Numerical Simulation of Pulsatile Blood Flow Through Healthy and Axisymmetric Stenosed Vertebral Artery

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ABSTRACT

Cerebrovascular diseases are one of the most critical causes of mortality and morbidity. The vertebral arteries play a major role in supplying blood to the posterior brain; thus, an understanding of their hemodynamics is vital. Geometry of the vertebral arteries involves many curves and bends making it susceptible to atherosclerotic and non-atherosclerotic diseases. This paper examines the blood flow in healthy and severely stenosed ($>70\%$) vertebral arteries; treating the former as the base model a comparative study is carried out highlighting the changes in flow phenomenon and hemodynamic parameters.

Keywords: CFD; hemodynamics; non–Newtonian fluid; Vertebral artery stenosis.