

高能聚焦超音波在 Y-型血管所誘發之閉塞現象：

有限元素分析與假體實驗

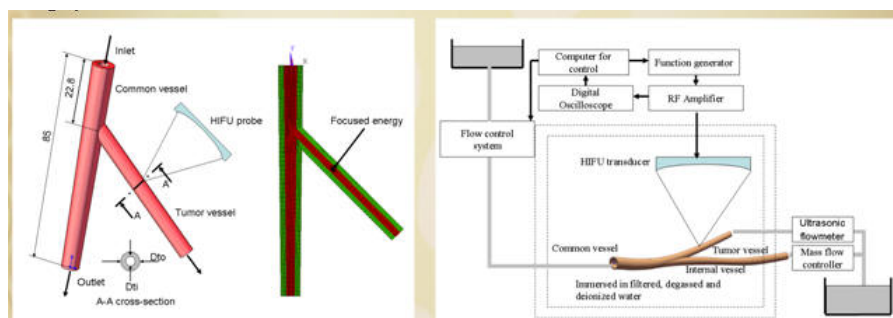
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技術內容

Purpose-In this study, a Y-shaped vessel model comprising common and tumor vessels and an indirect fabrication method are proposed. The accuracy of the threshold time predicted using the simulation results is proved that it is a promising tool for evaluating the HIFU surgery risk of used dosage parameters.

Design/methodology/approach-High-intensity focused ultrasound (HIFU) surgery offers a truly noninvasive treatment method with no skin incision but precise targeting of tumor tissues for thermotherapy. Clinical experience reveals that the efficacy of tumor destruction not only involves in coagulating necrosis but also involves damaging the tumor vessels, which play an important role in tumor progression. These vessels take the elevated temperature away by perfusion, resulting in uncertainty of the tumor vessel, and treatment performed according to the tissue parameter, perfusion rate of the tumor vessel, and treatment parameters including power intensity and exposure duration. The phantom experiments are carried out with perfusion of egg white to validate the threshold time prediction obtained from the simulation results as shown in Figure 2.

技術圖片



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