Neuroanatomy of a Stroke

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• No disclosures
• Stroke case presentations
  – Review signs and symptoms
  – Review pertinent exam findings
  – Identify the neuroanatomy of the stroke
  – Identify the vascular territory
  – Discuss likely etiology
Case 1

- 75 yr old female presents to the ER with trouble speaking and rt face, arm and leg weakness

- Exam
  - BP= 160/90 HR= 90 irregularly irregular
  - Expressive aphasia
  - Left gaze preference
  - Right homonymous hemianopia
  - Right hemiparesis/hemianesthesia
Left MCA Occlusion
Etiology

- Embolic stroke
- EKG: atrial fibrillation
- Likely etiology is cardiac embolus secondary to atrial fibrillation
- Treatment: long term anticoagulation
Case 2

• 70 yr old male with a history of HTN and DM presents with the following symptoms:
  – Vertigo
  – Veers to rt on walking
  – Nausea and vomiting
  – Numbness rt cheek
Lateral Medullary Syndrome

• Symptoms
  – Ataxia
  – Numbness
  – Dysphagia
  – Vertigo
  – Nausea/Vomiting
  – Dysarthria
  – Diplopia or blurred vision
  – Hoarseness
  – Facial Pain
  – Hiccups
Lateral Medullary Syndrome

• Neurologic Findings
  – Pain and temperature hypesthesia (contralateral limbs)
  – Horner’s syndrome (sympathetic tract)
  – Gait and limb ataxia
  – Facial hypesthesia (ipsilateral)
  – Nystagmus
  – Pharyngeal and vocal cord paralysis
Etiology

• Most frequent arterial lesion is occlusion of the vertebral artery
  – \( \frac{3}{4} \) are thrombotic and remainder cardioembolic
  – Rarely is the lesion confined only to the PICA
  – In young patients with headache vertebral artery dissection may be the cause
Case 3

- 85 yr old male with HTN presents with face, arm and leg weakness;
- Exam significant for rt facial weakness and 0/5 strength in the rt arm and leg
Lacunar Strokes

- Infarct caused by the occlusion of a single penetrating artery
- Lacunar infarcts are less than 15 mm in diameter
Clinical Lacunar Syndromes

• Pure Motor Hemiparesis
• Pure Sensory Hemiparesis
• Mixed motor/sensory
• Dysarthria clumsy hand syndrome
• Ataxic Hemiparesis
Case 4

- 70 yr old male with DM presents with complaints of double vision and weakness on the rt face, arm and leg
- Exam shows left third nerve palsy and rt face, arm and leg weakness
Oculomotor Nerve

• Clinical signs of CN III injury are:
  – Ptosis (drooping upper eyelid) – due to paralysis of the levator palpabrae superioris
  – Eyeball resting in the down and out position – due to the paralysis of the superior, inferior and medical rectus and the inferior oblique. The patient is unable to elevate, depress or adduct the eye.
  – Dilated pupil – due to the unopposed action of the dilator pupillae muscle
Weber Syndrome

- Ipsilateral third nerve palsy and crossed hemiplegia
- Likely to be due to occlusion of the posterior cerebral artery at the P1 segment
Case courtesy of A.Prof Frank Gaillard, Radiopaedia.org, rID: 2665
Case 5

- A 78 yr old male began having episodes of rt arm numbness, decreased coordination and weakness lasting 5 min. and self resolved
- He was diagnosed with TIAs and started on aspirin
- Work up was reported as normal
- Spells stopped but had a slowly progressive cognitive decline
- He presented to the ER two years later with several days of increased confusion and walking into walls
Cerebral Microhemorrhages
Cerebral Amyloid Angiopathy

- Characterized by amyloid B fibril deposition in the media of small to medium sized vessels
- Risk factor: increased age
- Recurrent hemorrhages: lobar
- Can have superficial siderosis
- Age 55 or older
- Microhemorrhages on MRI GRE images
CAA

- About 20% of patients may have transient focal neurologic spells, “amyloid spells”

- Usually seen in those with superficial siderosis
CAA

• No treatment but avoid anti-platelet agents and anticoagulants.