

THE IMPORTANCE OF DUPLEX SCAN IN THE DETECTION OF INNOMINATE ARTERIES SIGNIFICANT STENOSIS



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ABSTRACT

Atherosclerotic occlusive disease of the innominate arteries is not common, comprising less than 2% of all extracranial causes of cerebrovascular insufficiency. The most prevalent clinical signs are upper extremity arterial insufficiency and subclavian steal syndrome. The carotid steal and TIA-s is less common.

Patients and methods: We present three cases with innominate arteries (IA) subocclusion, two female, median old 62y, with hyperlipidemia, two of them have had hypertension.

In this case series, all patients had carotid artery’s symptoms with transitory visual disturbances, two of them had left side hemiparesis and only one male patient had right hemispheric stroke. At all patients performed a carotid duplex scan, which demonstrated 80% stenosis of the innominate arteries and hemodynamically insignificant stenosis of the right internal carotid artery. Furthermore, blood stasis with “diastolic flow” suggestive of brachiocephalic artery stenosis was demonstrated in the right common carotid, right internal and external carotid and right vertebral arteries. At “diastolic flow” there wasn’t difference between systolic and diastolic picks at Doppler waves. All patients undergo digital subtraction angiography and PTAs. The flow improvement rate was followed by Duplex scan. Immediately after PTA, a significant increase in systolic peak was recorded in all branches of IA.

Conclusion: Duplex scan is a very important method in detecting significant stenosis of IA as well as monitoring the flow recovery after PTA. “Diastolic flow” should induce suspicion of the presence of significant innominate arteries stenosis.

METHODS

This is the case series of tree patients hospitalized at the Special Hospital for Cerebrovascular Diseases “Sveti Sava” in Belgrade. The patients were assessed regarding demographic data, comorbidities and vascular risk factors.

The ultrasound examinations of neck arteries were performed using the MyLab 70 XVision ultrasound machine (Esaote, Genoa, Italy). All patients underwent the native multiphasic computed tomography [CT General Electric (GE), Bright speed] or the magnetic resonance imaging (MRI) (MR Signa, HD×, 1.5T, GE, Milwaukee) of the brain performed on the 1.5-Tesla system. Digital subtraction angiography (DSA) studies were performed using a digital angiography system (Innova 3100 Single Plane; GE Milwaukee).

- We are presenting three patients :
1. Male, 56y, stroke with seizure, hypertension, on CT scan there was acute parietooccipital right ischemic lesion, NIHSS-4; mRS-1
 2. Female, 63y, carotid TIA with left hemi paresthesia, hypothyroidisms.
 3. Female, 66y, carotid TIA (amaurosis fugax right, hemiparesthesia with left hemiparesis) hypertension.

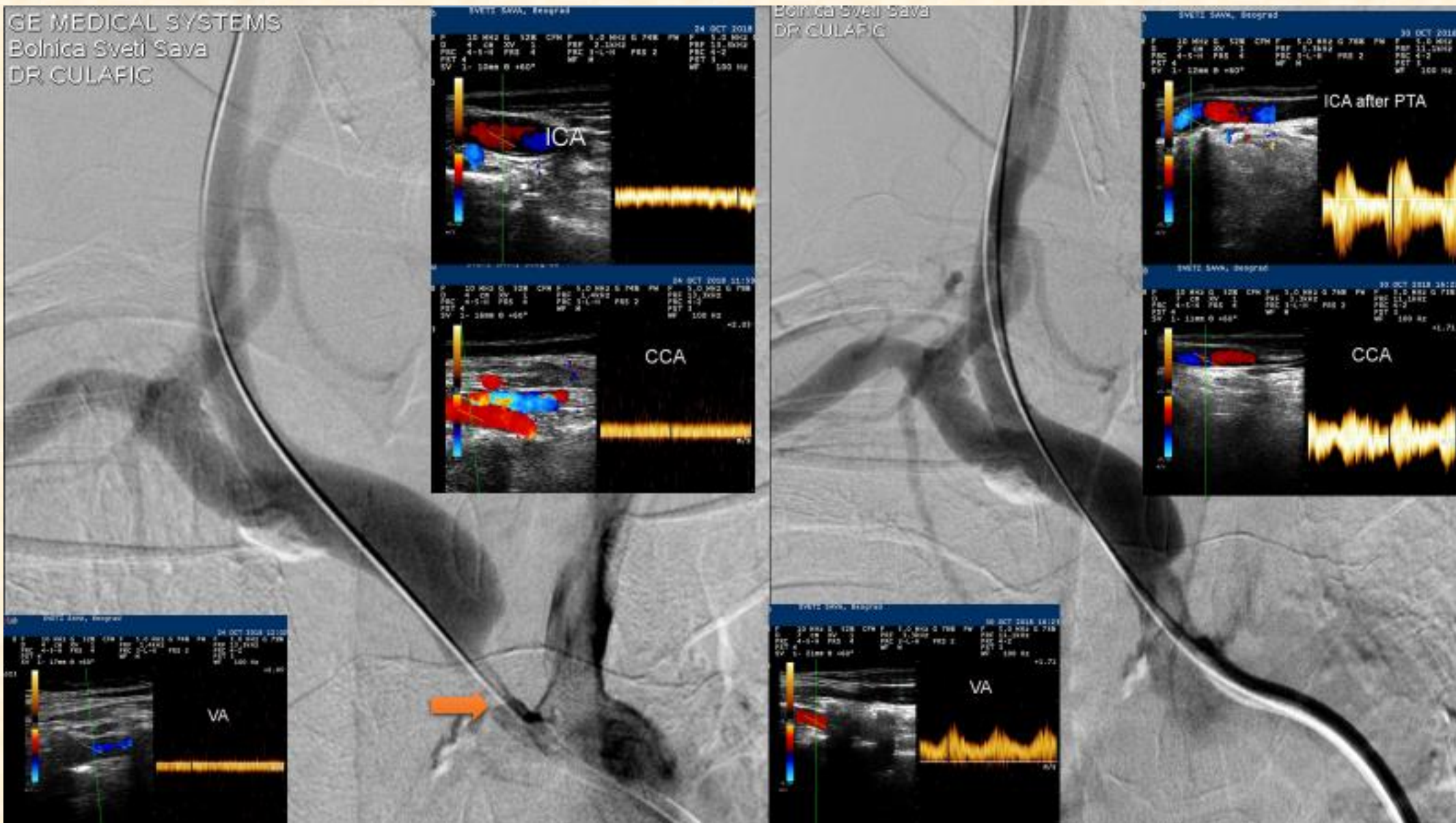


Figure 1. Picture of DSA and Duplex scan before and after PTA

RESULTS

Evaluation of the Doppler waveforms from the right common carotid, internal carotid and vertebral artery revealed that all patients had waveforms without systolic pick or diastolic deceleration (Fig.1, left side). Exploration Duplex scan of Truncus brachiocephalicus was very difficult to estimate the degree of stenosis. At all patients were found a turbulent flow. CTAs like MRA have confirmed the suspicion of high degree stenosis. DSA were performed and it showed similar result and it used for therapeutic approach. Immediately after PTA, a significant increase in systolic peak was recorded in all branches (Fig.1, right side).

CONCLUSIONS

In this case series, prevalent symptom of truncus brachiocephalicus stenosis are visual disturbances and left side hemiparesis. In order to that carotid TIA without significant sign of carotid arteries stenosis will required exploration truncus brachiocephalicus by Duplex scan falowed by angiography.

Duplex scan is a very important method in detecting significant stenosis of IA as well as monitoring the flow recovery after PTA. “Diastolic flow” should induce suspicion of the presence of significant innominate arteries stenosis.

REFERENCES

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