

# Neurovascular conflict of abducent nerve

Sixth cranial nerve palsy can occur due to pathology involving any of the five sections along its course from the dorsal pons to the lateral rectus muscle within the orbit. Of all the cranial nerves it has the longest intracranial course. Although pathologies such as hemorrhage, meningitis, inflammation, and infiltration with tumors have been reported to affect cisternal portion of the sixth nerve. Neurovascular conflict causing abducens palsy is relatively rare.<sup>[1]</sup> Ischemic mononeuropathy due to atherosclerotic risk factors such as older age, diabetes mellitus, hypertension, and hyperlipidemia is considered the most likely etiology of isolated sixth nerve palsy, but it does not exclude a structural cause which needs detailed imaging.<sup>[2]</sup> In this issue, Arishima and Kikuta describe microvascular conflict by the dolichoectatic vertebrobasilar system as the cause of isolated abducens palsy.<sup>[3]</sup> The authors should be commended for their observation and detailed imaging to find out vertebrobasilar dolichoectasia as the cause of the sixth nerve palsy though their patient had the risk factors for ischemic mononeuropathy such as hypertension, hyperlipidemia, and ischemic heart disease.

There are no uniform diagnostic criteria for vertebrobasilar dolichoectasia but basilar artery length  $>29.5$  mm or lateral deviation  $>10$  mm perpendicular to a straight line joining the basilar artery origin to its bifurcation on magnetic resonance angiography is abnormal and a vertebral artery length  $>23.5$  mm and deviation  $>10$  mm perpendicular to a straight line joining its intracranial entry point to the basilar artery origin is considered abnormal.<sup>[4]</sup> Vertebrobasilar dolichoectasia (VBD) is reported to cause ischemic stroke, brain stem and cranial nerve compression,<sup>[5]</sup> hydrocephalus,<sup>[6]</sup> and cerebral hemorrhage. In their review of literature, the authors have included cases where the conclusive evidence of VBD was not present<sup>[7,8]</sup> and these patients had recurrent symptoms and neurovascular conflict was not clearly evident.

Although cases of neurovascular conflict have been more commonly reported in middle-aged, there is no reason for the authors to speculate that old

age may not result in symptomatic neurovascular conflict. Like in any other neurovascular conflict thorough investigation to rule out other causes of neurological deficit is mandatory and a period of medical management is advised as some cases may recover spontaneously. There is no doubt that the high-resolution magnetic resonance imaging with Constructive Interference in Steady State, and Fast Imaging Employing Steady-state Acquisition sequence will act as a major imaging armamentarium for clinicians in diagnosing neuropathic strabismus. It is reported that approximately 94% of patients with sixth nerve palsy due to unknown etiology improve by 24 weeks.<sup>[9]</sup> If the patient does not have a high risk of ischemic mononeuropathy and neurovascular conflict is evident, surgical treatment should be considered after a sufficient period of medical management.

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