

Intracranial Aneurysm Associated to Internal Carotid Artery Hypoplasia- A Case Report

Štenc Bradvicav Ivanka*

Department of Neurology, Faculty of Medicine, University Hospital in Osijek, University of "Josip Juraj Strossmayer", Osijek, Croatia

***Corresponding Author:** Štenc Bradvica Ivanka, Department of Neurology, Faculty of Medicine, University Hospital in Osijek, University of "Josip Juraj Strossmayer", Osijek, Croatia.

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Abstract

Intracranial aneurysms may persist due to whole life time without making any symptoms or may even never be recognised. Some author showed the higher prevalence of unruptured intracranial aneurysms in patients with a hypoplasia of the extracranial part of internal carotid artery. We suggest to perform intracranial neuroimaging in all cases of hypoplasia of the extracranial part of carotides is found.

Keywords: Intracranial Aneurysm; Internal Carotid Artery; Hypoplasia

Introduction

In most of cases intracranial aneurysms are found incidentally and their presence is often linked to internal carotid artery stenosis [1]. In their meta-analysis authors conclude that about 1% of patients with a symptomatic internal carotid artery stenosis develop an intracranial aneurysm. Borkon, *et al.* found the incidence of concomitant carotid artery stenosis and unruptured intracranial aneurysms in about 0.5% - 5% cases [2]. In contrary to stenosis which is acquired due to some risk factors, hypoplasia of the internal carotid artery is a rare congenital anomaly. As Arshad presented, in his cases the intracranial aneurysms found after a subarachnoid hemorrhage appeared, were associated to bilateral internal carotid artery hypoplasia [3].

Case Report

We present a female patient, who suffered from headaches for a long period before she consulted a neurologist. In the clinical status she was asthenic, with a low body mass index of 18.2, caucasian, smoker, with present artery hypertension not regulated well, without other chronic diseases or risk factors for cerebrovascular disease.

After she referred to a neurologist at her age of 50 years (in 2011 year) the intracranial neuroimaging was performed. The computed brain tomography/angiography and digital subtraction angiography were performed and a big saccular aneurysm of the right internal carotid artery in the intracranial part was found.

As the saccular aneurysm was big, the neuroradiologist and the neurosurgeon decided to treat it by performing endovascular coiling.

Into the saccular supraophthalmic aneurysm which was of a diameter of 5.5 mm, located behind the starting point of the right ophthalmic artery and with the neck of the aneurysm diameter of 4 mm, a microcatheter and a microwire (Excelsior, Syncro) were conducted so 4 endovascular loops were implanted. The procedure went without any complication and the neurological status was normal.



Figure 1: Digital subtraction angiography in 2011.

During a period of the last nine years, the patient is still feeling good, with a normal clinical and neurological status.

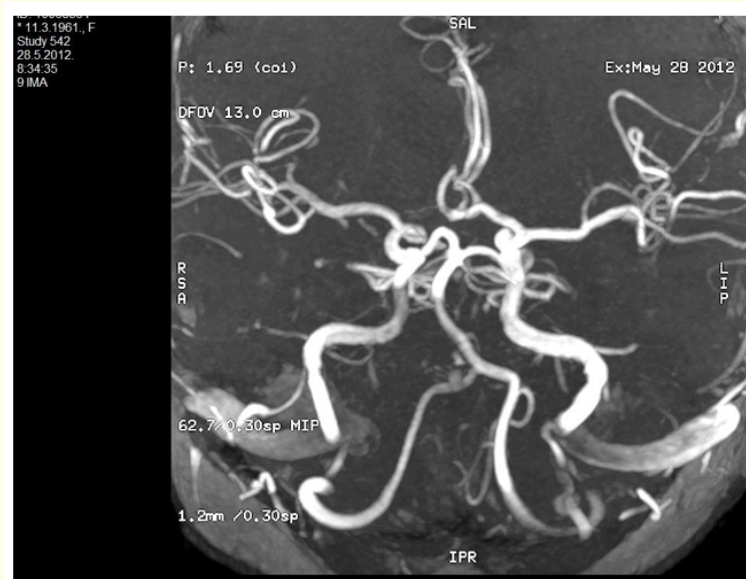


Figure 2: The magnetic resonance angiography after embolisation, 2012.

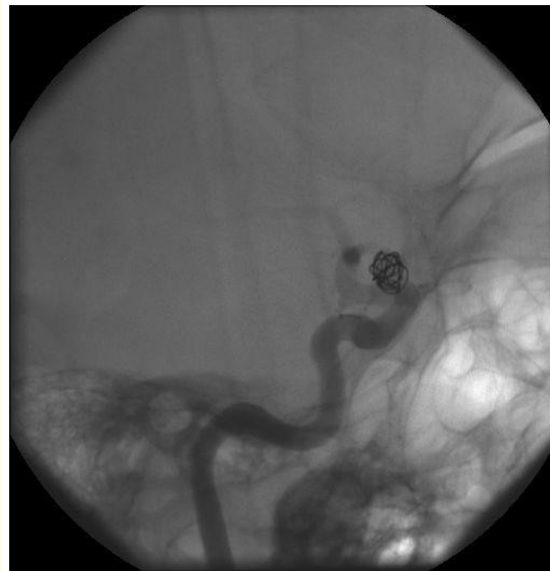


Figure 3: The digital subtraction angiography after embolisation, 2012.



Figure 4: The CT angiography showing the hypoplastic right internal carotid, in 2015.

The latest color doppler control in 2019, also confirmed the presence of hypoplastic right carotid internal artery without a hemodynamically disorder.



Figure 5: Color doppler flow imaging of the right internal carotid artery.

Discussion

Most of carotid aneurysms are treated surgically after they are accidentally found. The prevalence of aneurysms in general population is 3.6 - 6% and the incidence of subarachnoid haemorrhage is 6 - 8 per 100 000 person in one year [4]. The incidence is growing with age. The main risk factors are smoking, hypertension, hypercholesterolemia and genetic predisposition. When a hypoplastic carotid artery is present the incidence of coexisting aneurysm is much higher than in general population, estimated to be between 25 - 34% [5]. Therefore, these authors suggest to look for other Willisian abnormalities when a hypoplastic carotid artery is present. In cases of signs related to an aneurysm presence like headaches, epileptic seizures, cranial nerve palsy or bulbo-motor disturbances exist, further neuroimaging of intracranial vessels should be performed. Some authors showed the connection between aneurysms and vasculitis so the serum analysis of (MPO) ANCA and (PR3) ANCA are recommended to perform [6].

Infective endocarditis is also reported as a risk factor for developing intracranial aneurysms even in a multiple form implementing that some immune complexes may damage the cerebral vessels [7].

Methods used to prevent the aneurysm rupture are surgical clipping, endovascular coiling or a flow diverter which can be used to bypass the unruptured brain aneurysm especially if the aneurysm is placed in the carotid siphon [8].

For evaluating possible atherosclerotic plaques or stenosis on the extracranial part of carotides color doppler flow imaging is recommended as a noninvasive ultrasound imaging method. It is also used to evaluate the possible vessel changes occurring in vasculitis. Hy-

poplasia may also be found in people with some developed disturbances [9]. Kwak presented a case of intracranial aneurysm associated to agenesis of common carotid artery [10].

Conclusion

We conclude that in a case of a hypoplastic or stenotic internal carotid artery in the extracranial part is present, further analysis of intracranial arteries should be performed to explore the possible presence of unruptured aneurysms.

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