

stenoses. Accordingly, it is reasonable to adopt the same BMT recommendations as for ACS patients (section 3.1).

11.2. Screening for asymptomatic vertebral artery disease

No RCTs have evaluated VA screening. Accordingly, it is reasonable to adopt the same strategy as for ACS (section 3.2).

11.3. Interventions for asymptomatic vertebral artery disease

Within a cohort of 3 717 patients with atherosclerotic disease in the SMART Registry, 7.6% had an asymptomatic VA stenosis > 50%, in whom the annual stroke risk was only 0.2%.⁶⁰⁰

Recommendation 125			Unchanged
For patients with asymptomatic vertebral artery atherosclerotic lesions, open or endovascular interventions are not recommended.			
Class	Level	References	ToE
III	C	Compter <i>et al.</i> (2011) ⁶⁰⁰	

12. MANAGEMENT OF SYMPTOMATIC VERTEBRAL ARTERY DISEASE

12.1. Aetiology of vertebrobasilar stroke

About 20% of ischaemic strokes are VB, mostly due to cardioembolism, LAA, and small vessel disease.⁶⁰¹ Atherosclerosis of VAs or basilar arteries (BA) accounts for 20–25% of VB strokes. Stenoses mainly occur at the VA origin but can affect distal or intracranial VAs and BAs. Intracranial stenoses are more common with sub-Saharan or East-Asian ethnic origins. A haemodynamic aetiology was thought to be the most common cause of VB symptoms. However, in a prospective registry, only 13/407 patients (3%) had symptoms due to haemodynamic ischaemia and this was most commonly seen in patients with bilateral intracranial VA disease.⁶⁰² Cardiac embolism (usually AF) accounted for 25% of strokes/TIAs, with 25% being due to disease of small penetrating arteries arising from the intracranial VA, BA, and PCA arteries, causing lacunar stroke.⁶⁰² Thromboembolism was the main cause of symptoms with VA stenoses.

12.2. Symptoms attributable to vertebral artery disease

Being recently symptomatic refers to VB symptoms in the preceding six months (Table 13, section 4.1). In a series of VB strokes, common symptoms included dizziness (47%), unilateral limb weakness (41%), dysarthria (31%), headache (28%), and nausea/vomiting in (27%).⁶⁰³

12.3. Imaging strategies in vertebral artery disease

DSA has been replaced by CEMRA/CTA due to angiogram related stroke. CEMRA/CTA can image the entire VB system, enabling simultaneous detection of extra- and

intracranial stenoses. In a systematic review and meta-analysis (11 observational studies) which measured VA stenoses as 50–99%, sensitivity was 100% for CTA (95% CI 15.8 – 100), 94% for CEMRA (95% CI 79.8 – 99.3) and 70% for DUS (95% CI 54.2 – 83.3). Specificities for CTA were 95% (95% CI 83.8 – 99.4), 95% for CEMRA (95% CI 91.1 – 97.3), and 98% for DUS (95% CI 95.2 – 99.1).⁶⁰⁴ The proximal VA can be visualised on DUS, but not the distal VA, so the likelihood of distal VA disease must be inferred from waveform abnormalities.⁶⁰⁵ DUS can estimate VA size and flow direction and may differentiate between hypoplasia, stenosis, occlusion and aplasia.^{605,606} It can also diagnose subclavian steal syndrome with pre-steal (transient midsystolic flow deceleration), partial steal (flow reversal during systole), and complete steal (retrograde flow throughout cardiac cycle). For detecting VB infarcts, MRI is more sensitive than CT,⁶⁰⁷ reflecting higher spatial resolution, especially with small infarcts in the brainstem. DWI-MRI is the most sensitive method for detecting acute ischaemia and may be positive for approximately two weeks after symptom onset.

Recommendation 126			Unchanged
For patients with suspected vertebrobasilar ischaemia, computed tomographic angiography or contrast enhanced magnetic resonance angiography is recommended as the first line vascular imaging modality.			
Class	Level	References	ToE
I	B	Khan <i>et al.</i> (2007) ⁶⁰⁴ , Davis <i>et al.</i> (1986) ⁶⁰⁶	

12.4. Optimal medical therapy

No RCTs have evaluated APRx, statin, or antihypertensive therapy in symptomatic VA stenosis patients. It is reasonable to adopt the same recommendations as for SCS patients (section 4.2).

12.5. Role of vertebral revascularisation in positional vertigo

A diagnosis of positional VB ischaemia is often assumed in patients with dizziness or vertigo during neck movement. However, the syndrome is overdiagnosed, usually without further investigation. A systematic review reported no changes in VA or PCA flow in seven series, while 13 described varying changes (reversal, occlusion, reduced flow).⁶⁰⁸ In a study involving 46 patients with a TCD window who presented with dizziness or vertigo on head movement, none had changes in extracranial VA flow during head movement, none had reversal of VA flow and there were no changes in PCA flow (directionality or flow velocities) during head turning.⁶⁰⁹ Most symptoms relating to head/neck movement have other causes, including benign paroxysmal positional vertigo, vestibular neuritis, and (occasionally) exacerbation of vertigo associated with migraine.⁶¹⁰ In a