

The Vertebral Artery in the Vascular Lab: What Does It Mean?

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Disclosures

- None



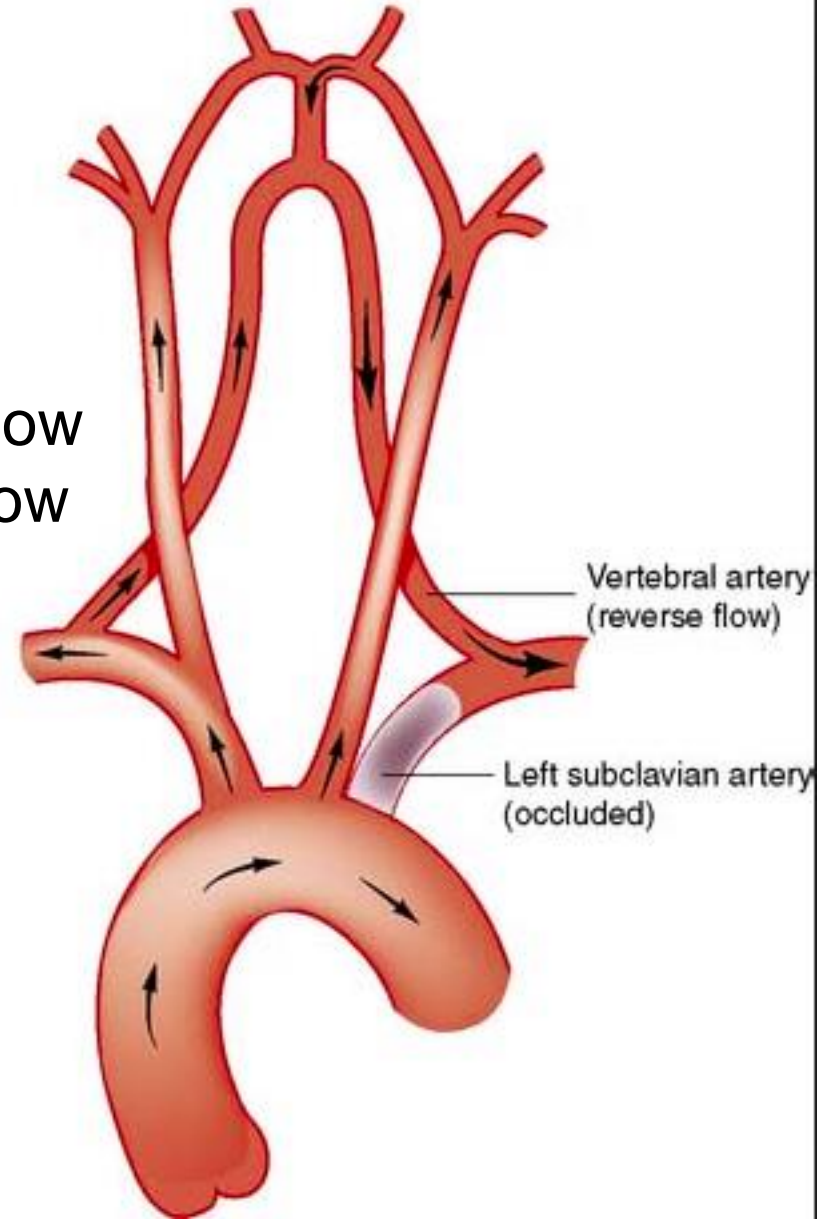
Subclavian Steal

Occlusion of proximal Subclavian Art
Vertebral artery supplies retrograde flow
Posterior brain receives decreased flow

55 years +

Men > Women more than 2:1

LSA affected 3x more than RSA



Subclavian Steal

Causes:

- Arteriosclerosis of subclavian artery (>95% cases)
- Embolism
- Takayasu's Arteritis
- Dissecting Aneurysm

Risk Factors: (similar to CAD)

- Smoking
- Hypertension
- Hyperlipidemia
- Hypertension

Symptoms of Subclavian Steal

Vertebrobasilar Insufficiency (posterior circulation symptoms)

Light headedness or dizziness

Ataxia or Vertigo

Visual Disturbance

Headache

Syncope

Confusion

Symptoms of Subclavian Steal

Subclavian Insufficiency

Arm weakness, coldness

Numbness or “tingling”

Arm Claudication with exercise

Symptoms can be exacerbated with:

Vigorous exercise

Sudden turning of head to affected side

Signs of Subclavian Steal

Diminished pulses (radial/ulnar)

Discrepant blood pressures in upper extremities (>20mmHg) (Pitfall with bilateral disease)

Subclavian Bruit

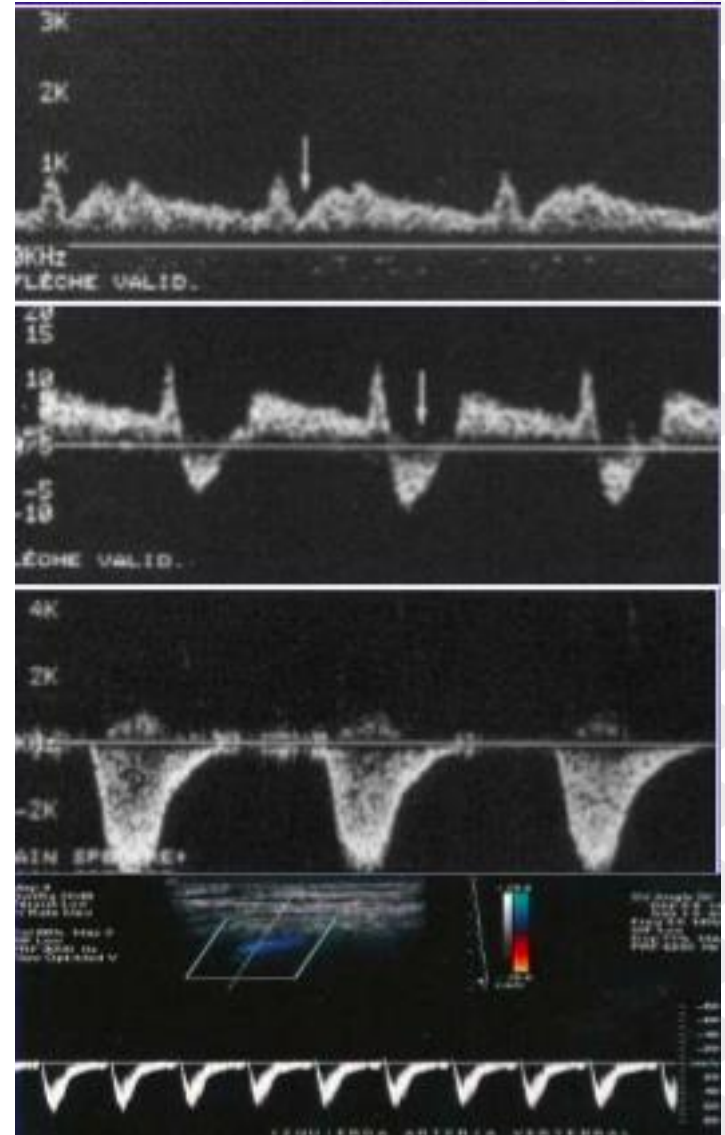
Subclavian steal on Duplex Exam

Incomplete steal

- Striking deceleration of velocity in mid or late systole
- High grade stenosis of subclavian rather than occlusion

Complete Steal

- Complete reversal of flow within the vertebral artery



Vertebral Retrograde Flow

- Reversal of flow in the vertebral artery is a common finding identified on cerebrovascular duplex ultrasound.
- The clinical significance and natural history of patients presenting with this finding, however, is poorly understood.

Vertebral Retrograde Flow



Methods

- Objective: to better characterize the symptomatology and outcomes of patients presenting with reversal of flow in the vertebral artery
- A retrospective review was performed of all cerebrovascular duplex studies performed at our institution between January 2010 and January 2016.
- Individuals with reversal of flow in one or both vertebral arteries were included in the analysis.

Methods

- A retrospective review was performed of all cerebrovascular duplex studies performed at our institution between January 2010 and January 2016.
- Individuals with reversal of flow in one or both vertebral arteries were included in the analysis.
- A total of 74 patients were included in the study
- Mean duration of follow-up was 28 ± 22 months

Demographics

Variable	Statistic (N=74)
Mean age at diagnosis (years)	71 (range 27-92)
Male gender, no. (%)	37 (50)
Hypertension, no. (%)	58 (83)
Hyperlipidemia, no. (%)	40 (57)
Diabetes mellitus, no. (%)	21 (30)
Tobacco use, no. (%)	
Current	8 (11)
Former	41 (59)
Never	25 (30)
History of CAD, no. (%)	35 (50)
History of PAD, no. (%)	28 (40)
History of TIA/CVA, no. (%)	15 (21)

Anterior Circulation

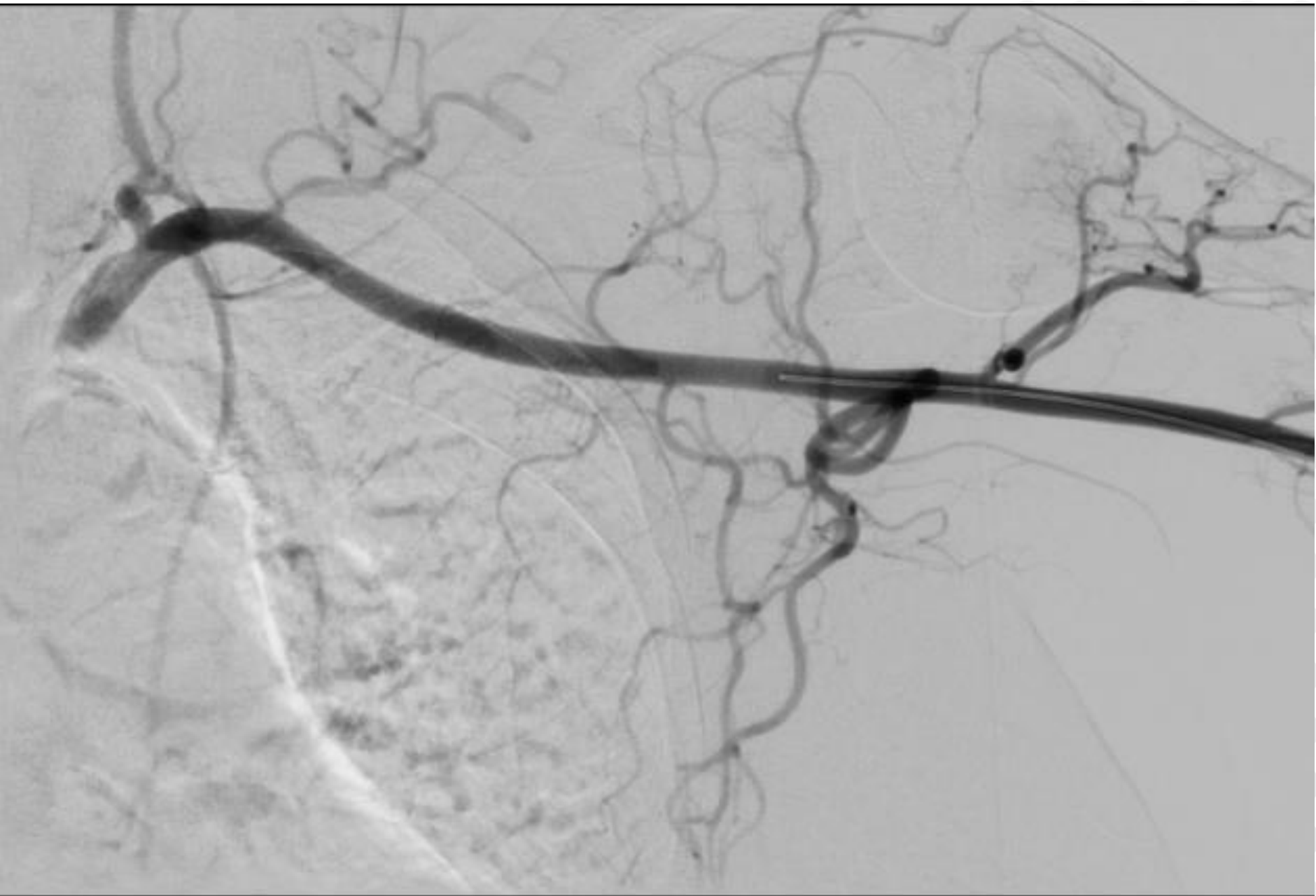
- 21 patients (28%) had evidence of a prior unilateral or bilateral carotid intervention (carotid endarterectomy (CEA) or carotid stent placement (CAS))
- 21 patients had evidence of moderate carotid stenosis (50-79%) in at least one carotid artery
- 12 patients (16%) had evidence of severe carotid stenosis (>80%) in at least one carotid artery.

Table 2: Indication for Study

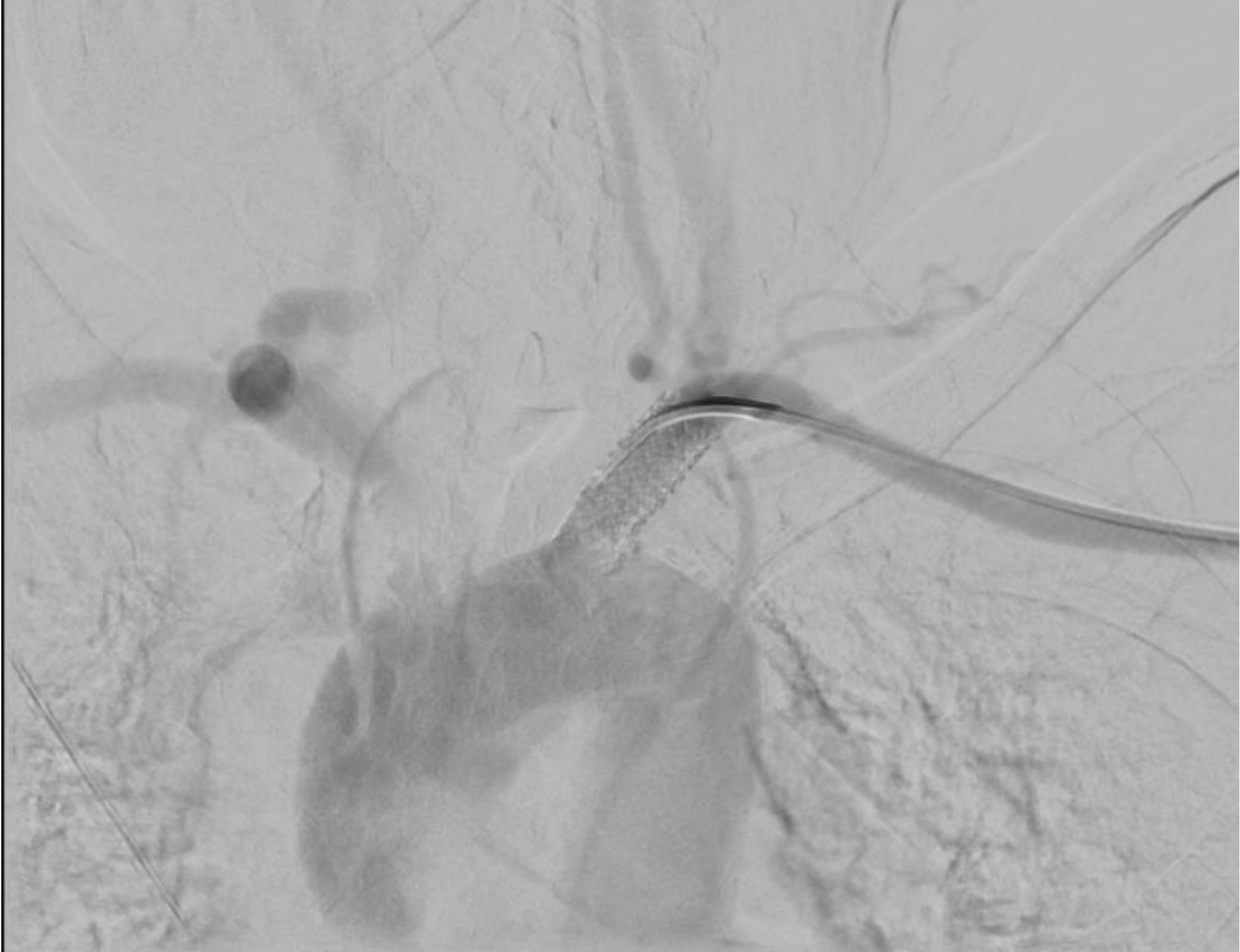
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Asymptomatic/Screening	44%	(32)
Anterior circulation symptoms	7%	(6)
Posterior circulation symptoms	21%	(13)
Follow-up after cerebrovascular intervention	29%	(21)
Isolated upper extremity symptoms	6%	(4)

Interventions performed on patients presenting with vertebral artery flow reversal and posterior circulation symptoms

Intervention	Number of patients (N=15)
Subclavian artery stenting	3
Subclavian artery balloon angioplasty	1
Axillary-axillary arterial bypass	1
Awaiting intervention	5
Too high risk for surgical intervention	1
No intervention needed, patient diagnosed with Meniere's disease	1







59 patients *without* Symptoms related to Posterior Circulation

- Remained asymptomatic
- One patient progressed to vertebral artery occlusion
- Six patients had progression of their carotid disease during this interval.

