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THE AZYGOS ANTERIOR CEREBRAL ARTERY ANEURYSMS CONFIRMED AT OPERATION

Zoran Milenković, Milan Puzić, Ljiljana Vasović, Stojanka Djurić, Radomir Vučetić, Dragan Stojanov

Summary: In a consecutive series of 330 patients with 337 aneurysms who were operated on two rare cases with an azygos anterior cerebral artery (AACA) were identified harboring an aneurysm at its distal end.Both patients were successfully operated on.The incidence of the distal anterior cerebral artery aneurysms was not in close correlation with this anomalous vessel.The preponderance of females was hypothesized but the confirmation is still rather inconclusive.

Key words: Azygos artery, anterior cerebral artery, aneurysms, bihemispheric pericallosal artery

The presence of the unpaired, distal, postcommunicating (A2) segment of the anterior cerebral artery (ACA) is very rare in adults (1,2,3,) and slightly higher in fetuses and infants (4, 5,). Aneurysms of the azigos anterior cerebral artery (AACA) were found in 4l% of identified cases of Huber et al (2) series of 17 unpaired pericallosal trunks. Twenty one cases of the aneurysma in association with the AACA have been described up to now in the available literature (2, 3, 6, 7, 8, 12, 13). We present two more cases.

Case reports

Case 1: A 59 year old female was admitted at our Clinic on March 1995 due to a sudden attack of headache, vomitting, and transitory loss of consciousness. There were no meningeal signs and symptoms. Lumbar puncture done at the local hospital revealed a bloody cerebrospinal fluid (SCF) and she was transferred to the Clinic 4 days after the attack. Four– vessel angiography showed an aneurysm at the distal end of the unpaired, pericallosal trunk (Fig.l). The patient was operated on a weak after the attack by the anterior interhemispheric approach and a 3 cm long, unpaired, postcommunical segment with bilateral branching of supracallosal, pericallosal arteries with the aneurysm at the distal end of the segment was dissected. The aneurysm was occluded (Fig 2). The postoperative course was uneventful and she was discharged 10 days after the operation without deficit and engaged in normal activities.

Case 2: A 55 year old woman got a severe attack of headache, with sudden loss of consciousness and became sleepy later on with evident meningeal signs and symptoms but with no other neurologic deficit. Lumbar puncture done in the local hospital confirmed bloody SCF. She was transferred to our clinic the day after the accident on May 15. 1995 and CT revealed blood in the basal cerebral cisterns. Four–vessel angiography disclosed also the unpaired, postcommunical segment of the ACA with aneurysm at its distal end (Fig.3). The patient was operated on but using the right–side frontal, interhemispheric approach, slightly more highly and posteriorly we were not able to reach the aneurysm adequately. The clip for orientation was applied and another right–side angiography was performed for better orientation. After five days reoperation was done, using the same approach but more anteriorly and the aneurysm was found at the distal end of the unpaired, large, 2 cm long trunk and it was occluded by one clip (Fig.4). The postoperative course was complicated with wound infection, but the patient recovered well and was discharged on the 15th postoperative day. The last control (two months later) showed that the patient was feeling well leading a normal houswife life.

Discussion

The azigos ACA has got several names: arteria termatica (3), the common arterial cerebral trunk (13), the azygos pericallosal artery (6), the unpaired pericallosal artery (2), the unpaired cerebral artery (1). In a work compiled by ten authors who ex–amined 2l53 cerebral vascular system 23 AACA (about 1%) were identified (1). In a series of Bap–

tista (l) the incidence was only O.26%, in contrast to the series of LeMay and Gooding (14) who revealed 3.8% even though they conceded that some of them could be classified as a bihemispheric pericallosal arteries. In Huber et al (2) series of 7782 unselected angiographic cases 17 (0.21%) had a large, unpaired pericallosal trunk and 4 out of 17 were the real AACA,the remaining 13 were bihemispheric pericallosal arteries. Baptista (1) defined clearly the difference between two aformentioned types: a) a true AACA from which all major branches are given off to both hemispheres and b) a bihemispherioc ACA where both right and lerft ACA are present but one is rudimentary and most of the major branches to both hemispheres arise from the other ACA. The incidence of the AACA is more comon in fetuses and baby brains than in adults reaching up to 5% (4). However in our series of 60 fetuses brains older than 4 months only one case (1.6%) was identified (15), and in another series of 200 fetuses also one case of the AACA (0.2%) was recorded (16).

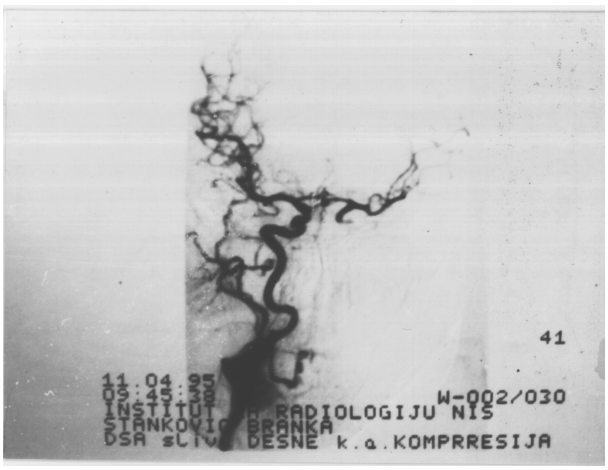
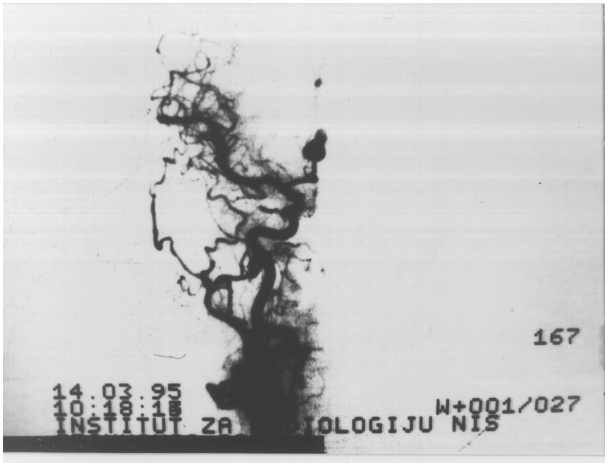
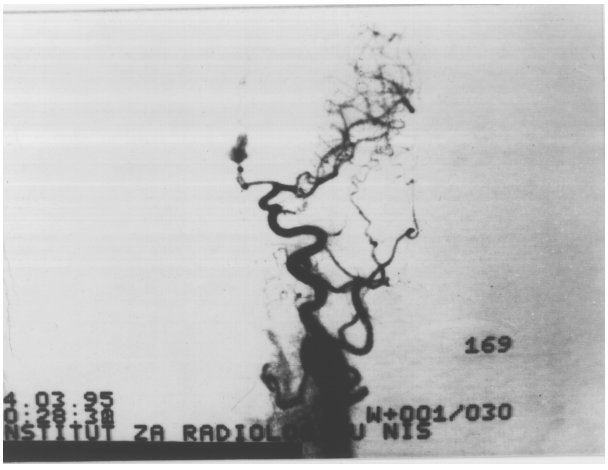


Fig. 2. The postoperative cross–compression angiography with the occlusion of the aneurysm. Case 1.



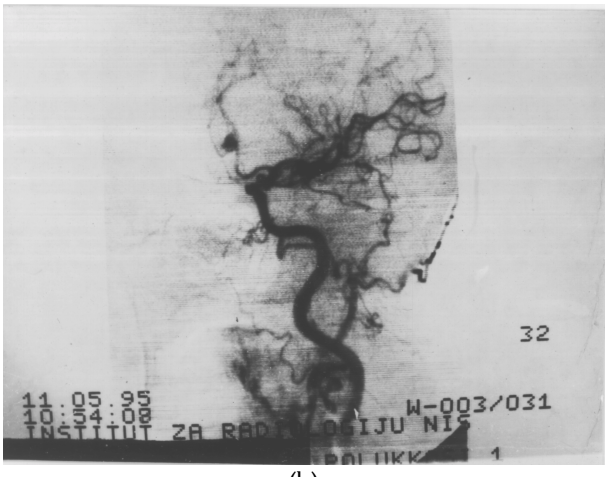
(a)



(b)

Fig.1 a) and b)The right and left carotid artery angiography revealed an azygos anterior cerebral artery aneurysm. Case 1

(a)



(b)

Fig. 3 a) and b).The right and left carotid artery angiography with an azygos anterior cerebral artery aneurysm. Case 2.

Fig. 4. The postoperative left carotid angiography with the occlusion of the aneurysm. Case 2.

Regarding the location of aneurysms in association with the AACA one can state that they are usually located at the distal end of the unpaired, postcommunical ACA and it may be that the burden of blood from the bilateral A1 segment on the end of the anomalous ACA is responsible for aneurysmal development (16). On the other hand there was no close correlation between the number of cases with the distal ACA aneurysm and the incidence of the AACA. So in Pool and Pots (13) cases of 22 distal ACA aneurysms, 3 patients with the true AACA were identified, like in Leitinen et al (12) series of 14 patients with distal ACA aneurysms; two cases with the AACA were recorded among 11 distal ACA aneurysms of Kinoshita et al (10) patients, 37 Nizuma et al (17) patients, our 10 patients or 23 aneurysms in Yasargil (3) series. However Hernesniemi et al (18) in a series of 84 consecutive patients with 92 distal ACA aneurysms did not find any case with the AACA. Definitive diagnosis of the AACA can be made during the operation and/or by single carotid angiography with contralateral compression (17). The female:male ratio has not been stressed up to now. In the available literature (8, 9, 11, 17), only women were found to have aneurysms in association with the existance of the AACA, but we do not have infomation about the incidence of sex in the 16 reported cases and this makes our confirmation rather inconclusive.

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ANEURIZME PREDNJE CEREBRALNE AZIGOS ARTERIJE POTVRDJENE NA OPERACIJI

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Kratak sadržaj: U konsekutivnoj seriji od 330 pacijenata sa 377 aneurizmi na cerebralnim krvnim sudovima, koje su bile operisane na našoj klinici, nadjena su dva retka slučaja aneurizmi prednje cerebralne arterije koje su uspešno operisane. Nije nadjena adekvatna korelacija izmedju aneurizmi distalnog dela prednje cerebralne arterije i ovih anomalnih arterija. Dominantnost ženskog pola postavljena je kao hipoteza, ali se nije mogla ubedljivo dokazati.

Ključne reči: Arterija azigos, prednja cerebralna arterija, aneurizme, bihemisferna perikalozalna arterija

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