Stroke and arterial dissections

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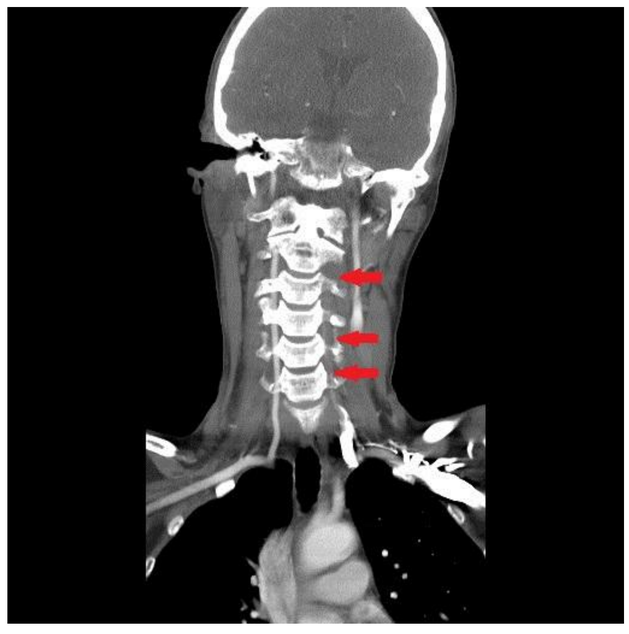
Purpose

Vertebral-artery dissection can be estimated at 1 per 100,000 to 1.5 per 100,000. Spontaneous dissections of the carotid or vertebral artery account for only about 2 percent of all ischemic strokes. Traumatic dissection occurs in approximately 1% of all patients with blunt injury mechanisms, and is frequently initially unrecognized.
Conventional angiography or magnetic resonance angiography (MRA) are considered as the gold standard to diagnose VAD; CT angiography (CTA) and Doppler ultrasonography are described less frequently in literature, even if CTA is considered more sensitive (100%) than either MRA (77%) or Doppler ultrasonography (71%) in several studies. Prompt recognition of dissection and specific treatment is required for a better evolution of the disease.

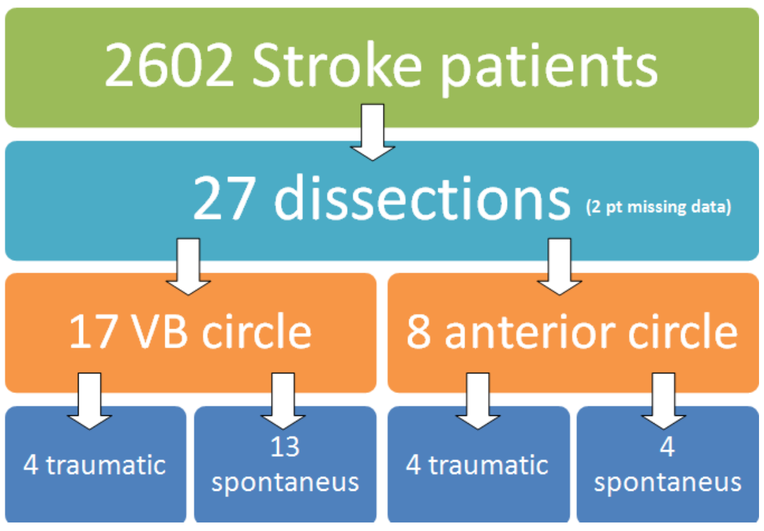
Methods and results

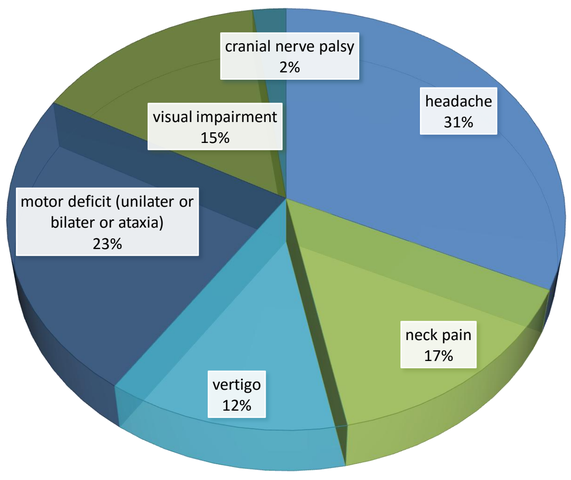
From 2009 to 2015, 2602 patients were discharged from our Neurological Clinic with diagnosis of stroke, of these patients 27 were discharged for a sudden onset of stroke following an artery dissection. Data of 2 patients are missing. Dissection were found both in carotid and vertebral arteries (11 vs 14). 13 patients were females and 14 males. Of the remaining 25 patients data regarding symptoms onset, risk factors for stroke, diagnosis and therapy were collected.
In all patients with suspected vessel dissection duplex ultrasound was performed as an emergency examination. Vessel dissection was mostly confirmed by CT angiography. Prompt therapeutic intervention with intravenous heparin was started almost all subjects. After all, therapy with oral anticoagulants was set up for 3-6 months. Follow up with ultrasound examination was performed for all patients. After 6 to 18 months anticoagulant therapy was switched to antiplatelet ones.

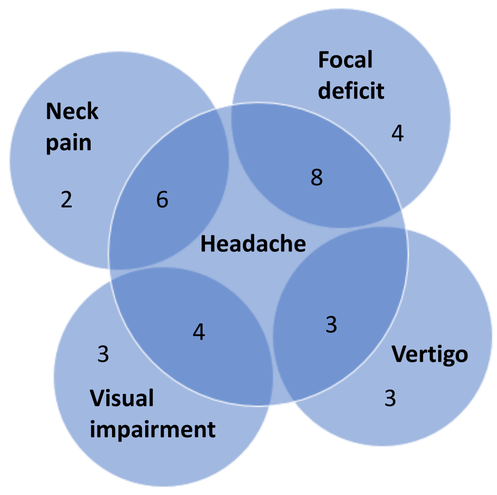


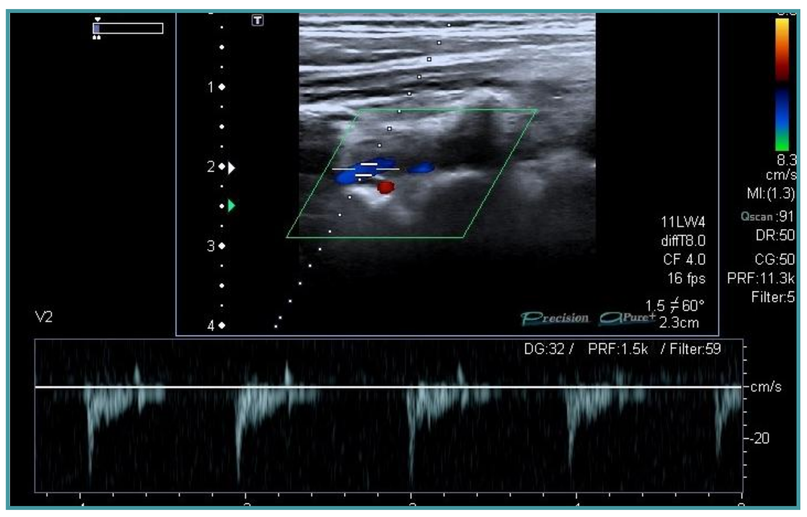
A 50-year-old patient with a dissection of the left vertebral artery. CT angiography showing left vertabral artery occlusion (arrow), caused by vertebral artery dissection in the V2 segment.

CT angiography performed 2 months later. The image shows a partial recanalization of V2 segment of left vertebral artery (arrow).

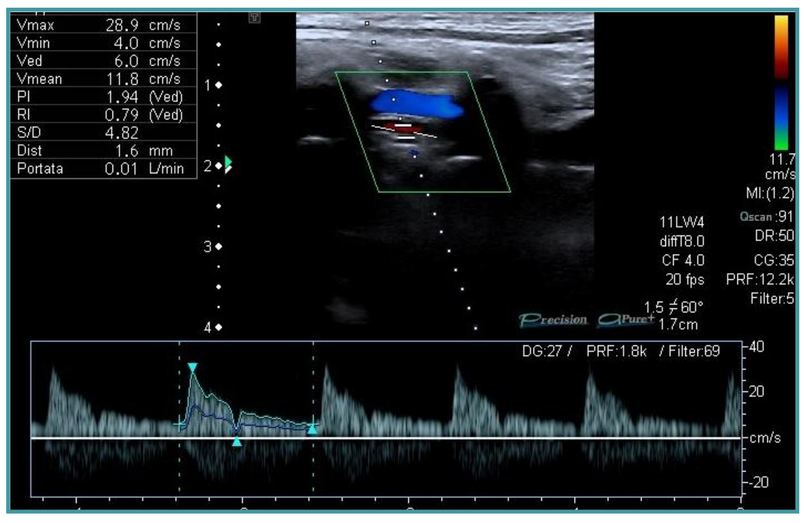








Color-duplex ultrasound, B mode examination, showing left vertebral artery (V2 segment) with hypoechoic vessel wall with abnormal flow such as color aliasing, flow demodulated with minor systolic picks (VPS 27 cm/s) and none diastolic picks.



Color-duplex ultrasound, B mode examination, performed 2 months later. The image shows a partial vessel canalization, with a feeble hemodynamic systolic and diastolic picks signs in the left vertebral artery (V2 segment).

Comments and conclusions

Incidence of stroke due to arterial dissection was found to be in line with previous literature data.
In our experience vertebral and carotid artery dissection are more frequent in young patient aging less than 50 years old.
We didn't find any difference between sex incidence (on 27 subjects 13 were female and 14 were man). Smoke attitude or previous headache history didn't seem to influence the incidence of disease. Even estroprogestininc therapy at disease's onset seemed to be not relevant.
Posterior circulation was seen to be more often involved than the anterior ones, in a smaller percentage of cases both vertebral artery were involved simultaneal.
Moreover in our experience Doppler ultrasonography was used as the first diagnostic examination to evaluate the dissection and later on the best non-invasive examination for follow-up. We suggest its possible use in routine diagnostic artery dissection's protocol. Because ultrasonography can be repeated as often as necessary, it is a prove technique for early diagnosis, follow up examination, and therapeutic decisions.

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