

Hemodynamic Numerical Simulation in Artery Complicated with both Stenosis and Aneurysm in Different Shape and Position

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Cerebrovascular diseases such as aneurysm and stenosis are significantly involved with stroke. Computational fluid dynamics has gained many results in stenotic artery and aneurysm studies, respectively. However, little research focus on the case with them happened simultaneously in the same artery, while there are patients suffering from this in clinics. To learn the different hemodynamics in this complicated geometry, and study the influence to the aneurysm when a pre-aneurysm stenosis exists, 34 idealized models with different values of the degree of stenosis, the distance between stenosis and aneurysm, the curvature of parent artery and the aspect ratio, and with different shape of stenosis have been studied. Results suggest that hemodynamics like blood velocity, pressure and WSS are in obvious difference between different geometric configuration of models. This study provides the developing trend of those hemodynamic parameters which are related to vascular lesions to further researches and medical doctors.

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