

Ultrasound to detect involvement of vertebral artery in giant cell arteritis

Sirs,

In giant cell arteritis (GCA) ultrasound is able to visualise typical vasculitis signs such as circumferential vessel-wall-thickening (“halo sign”) and stenosis. This diagnostic tool is validated for examination of the temporal artery (1-4). Additionally, the vertebral artery is accessible for sonographic examination. Few publications describe a vertebral artery “halo sign”. However, ultrasound of the vertebral artery is not (yet) validated as being a diagnostic method of giant cell arteritis (5, 6).

In this retrospective single-centre study 35 patients (19 female, 16 male), newly diagnosed with giant cell arteritis were analysed. All patients were examined by doppler ultrasound of the temporal and vertebral artery. Doppler ultrasound examination was performed by a very experienced examiner (more than 2000 duplex sonographic examinations of arteries per year). A positive finding in ultrasound of the temporal artery and the vertebral artery was defined as a circumferential hypoechoic vessel wall thickening known as “halo sign”. Positive findings of an involvement of the vertebral artery in the ultrasound scan were confirmed by magnetic resonance angiography (MRA) or computer tomography angiography (CTA). Long extended stenosis and/or wall thickening of the vertebral artery in the MRA or CTA were defined as a positive finding.

By sonographic examination of the 35 patients, 8 of them (22%) were identified with concentric, homogeneous hypoechoic wall thickening of the vertebral artery, indicating an involvement of this vessel of the giant cell arteritis (mean age 73±8.7 years, range 55-83 years, 4 male and 4 female).

Four of these patients (50%) showed clinical symptoms indicating affection of the brainstem (two patients suffered from vertigo, two from a brain stem infarction). All of these 8 patients had elevated inflammatory parameters: C-reactive protein/ CRP= 8.0±7.7 mg/ml (standard value <0.5 mg/dl); blood sedimentation rate: 64±24 mm/ hour (standard value = 15 mm/ hour).

In case of the 8 patients showing sonographic findings with an involvement of the vertebral artery the results were compared by MRA (6 patients), in one case by CTA (due to pacemaker) and one of the patients did not receive an additional examination. In summary, in 6 of 7 patients with positive sonographic findings the involvement of the vertebral artery was confirmed by a cross section method (MRA or CTA).

None of the 8 patients analysed showed an exclusive involvement of the vertebral artery. All cases had at least one other vessel involved, mainly the temporal artery. Only

Table I. Involvement of vertebral artery.

Patient	Sonography vertebral artery	MRA/CTA of vertebral artery	Sonography temporal artery	Histology temporal artery	Involvement of vessels other than vertebral and temporal artery	Clinic of vertebral artery
1	halo sign	positive	halo sign	positive	carotid artery	brain stem infarction
2	halo sign	positive	halo sign	not performed	none	vertigo
3	halo sign	not performed	negative	positive	none	none
4	halo sign	positive	halo sign	positive	Axillary artery and subclavian artery	vertigo
5	halo sign	negative	halo sign	positive	none	none
6	halo sign	positive	negative	not performed	Subclavian artery	none
7	halo sign	positive	halo sign	positive	none	brain stem infarction
8	halo sign	positive	halo sign	negative	none	none

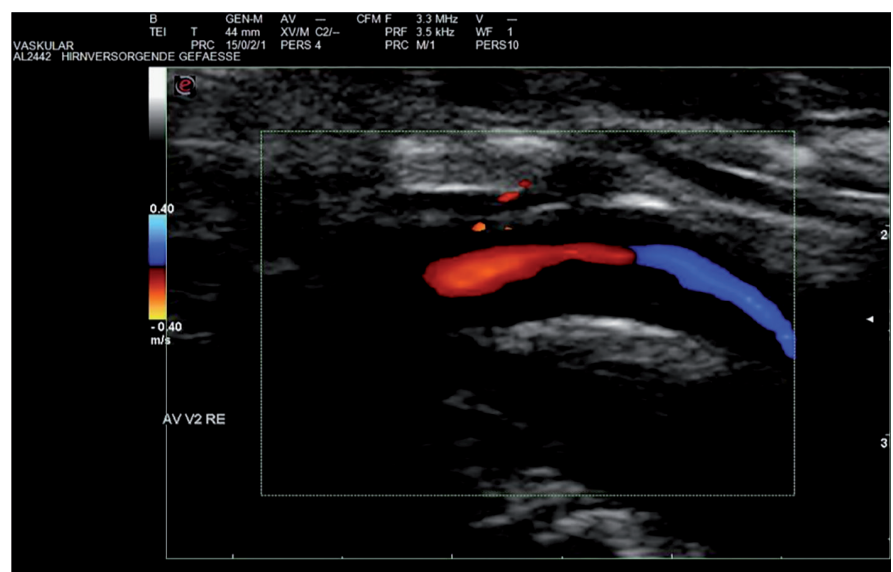


Fig. 1. Colour duplex ultrasonography of the vertebral artery (longitudinal section). The circumferential hypoechoic vessel-wall-thickening (vertebral-halo sign) is found in the vertebral artery in giant cell arteritis.

one of the patients showed neither a positive sonographic finding nor a positive histology of the temporal artery.

Authors like to emphasise that a reliable estimation of the rate of vertebral artery involvement is not possible in this setting. However, data of this study indicate that vertebral artery involvement in giant cell arteritis is more common than generally known. In this cohort 22% (8 of 35) of the patients with a newly diagnosed giant cell arteritis showed an involvement of the vertebral artery. 50% of these patients with GCA of the vertebral artery do not show clinical symptoms that indicate an involvement of the brain stem arteries, 25% (2 of 8) showed the non-specific symptom vertigo. Authors believe that a regular sonographic examination of the vertebral artery of all patients with GCA is the method of choice to early identify the GCA of the vertebral artery. This may lead to an even more intense treatment of this high risk group of patients.

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