

## RIGHT SUPERIOR CEREBELLAR ARTERY OCCLUSION AFTER PTCA PROCEDURE : A CASE REPORT

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### Abstract

PTCA (Percutaneous Transluminal Coronary Angioplasty) is a useful technique for the treatment of coronary artery stenosis. The procedure has its recognized complications, especially thromboembolism. We present a case of 75 years old female, hypertensive with crossed signs. The clinical signs of cerebellar lesion was caused by occlusion of SCA which subsequently caused a cerebellar infarction. The infarction occurred after PTCA induced thromboembolism which interrupted the posterior circulation. The case report reiterates the complications of PTCA and warrants early recognition of such cases which could have benefited from intra-arterial thrombolysis (IAT) with possible endovascular neurointervention.

**Keywords:** PTCA, Cerebella Infarct, Crossed Signs, IAT, Neurointervention

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### Introduction

The function of cerebellum is fine coordination of movement. Three arteries supply blood to the cerebellum, the superior cerebellar artery(SCA), the anterior inferior cerebellar artery (AICA), and the posterior inferior cerebellar artery (PICA). SCA arises proximal to the termination of basilar artery and supplies the rostral part of cerebellar hemisphere and the superior vermis and the lateral part of rostral pons. Percutaneous Transluminal Coronary Angioplasty (PTCA) is a minimally invasive procedure that dilates an occluded coronary artery with a balloon (Coronary Angioplasty) and then a stent is placed to hold the artery open.<sup>1</sup>

Cerebellar damage results in loss of synergy of motor movement. Instead of causing weakness, cerebellar damage causes impaired muscle coordination, ataxia, intention tremor, dysmetria, or balance disorder. Without cerebellum, the movement will appear rough, uncoordinated and tremorous.<sup>2</sup>

### Case Illustration

A woman, 75 years old, consulted at internal medicine departement with the chief complain of persistent non rotatory dizziness. The onset was sudden and it was associated with nausea and episodes of vomiting, the dizziness got better when she slept on her right side. She also complained of having double vision. Patient was hypertensive and had coronary heart disease for 23 years. She was taking medicine regularly, prescribed by a cardiologist. One month ago the patient underwent a coronary angiography (difuse stenosis 80%-90%) and underwent PTCA. Three days post procedure sensation of spinning occurred which resolved spontaneously. Neurological examination revealed paresis of left III, IV and VI cranial nerves. There was right dysmetria and disdiadokokinesia. Dix Hallpike elicited left horizontal nystagmus.

## Discussion

The most common etiology of ischemic stroke is arteriosclerosis. Arteriosclerosis causes stenosis and occlusion of blood vessels, and is exaggerated by hypertension. This leads to a reduction in blood flow to tissues and causes cerebrovascular risk brought on by atherosclerosis, which is a specific form of arteriosclerosis caused by the buildup of fatty plaques, cholesterol and some other substances in and on the artery walls. Patient's age, diabetes melitus, increased BMI (Body Mass Index), hypertension and history of cerebrovascular disease have an independent correlation with ischemic stroke compared with haemorrhagic stroke.<sup>3</sup> In this case, patient has several risk factors, which are old age (73 years old), history of coronary heart disease, post PTCA and increased BMI of 25%.

PTCA is a minimally invasive procedure used to open an occluded blood vessel. The indications of PTCA are occlusion of blood vessel (over 75%), unresponsiveness to medical therapy or fulfilling one of these criteria- coronary heart disease, unstable angina, myocardial infarct with poor hemodynamics and heart valve anomaly. The contraindications of PTCA are patient with an occlusion of left main coronary artery which does not show any collateral flow to circumflex artery, stenosis in right coronary artery and aorta, proximal aneurysm or distal stenosis and dysfunction of left ventricle. The complications of PTCA are delayed side effect of iodinated contrast agent, arrhythmia, bleeding from puncture site, heart attack or stroke, infection on puncture site, renal failure and arterial rupture.<sup>4</sup>

SCA curves around the midbrain and gives off branches to the tegmentum. When the artery is occluded the symptoms of dysmetria, dysdiadochokinesia and intention tremors occur. The major territory of supply of the basilar artery are the pons, especially the basis pontis. The tegmentum of the pons has a rich, collateral supply of vessels but depends primarily on the SCAs. Occlusion of the basilar artery often causes ischemia of pontine base bilaterally, sometimes extending into the medial tegmentum on one or both sides. The cerebellar hemispheres are mostly nourished by the PICA, which is preserved when the basilar-artery clot does not extend to the distal basilar artery.<sup>5</sup>

Advances in neuroimaging techniques, especially the introduction of MRI (Magnetic Resonance Imaging), and CTA (CT Angiography) and MRA (MR Angiography), has now made it possible to safely investigate patients with posterior circulation ischemia and to identify the cause of the vascular lesion. Diffusion and perfusion-weighted MRI can also be helpful in identifying infarcts earlier than T2-weighted standard MRI scans. In this case, non contrast CT Scan of brain revealing hypodensity of mid vermian and right side of cerebellum in SCA territory is suggestive of SCA territory infarction (Fig:1).

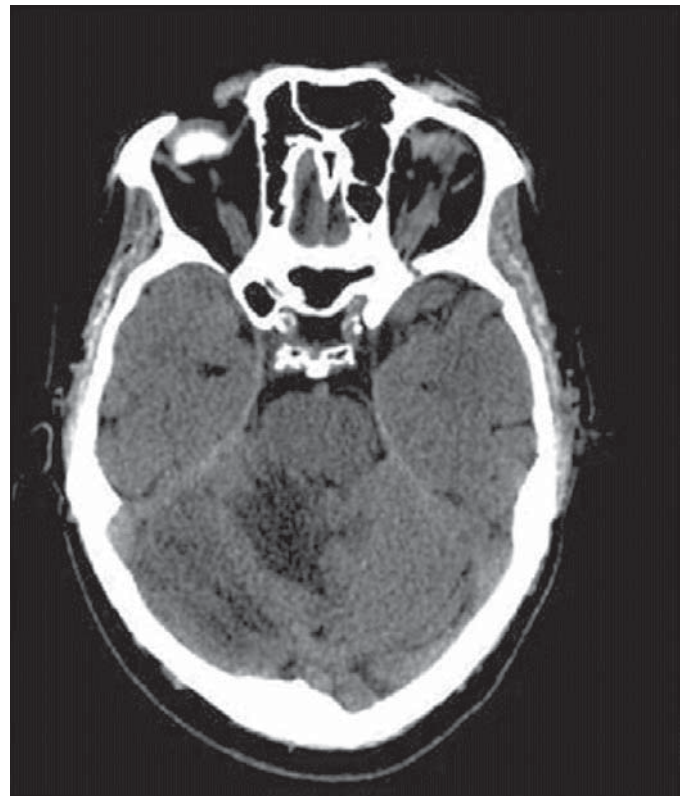


Fig:1- Hypodensity of mid vermian and right side of cerebellum in SCA territory.

CT is not as sensitive as MRI in imaging brainstem and cerebellar infarcts. CT is however, reliable in excluding primary brainstem and cerebellar hemorrhage, one of the differential diagnostic considerations. In patient with bilateral abnormalities of brainstem function, the principal differential is basilar-artery obstruction and obliteration of basilar branches bilaterally, despite a patent basilar artery. This distinction can usually be made by vascular imaging tests, CTA, MRA, and catheter angiography.<sup>6</sup> The lack of a history of prior stroke and the presence of

crossed (bilateral) signs made it highly probable that the lesion involved the posterior circulation;basilar artery.<sup>5</sup> She had persistent neurologic signs for more than 72 hours, so she was not a candidate for thrombolysis. If she would have presented within 24 hours, she would have been considered to have a catheter angiography followed by intra arterial thrombolysis and possible neurointervention.

## Conclusions

Lesions in cerebellum would likely cause coordination disturbances, in this case there are cerebellar signs of central vertigo, right hand dysmetria, horizontal nystagmus, paresis of the left III, IV, and VI cranial nerves. The cerebellar lesion was caused by occlusion in SCA probably secondary to thromboembolism post PTCA. The infarction was accompanied by widespread edema, which is one of the complications of PTCA; causing stroke. Early recognition of posterior circulation stroke could have benefited from intra-arterial thrombolysis (IAT) with possible endovascular neurointervention.

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