



## LECTURE

# Cervical and transcranial vascular ultrasound in the acute stroke patient

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From the Porto University Center of Medicine Stroke Update Course, Porto, Portugal. 26–27 June 2018.

### Abstract

Neurovascular ultrasound can help in several steps during the acute phase of the stroke patient, either for revascularization decisions or for other clinical management decisions. Neurovascular ultrasound can be our brain stethoscope, important for the cerebral haemodynamics, but it also currently provides an accurate evaluation of structural arterial changes.

Although the good practice guidelines indicate that an acute stroke patient with a clinical syndrome suggesting a large artery occlusion should rapidly perform a CT scan and CT-angiography for selecting for potential endovascular revascularization, those radiologic exams cannot be repeated whenever the clinician wants to know how cerebral haemodynamics are performing, to make clinical decisions.

In the acute stroke unit patients, we want to check the morphologic and haemodynamic condition of the cervical and cerebral arteries, to evaluate stroke aetiology, where Neurosonology is definitely a crucial player.

Then we must decide what to do for the secondary prevention, and again Neurosonology can give very specific clues to help in some decisions.

Some of the questions where Neurosonology can help in the acute stroke settings are: Is there a large artery occlusion, even with a low NIHSS? Is the artery opening with thrombolysis? Was the revascularization haemodynamically satisfactory? How is the perfusion of the affected tissue? Should we lift the patient from bed early or more progressively? Is there an increase in intracranial pressure? How should we manage blood pressure? What was the stroke aetiology? Does the patient have an atherosclerotic stenosis criterion for revascularization, which stenosis/haemodynamics/imaging/patient parameters are worth to consider? Is a dissection haemodynamically unstable and candidate for revascularization? Are there some clues for a cardioembolic aetiology? Is a PFO closure warranted? Is there a cerebral vasoconstriction syndrome, or clues for vasculitis, or more rare syndromes such as the moyamoya syndrome? Any arteriovenous malformation clues in an intracranial haemorrhage patient? Are the vasospasm criteria for endovascular treatment in a subarachnoid haemorrhage patient?

In conclusion, Neurosonology provides an invaluable tool to assist the stroke physician in many of the big decisions in the acute stroke setting.

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Citation: Azevedo, E. Cervical and transcranial vascular ultrasound in the acute stroke patient. *International Journal of Clinical Neurosciences and Mental Health* 2018; 5(Suppl. 2):L25

Published: 26 Jun 2018



Open Access Publication Available at <http://ijcnmh.arc-publishing.org>

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