Artery Pressure as a Traveling Force

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Are the penetrating arteries the main driver of CSF in the brain?
In short, a two-compartement model (CSF and blood) is reduced to one-compartment by assuming the blood-pressure is known. The gradient of the known blood presure is added to the right hand side of the momentum-equation. Other boundary conditions are noslip and zero-pressure on the outer surface. Sress-free conditions and no flow of CSF ($\nabla p \cdot \mathbf{n} = 0$) into the ventricles.

The blood pressure was on the form:

$$p_b(x, y; x_0, y_0) = \frac{1}{2\sqrt{\sigma_x}} \exp((x - x_0)^2/\sigma_x^2) \frac{1}{2\sqrt{\sigma_y}} \exp((y - y_0)^2/\sigma_y^2)$$

The position of the "mean" (x_0, y_0) is updated each time step to have a traveling wave. The time it takes to travel from the subdural region to the ventricle is a parameter that can be given. (Here 0.05 s). A traveling force cause flow inside the brain, mainly outwards. There is some concern with numerical artifacts as the permeability is low. Displacements are small.

Will be updated...

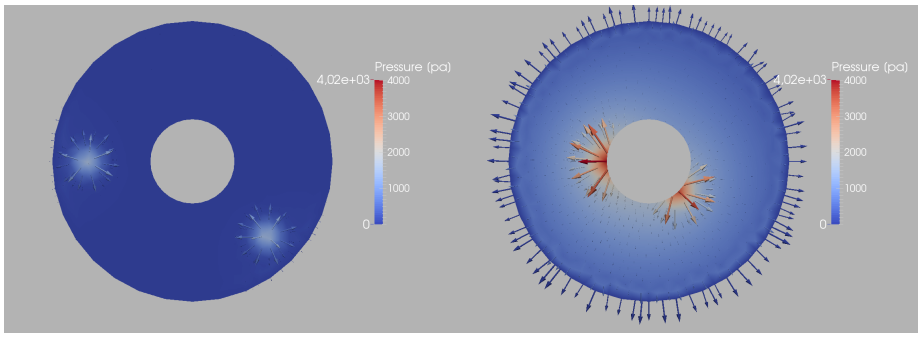

Figure 1: Pressure (color) and it's gradient (arrows) indicating flow direction