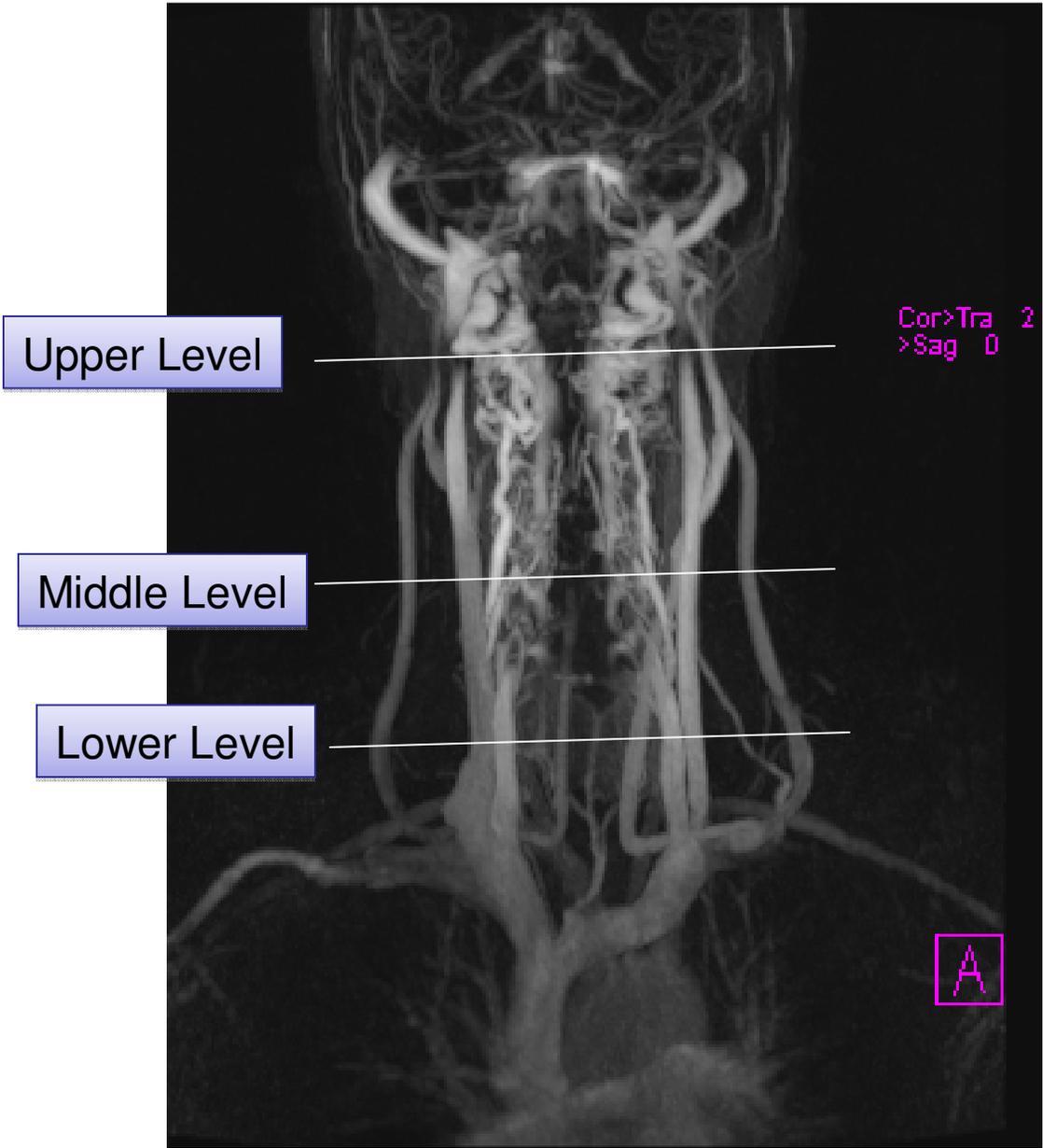


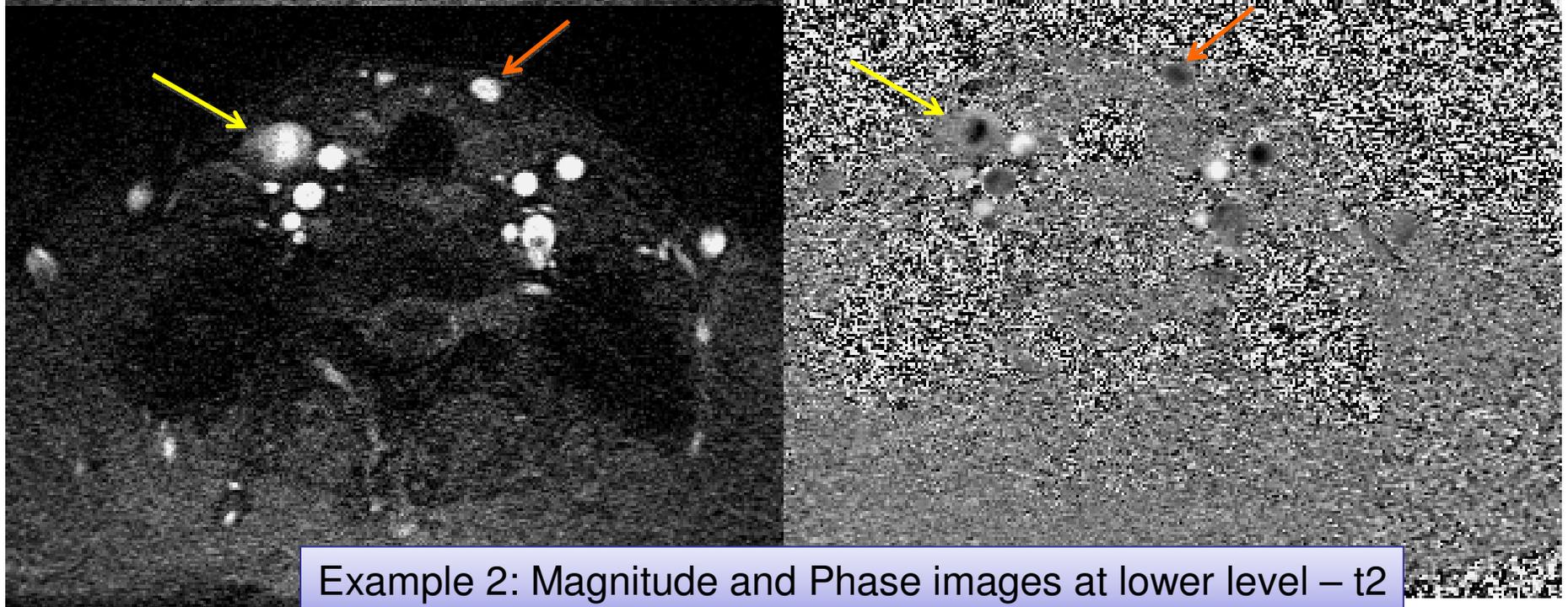
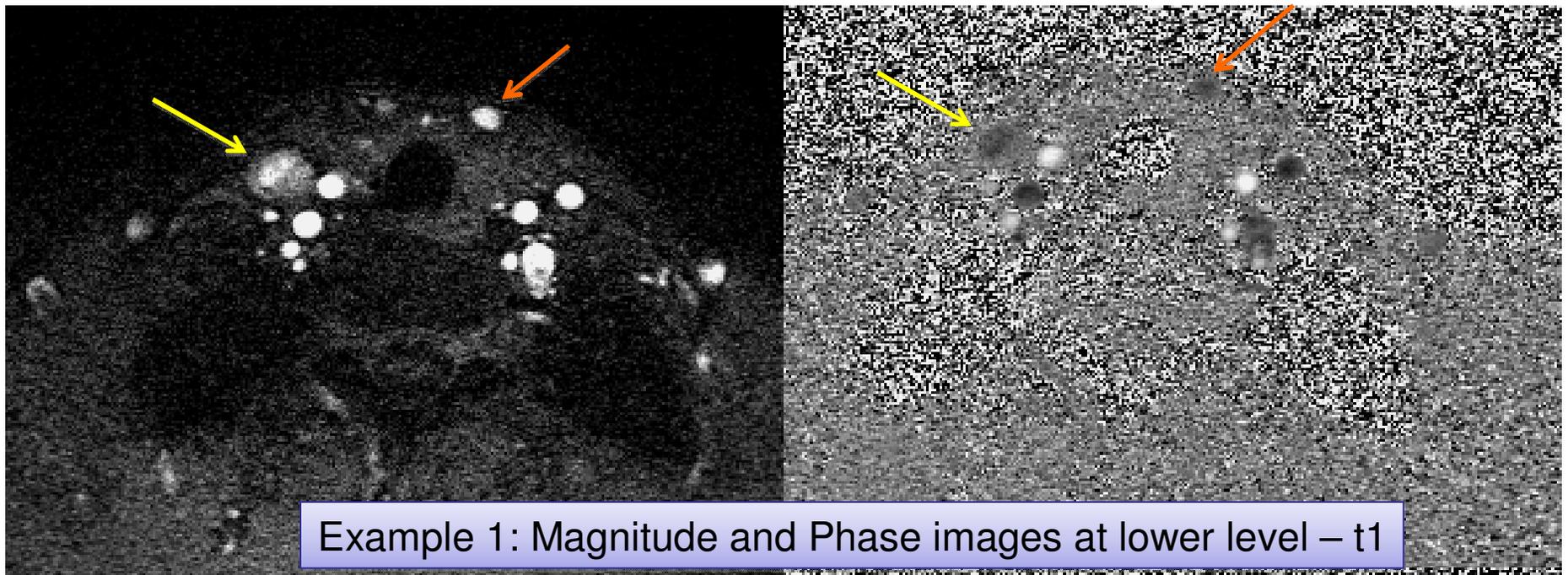
Slice positions



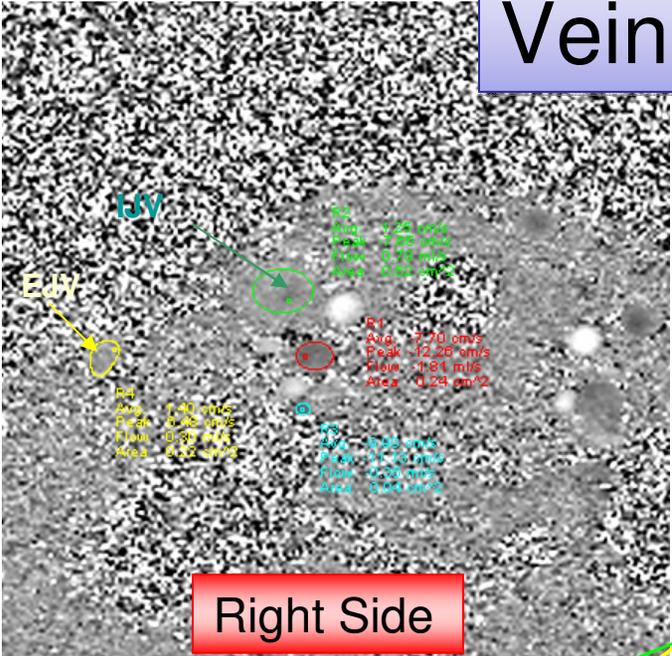
Velocity and flow profiles

- In this case, reflux is prominently seen in the right IJV and EJV in the lower neck.
- Variable positive/negative flow within a given cross section shows a very complicated flow pattern.
- Total flows often don't reveal complicated flow patterns as seen in the cross section.
- Some measure such as expected variance from laminar flow may be a useful marker of bidirectional flow in the vessel.
- Total blood flow volume in and out of the brain is also very important. This is usually on the order of 12ml per second* with an error of roughly $\pm 20\%$.
- Arterial and venous in/out flow for major vessels appear to match within about $\pm 25\%$ and in this case we find flow in the lower veins = -9.1 ml/s and the lower arteries = 10 ml/s.

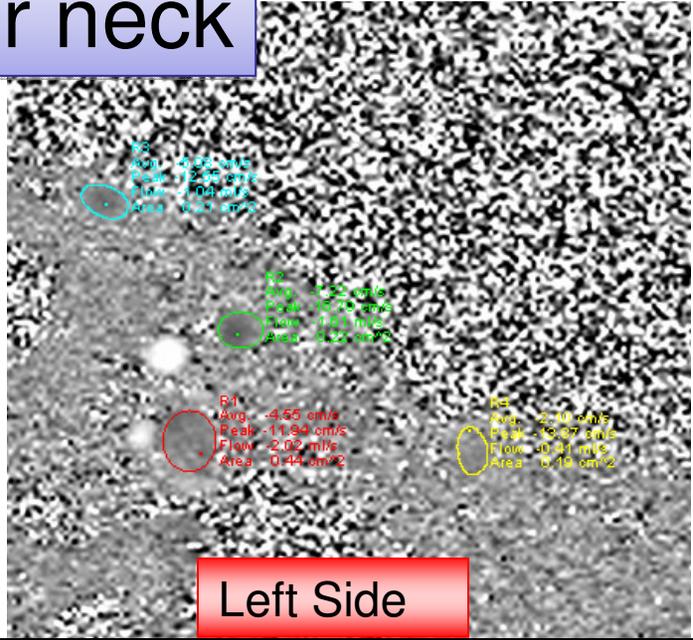
*Stoquart-Elsankari S, Lehmann P, Villette A, Czosnyka M, Meyer ME, Deramond H, Balédent O. A phase-contrast MRI study of physiologic cerebral venous flow. J Cereb Blood Flow Metab. 2009 Jun;29(6):1208-15



Veins at Lower neck



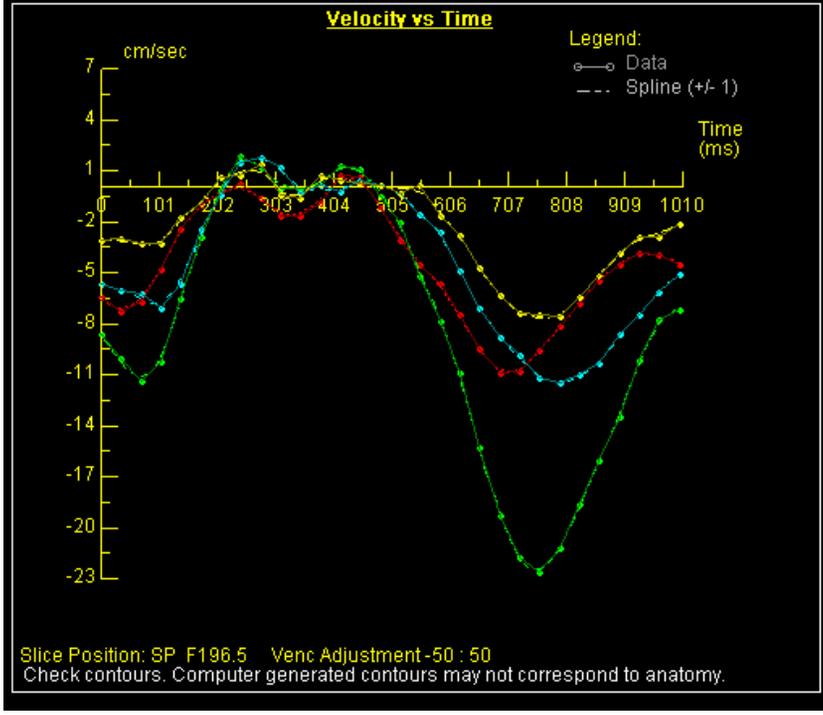
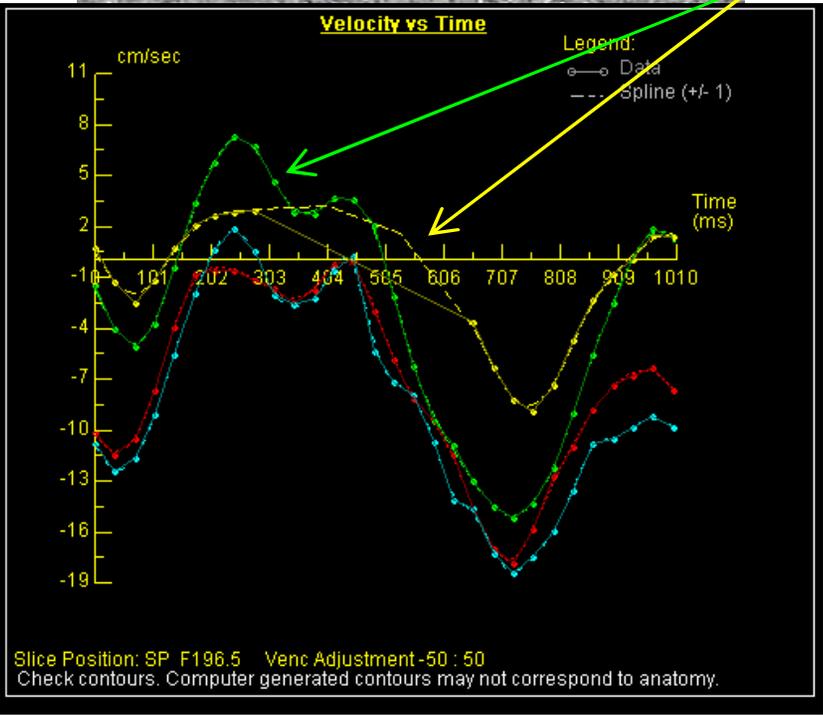
Negative velocity values indicates flow towards the heart. Positive values indicate flow towards the brain.



Right Side

Reverse flow

Left Side



Average velocity through the cardiac cycle.

Veins at Lower neck

