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Title: A novel method of artery stenosis diagnosis using transfer function and support vector machine based on transmission line model: A numerical simulation and validation study

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Highlights:

1. A calculation method of transfer function (TF) between ascending aorta and any other artery was proposed based on a 55 segment transmission line model (TLM) of human artery tree.
2. The effects of degree and position of artery stenosis on the modulus and phase of TF were simulated and discussed by a series of simulation.
3. A novel method of artery stenosis diagnosis by combining TF and support vector machine was proposed and validated by a numerical simulation. The diagnosis accuracies of this method for moderate (50%) and serious (90%) stenosis were 87% and 99% respectively.

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