

TOPICAL REVIEW

Clinical manifestations of vertebrobasilar dolichoectasia

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Abstract: Vertebrobasilar dolichoectasia is defined as an increase in the length and diameter of the intracranial arteries. Clinical manifestations of dolichoectasiae result from compression of the cranial nerves and structures of the brain stem, turbulent flow causing tinnitus and vertigo, often with damages of small blood vessels of the brain. Dolichoectasia is an ischemic stroke risk factor. The role of dolichoectasia in occurrence of haemorrhagic stroke, aneurysm and arterial dissection and thrombosis is still not fully understood (*Ref. 34*). Full Text (Free, PDF) www.bmj.sk.

Key words: vertebrobasilar dolichoectasia, compression.

Intracranial arterial dolichoectasia is defined as an increase in the length and diameter of the intracranial arteries. The incidence of intracranial dolichoectasia ranges from 0.06 to 5.8 % (1–3). Intracranial dolichoectasia was associated with vascular risk factors such as age, male sex, hypertension, previous history of myocardial infarction, and lacunar infarction, but not with carotid atherosclerosis (4). But, the disease has also been described in older patients without atherosclerotic vascular changes suggesting a multifactorial etiology (5). The authors found that the histological features of dolichoectasia are early fragmentation of the internal elastic lamina, intimal hyperplasia and intramural hemorrhage (3, 6). Blood flow within the dilated arteries is orthograde and retrograde flow within the same arterial segment. The above described creates significant obstacles to circulation and leads to thrombus creation (7). Clinically significant is the vertebrobasilar dolichoectasia. This is a widening of the entrance of the vertebral artery into the basilar artery. Vertebrobasilar dolichoectasia is an anomaly which has been well-known since the earliest days of clinical neurology. Although conventional intra-arterial digital subtraction angiography remains the gold standard method for imaging the vertebral artery, non-invasive modalities such as ultrasound, multislice computed tomographic angiography and magnetic resonance angiography are constantly improving and are playing an increasingly important role in diagnosing vertebrobasilar pathology in clinical practice. Magnetic resonance of the brain is the method of choice in diag-

nosing vertebrobasilar dolichoectasia (8–12). The clinical features are very varied and may be asymptomatic. Sometimes the clinical findings are due to compression of adjacent structures. We show clinical manifestations of vertebrobasilar dolichoectasia presented so far in the literature.

Discussion

The most frequently diagnosed complication of vertebrobasilar dolichoectasia is the compression of structures adjacent to the vertebral and basilar arteries. Vertebrobasilar dolichoectasia presents as lower cranial nerve palsy. Dysfunction of one of the ocular motor cranial nerves due to vertebrobasilar dolichoectasia is very rare, the literature described isolated IVth (trochlear) nerve palsy (14), isolated VIth (abducens) nerve palsy (15, 16). Vertebrobasilar dolichoectasia may rarely cause compression of the optic tract and progressive visual loss, and very rarely downbeat nystagmus (17, 18). Vertebrobasilar dolichoectasia can very rarely cause trigeminal neuralgia but can be very successfully treated with microvascular surgeries (19, 20). Hemifacial spasm caused by vertebrobasilar dolichoectasia registered symptom (11, 21, 22). Very rarely dolichoectasia is tic douloureux (23). Hafeez et al established that vertebrobasilar dolichoectasia is a very significant cause of pulsating tinnitus (24). Vertigo and recurrent vertigo are caused by compression of the brain stem, widening of the basilar artery, including widening of dolichoectasia, making a possible cause of the vertigo (25, 26). Researche of the intracranial arterial dolichoectasia shows much more frequent occurrence of small-vessel disease in stroke patients. The small-vessel disease damages are dominated by multilacunar infarction, leukoarariosis and état criblé (27). Studies made by several authors suggest that vertebrobasilar dolichoectasia may be an independent risk factor for stroke. That cases had an increased likelihood for posterior circulation dysfunction, all cause mor-

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tality, and reduced cumulative survival independent of other vascular risk factors in this cohort (28–30). Intracranial bleeding in patients with vertebrobasilar dolichoectasia is not as uncommon as usually believed. Its occurrence is associated with the degree of ectasia and elongation of the basilar artery and may be favoured by hypertension and use of antiplatelet or anticoagulant agents (31). Described are only particular cases of dolichoectasia accompanied with saccular aneurysm (32), partial thrombosis (33) and spontaneous dissection (34).

Conclusion, vertebrobasilar dolichoectasia causes various clinical manifestations: by compression of the surrounding structures of the brain-stem (n. trochleari, n. abducens, n. facialis, n. trigeminus, optic tract etc.), but also by turbulent – orthograde and anterograde blood flow (vertigo, tinnitus), but also by specific changes of blood vessels, especially small blood vessels. Dolichoectasia is an ischemic stroke risk factor, and could also have a significant impact on aneurysm and dissection occurrence, as well as greater leaning to thrombosis. Further research on the importance of dolichoectasia in hemorrhagic stroke, aneurysm and arterial dissection as well as partial and total thrombosis occurrence is required.

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