Computational and Physical Analysis of Cardiovascular System

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— The website created in CSS and html coding language,
describes the computational analysis of cardiovascular system. A web application
program created in Javascript, has been adapted to the website to aid users determine if one has cardiovascular disease; specifically aortic stenosis. The grade of an
aortic stenosis condition, is categorized into five cases: Normal, mild, moderate, severe, or critical. This information on this web application is meant to be educational
based on basic physical equations, cardio, physics and computer simulations. A variety of methods are employed to assess the degree of aortic stenosis in our program;
including mean transvalvular gradients and valve area, calculated by the continuity
equation. Our results show that severe AS causing LV systolic dysfunction depends
on the transaortic velocity, and AS can lead to a patient with severe LV dysfunction.
As the data shows, the AVV causing AS occurs at 3.0 cm/sec. However, given there
is not a uniform diameter, the measurement using echocardiogram may be inaccurate in cases of aortic stenosis. If the obtained valve area using the echocardiogram
is in the range of AS, the hemodynamics can be used for the validation.

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Date submitted: 16 Oct 2015   Electronic form version 1.4