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The Exact Specification for Consumption of Blood-Pressure Regulating Drugs with a Numerical Model of Pulsatile Micropolar Fluid Flow in Elastic Vessel

Authors : Soroush Maddah, Houra Asgarian, Mahdi Navidbakhsh

Abstract : In the present paper, the problem of pulsatile micropolar blood flow through an elastic artery has been studied. An arbitrary Lagrangian-Eulerian (ALE) formulation for the governing equations has been produced to model the fully-coupled fluid-structure interaction (FSI) and has been solved numerically using finite difference scheme by exploiting a mesh generation technique which leads to a uniformly spaced grid in the computational plane. Effect of the variations of cardiac output and wall artery module of elasticity on blood pressure with blood-pressure regulating drugs like Atenolol has been determined. Also, a numerical model has been produced to define precisely the effects of various dosages of a drug on blood flow in arteries without the numerous experiments that have many mistakes and expenses.

Keywords : arbitrary Lagrangian-Eulerian, Atenolol, fluid structure interaction, micropolar fluid, pulsatile blood flow
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