compared to current LSL specific risk estimates, and a protocol for screening first-degree relatives of LSL probands should be devised.

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