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Stroke-like presentation of Giant Cell Arteritis

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Abstract

Stroke is a severe medical condition, which should be diagnosed ant treated rapidly. During imaging diagnostics atypical appearance of vessels may suggest other than thrombotic occlusion. Circumferential vascular stenosis is typical for giant cell arteritis, which should be considered as a differential diagnosis and treated with corticosteroids.

Key words: stroke; giant cell arteritis; Brain CT

Introduction:

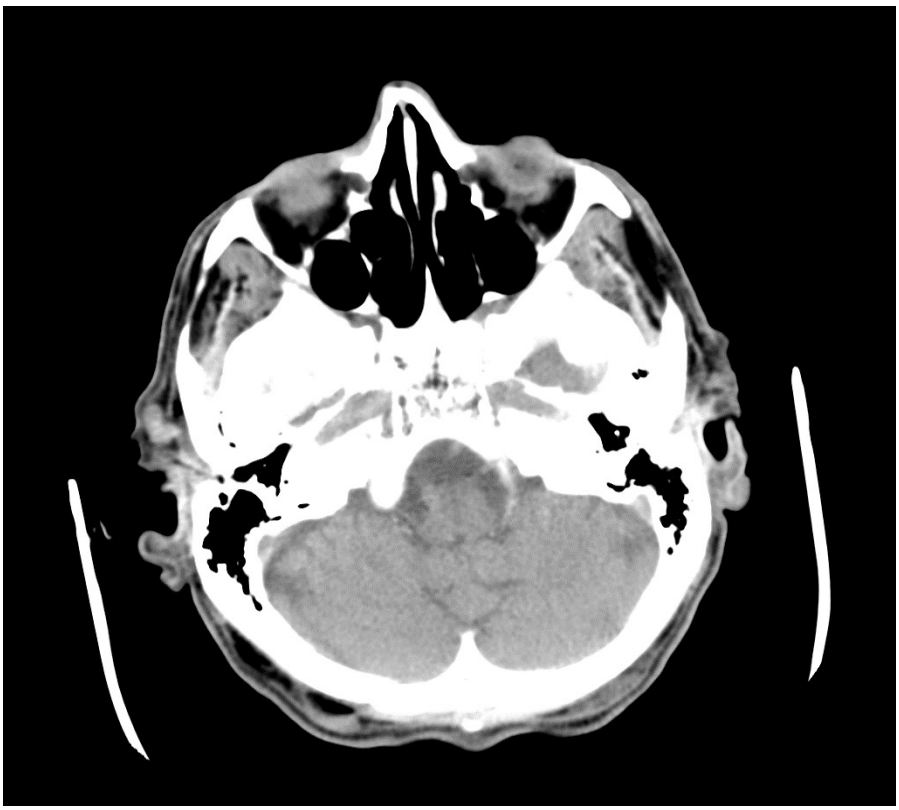
Stroke is a potentially life threatening medical condition, with the incidence range varying from 65/100.000 to 212/100.000 people/year [1]. Ischaemic brain events which fade without treatment under 24h and does not show permanent changes in routinely performed CT and MRI examinations are called transient ischaemic attacks TIA [2]. Most frequent is the ischaemic stroke, which can be successfully treated up to first 6h from the beginning of symptoms. Intravascular thrombus is most often the cause of an ischaemic stroke [3], less often it is of other aetiology, such as inflammatory vascular changes [4].

Case report:

A 65 year old male was admitted to the emergency department with the suspicion of brain stroke. Since 2 hours from the admission the patient suffered visual impairment and left-sided muscular weakness. Less intensive, although similar episodes occured a few times in the past 6 months, being interpreted as TIAs. During the hospitalisation presented symptoms had a tendency to fade without treatment. With the aim of excluding organic background of that symptoms a non-contrast brain CT was performed. (Picture 1)

Picture 1. Arrow – right internal carotid artery hiperdensity

Picture 2. Arrow – left vertebral artery hiperdensity



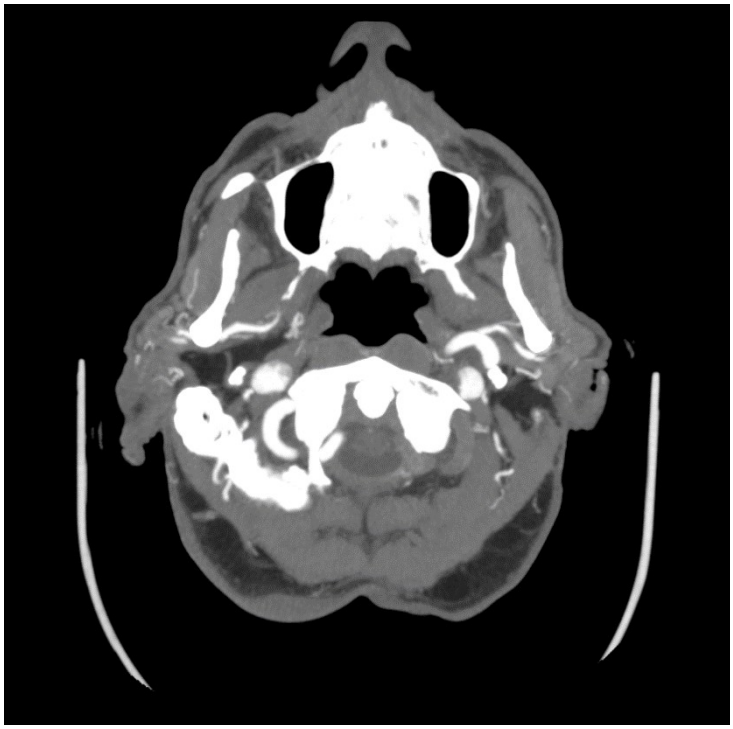
In the examination a hiperdensity of right internal cerebral artery was found at the level of sphenoid bone and in the internal cerebral artery canal on the right side (Picture 1). Hiperdensity was also noticeable in the intracranial part of left vertebral artery. (Picture 2) The CT arteriography of brain arteries was made to verify the presence of thrombi in mentioned locations.

The CT brain angiography was performed 1,5 h after the initial brain CT scan. It showed the lack of contrast flow in right internal cerebral artery and left vertebral artery (Pictures 3 and 4), which was interpreted as thrombi. In addition to this in the left vertebral artery, at the level of cervical 2-4 vertebral bodies was revealed a circumferential, critical stenosis (Picture 5). At the time of scanning the patient stopped to present any of previously reported symptoms, despite that the patient was admitted to the neurology department due to abnormal CT brain angiography result.

Cervical arteries ultrasound Doppler examination confirmed the occlusion of right internal carotid artery and left vertebral artery. Ultrasound features of vascular wall inflammation such as hipoechogenictity and wall widening were also noticed in the left vertebral artery and both temporal arteries. Presented symptoms, including visual impairment, stroke-like left -sided muscular weakness, significantly elevated ESR and Doppler ultrasound appearance of inflammatory vascular disease brought the patient to the rheumatology department with the diagnosis of giant cell arteritis. After pulses of high-doses steroid treatment the transient sympthoms ceased. The patient remains an ambulatory patient of the department of rheumatology.

Picture 3. Arrow – lack of contrast flow in right internal carotid artery

Picture 4. Arrow – lack of contrast flow in left vertebral artery



Picture 5. Arrow – circumflex stenosis of left vertebral artery at the cervical level

Discussion

Giant cell arteritis (GCA), or temporal arteritis due to common site of involvement is a granulomatous inflammation of large diameter vessels. It occurs above the 50 year of life , most often in the 8th decade of life, with the female to male ratio about 2:1 [5]. The diagnosis of GCA is based on complying at least 3 of 5 criteria: above 50 years, new onset of localized headache, pain in the field of temporal artery of lowered pulse, ESR higher than 50mm/h, vascular wall inflammatory changes. Partial or complete vision loss unilateral or bilateral occurs in up to 20%, often being one of first symptoms. [6].

According to the reports the frequency of ischaemic stroke in patients with GCA varies from 2 to 20%. [7] Those reports were not differentiating between cardio-vascular and inflammatory aetiology. Most recent study, involving patients with ischaemic stroke within a year since the GCA diagnosis (in the acute phase and during steroid therapy) the frequency of ischaemic events reached 16% [8], which may suggest substantial stroke risk increase in the acute phase of GCA.

The frequency of involving basal or vertebral arteries in ischemic stroke may reach up to 40-60 % in patients with GCA and only 15-20% with cardio-vascular disease and atherosclerotic vascular changes [9]. Differentiating inflammatory and atherosclerotic wall changes may be challenging due to the fact widening and narrowing of vessels is not always captured, elderly patients have also greater incidence of atherosclerotic changes. [10]

GCA should be mentioned in the differential diagnosis list in patients with atypical presentation of ischaemic brain event with changes in the large brain arteries in the CT brain angiography, especially when circumferential. CT angiography is a useful tool in term of clinical suspicion of GCA according to the EULAR guidelines [11]. An important finding in some patients is the ‘halo’ sign in ultrasound Doppler examination with thickened arterial walls which occurs in inflammatory changes. [12]

Vital for the radiological and clinical findings correlation is the fact of right internal carotid artery and left vertebral artery occlusion and no clinical symptoms at the moment of CT brain angiography, which proves haemodynamic efficiency of the Willis circle arteries in the presented patient.

Conclusions:

GCA needs to be considered when CT brain angiography shows circumferential pattern of arterial stenosis.

Willis circle in some individuals may supply sufficient amount of blood in spite of 2 out of 4 main cerebral arteries occlusion.

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