In Vitro Study of Aortic Flow

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ABSTRACT

In this study， three-directional phase contrast (PC) magnetic resonance imaging (MRI) is used to obtain aortic contour of the healthy human and make aortic model by rapid prototyping technology , Flow and pressure that the experiment gets is used as the boundary conditions for computational fluid dynamics (CFD) calculated . Using CCD to take flow field phenomenon of aortic model which is compared with CFD calculated . MRI measurement of flow distribution in aortic model and comparison with CFD predictions , then confirm MRI measurements is sufficient . A novel technique of maximum curvature of velocity profiles is developed to determine the final vessel boundary . To analyze wall shear stress (WSS) and observe the characteristic of the aortic field and discuss the distribution of wall shear stress and influence of the unsteady flow field for wall shear stress.

Keywords : MRI , WSS , aortic , CFD

Table of Contents

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