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(54) Title: A METHOD FOR CALCULATION OF A PRESSURE DROP BETWEEN CROSS-SECTIONS OF AN ARTERY

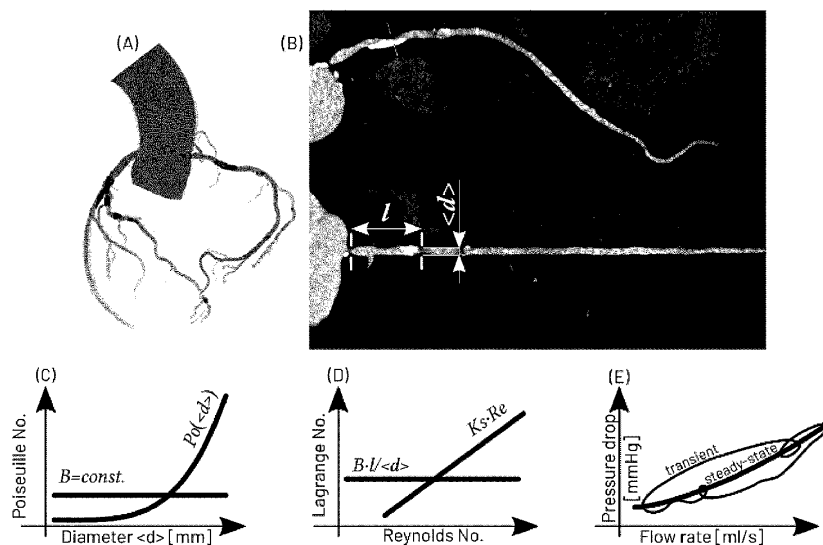


FIG. 1

(57) Abstract: The invention is a computer-implemented method for a calculation of a pressure drop between cross-sections of aorta, coronary, carotid, renal, or peripheral artery. The method comprises steady-state computational fluid dynamics (CFD) simulations and separates of the pressure drop into components: a steady-state pressure loss and a transient pressure loss. The former is presented as a linear combination of pressures (zero-flow, viscous and local resistance) and the latter is computed in accordance with the second law of motion. In embodiments, the steady-state pressure loss includes similarity invariants (Euler, Lagrange, and Reynolds numbers). The invention provides fast in silico evaluation of a human heart condition (including fractional flow reserve) and was positively evaluated using clinical trials.

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