POSTERIOR CIRCULATION STROKE INVOLVING MULTIPLE ARTERIAL TERRITORIES
- A CASE REPORT

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Abstract:
We report a case of an elderly man with posterior circulation stroke involving multiple arterial territories within the posterior circulation. Patient presented with clinical features of sudden onset multiple cranial nerve palsies with cerebellar signs on right side. MRI Brain showed infarcts in right AICA-anterior inferior cerebellar artery territory and bilateral PCA-posterior cerebral artery territories.

Keyword: Posterior circulation stroke, Multiple brain infarcts, AICA

INTRODUCTION:
Posterior circulation stroke accounts for about 20% of all strokes. Posterior circulation includes vertebral arteries, basilar artery, posterior cerebral arteries and their branches. It supplies brainstem, cerebellum, thalamus, medial temporal and occipital lobes. Occlusion of each vessel produces its own distinctive syndrome. Here, we report a case of posterior circulation stroke which involved multiple vascular territories.

CASE REPORT:
Sixty five year old man was admitted to our ward with sudden onset vertigo and recurrent episodes of vomiting followed by unsteadiness of gait, hard of hearing & tinnitus in right ear and difficulty in speech. He also had history of bumping into objects on right side. He was a known hypertensive for past two years on irregular treatment. He was not a smoker or alcoholic.

His general examination was normal. All his peripheral pulses and both carotids were felt equally. His blood pressure was elevated. On examination of central nervous system, there was lower motor neuron type facial palsy on right side, loss of pain and temperature sensations on right side of face, sensorineural hearing loss on right side. He also had cerebellar signs on right side and right homonymous hemianopia.

MRI BRAIN - RIGHT AICA TERRITORY INFARCT -
Infarcts in the right dorsolateral pons, middle cerebellar peduncle and right cerebellum. MRI Brain showed multiple acute ischemic infarcts in the right AICA territory and bilateral PCA territories with left more than the right. MR Angiogram of the intracranial vessels showed no flow within bilateral vertebral arteries and proximal part of basilar artery. Distal part of basilar artery and posterior cerebral arteries were reformed by collaterals.

His hemogram, coagulation profile, HIV, blood sugar, serum electrolytes, renal function and liver function tests were normal. Lipid profile showed elevated triglycerides and cholesterol. Audiometry showed marked sensorineural hearing loss on right side. Chest X-ray and ECG were normal. Echocardiography showed concentric LVH.

Patient was given Inj. LMW Heparin 0.2ml s.c od for seven days along with antiplatelets and statins. He made good recovery in facial paralysis and ataxia but deafness remained the same. Carotid and vertebral doppler done after one week showed no stenosis or occlusion. It showed age related wall thickness in both the carotids and antegrade flow in the vertebral arteries. MRA of the neck done after one month showed reformed vertebral arteries and basilar artery.
RIGHT CEREBELLAR INfarct

MRA of brain showing no flow within bilateral vertebral arteries and proximal part of basilar artery

BILATERAL OCCIPITAL INfarcts with left larger than the right

MRA of neck showing reformed vertebral arteries and basilar artery

DISCUSSION

Multiple infarcts occur in about 10% of patients with acute posterior circulation stroke. To describe the location of infarcts, posterior circulation is divided into proximal, middle, and distal territories. Proximal territory includes medulla and cerebellum supplied by vertebral arteries and posterior inferior cerebellar artery. Middle territory includes pons and cerebellum supplied by proximal part of basilar artery and anterior inferior cerebellar artery. Distal territory includes midbrain, thalamus, medial temporal & occipital lobes and cerebellum supplied by rostral basilar artery, superior cerebellar artery and posterior cerebral arteries.

Our patient had multiple infarcts in middle and distal territories involving right anterior inferior cerebellar artery and bilateral posterior cerebral arteries. In our hospital, most common location of infarcts in posterior circulation stroke patients were among the territories of posterior inferior cerebellar artery or posterior cerebral artery. Involvement of anterior inferior cerebellar artery territory is a rare entity.

Symptoms of AICA infarct include vertigo, vomiting, tinnitus, dysarthria and unsteadiness of gait. Signs include ipsilateral facial palsy, hearing loss, trigeminal sensory loss, Horner's syndrome and contralateral temperature & pain sensory loss over limbs and trunk. Our patient had most of the features of AICA infarct. Left occipital lobe infarct was larger than the right which manifested as right homonymous hemianopia in our patient.

Different patterns of infarction are associated with different vascular pathologies and stroke mechanisms. Embolism and thrombosis account for middle plus territory (middle+proximal or middle+distal or middle+proximal+distal) infarcts. Embolism is the predominant stroke mechanism for proximal and distal territory infarcts. Probable cause for stroke in our patient could be embolism and the identified risk factors were hypertension and hyperlipidemia.

CONCLUSION:

Our case was reported to highlight the entity of posterior circulation stroke involving multiple arterial territories within the posterior circulation. In such cases of posterior circulation stroke with multiple arterial involvement, identifying the pattern of infarction provides clue to stroke mechanisms and guides therapeutic options in acute stroke.

REFERENCES:


