ANTERIOR INFERIOR CEREBELLAR ARTERY INFARCT PRESENTING AS UNILATERAL DEAFNESS IN A YOUNG PATIENT

ABSTRACT

Acute ischemic stroke in the supply of the anterior inferior cerebellar artery is known to be connected with facial weakness, nystagmus, hearing loss, hypalgesia, and ataxia. This is a case of a young man with unilateral deafness caused due to infarction of anterior inferior cerebellar artery. Clinical findings and audiometry showed evidence suggestive of cochlear localization for deafness. MRI (Magnetic resonance imaging) Brain shows involvement of pons with infarct is seen in the right Anterior inferior cerebellar artery (AICA) territory. The inclusion of labyrinthine auditory artery suggests sensorineural hearing loss.

KEY WORDS: Cerebellar Artery; Unilateral Deafness; MRI

INTRODUCTION

Generally in patients, unilateral, sudden deafness causes are not known and is often thought to occur due to some viral infection or autoimmune in origin. However, in elderly people with known history of cerebrovascular disease sudden loss of hearing is mostly due to ischaemia in the labyrinthine artery territory, which is a branch of anterior inferior cerebellar artery (AICA). In here we present a case of single sided loss of hearing in a patient with AICA infarct.

CASE REPORT

A thirty-nine-year-old male patient who is a heavy smoker was hospitalized with vertigo which was insidious, along with deafness in right side with unstable gait. On examination patient was conscious and his blood pressure and pulse were normal. Patient had lower motor neuron (LMN) type facial palsy with right sided sensori-neural deafness and also showed cerebellar signs on right side. No other neurological deficits are seen. MRI Brain shows involvement of pons with infarct is seen in the right AICA territory. (Figure 1 and 2). Magnetic resonance angiography shows that no abnormality in cranial vessels. Hemogram, coagulation profile, glucose level, lipid panel, liver function tests and kidney function tests were normal. Patient was screened for sexually transmitted diseases and rheumatological factors and all were found to be negative. Radiological investigations and cardiac monitoring were done for the patient and showed no abnormalities. Audiometric test showed good

speech distinction with moderate sensori-neural deafness. Patient was prescribed aspirin and One month after which he showed good recovery in LMN facial palsy and coordination of muscle movements which are voluntary but the unilateral deafness did not recover.

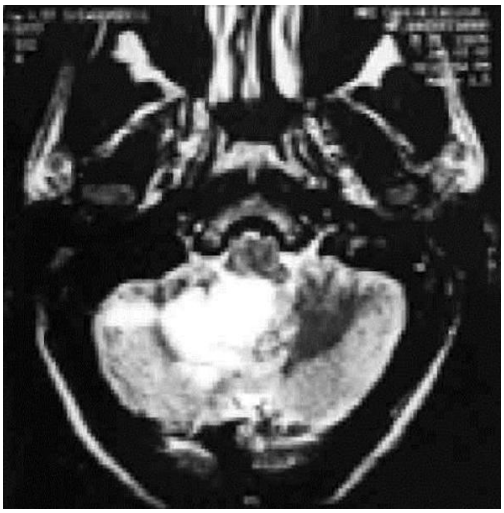

Figure 1: MRI brain showing infract in the right cerebellum in the AICA territory

Figure 2: MRI brain showing infract involving pons

Discussion and Conclusion

In 75% of the population, Basilar artery gives off Anterior Inferior Cerebellar artery from its caudal site, sometimes may be from the central region, rarely from its below limit, and is not seen in less than 5% of population. Dueto its small size, in cerebellumonly certain area of the anterior and medial side is supplied by the AICA. Proximal branches of the Anterior Inferior Cerebellar artery supply the pons except its medial part, including spinal trigeminal nuclei, 7th &8th crainal nerve nuclei, & ventrolateral system.

In most cases all AICA occlusions are atherothrombotic. In our case cause of the stroke could not be identified.MR angiogram showed no evidence for vertebrobasilar dissection. No sources of embolus were revealed in Trans-oesophageal echocardiography. Smoking was the only risk factor. Vertigo, vomiting, tinnitus and dysarthria are the symptoms of AICA infarct.

Ipsilateral facial nerve palsy, deafness, trigeminal nerve sensory loss, Horner Bernard syndrome, appendicular ataxia, and contralateral temperature and pain loss of sensation over the extremities and sternum are soe of the signs. Occlusion in anterior cerebral inferior artery is often misapprehended as lateral side medullary infarction. Other common complaints such as facial nerve palsy, loss of hearing, ringing in the ear and loss of sensation over the face are in favour of the former.

In vertebrobasilar occlusive disease hearing difficulty is not a common complaint[4]. Roquer et al described that in fifteen patients with anterior cerebellar inferior artery stroke out of which six had deafness. Whereas in Ameranco's series, among the thirteen patients with cerebellar infarction involved only territory of the anterior cerebeller inferiorartery, three people had loss of hearing.In AICA infarcts there are also many incidences of even deafness in both ears. In India there are no case of infarction of anterior inferior cerebellar artery with loss of hearing has been recorded.

In 83% individual’s labyrinthine artery rises from the anterior cerebellar inferior artery. Hence AICA is called the cerebellolabyrinthine artery. The labyrinthine type syndrome that occurs following the infarction in the territory of AICA could be clarified by different lesions. IAA occlusion, Vestibular nuclei involvement in the pontine tegmentum. In lateral pontine area, participation of the fibres of the vestibulocochlear nerve. Floccular lobe participation. Loss of hearingoccurs mainly due to the cochlear nuclear involvement at the pontomedullary junction, or due to the lateral lemniscus and the eighth nerve intraaxial fibres.2 Inner ear is particularly damaged in vertebrobasilar ischaemia because inner ear anatomy require higher energy requirements and also it does not receive enough blood supply from their collaterals.In few special cases, the labyrinth of the ear receive the entire supply of blood from labyrinthine artery and labyrinthine artery supplied by AICA

In central lesionspure tone type of hearing loss even in last stages are atypical. In this case pure tone audiometry showed persistent deafnes in one ear, but the ability to control voluntary movements essentially improved and the facial nerve palsy also

resolvedremarkably. The audiometric testoutcome and symptomatic improvement of the signs point the cause of loss of hearing towards the inner ear lesion. More over in audiometry, cochlear involvement was advocated by comparitively preserved speech discrimination.

Ethical Approval:

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

Consent

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

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