Stroke Variants

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Disclosure

• I have no actual or potential conflict of interest in relation to this program / presentation
Objectives

• Define Stroke

• Define Stroke Variant

• Give Examples of Stroke Variants
  • Their Presentations
  • How to Diagnose Them
  • How to Treat Them
What is a Stroke?

- 60yo obese female
- H/O NIDM, HTN, Hyperlipidemia
- Non Compliant with diet and meds
- Awakens from sleep unable to talk and move her right side.
- 160/100, Dysarthria, Flattening of L-NLF
- Right Hemiparesis
What is a Stroke?

• The presence of acute (non-traumatic) focal neurologic deficit from a vascular cause and resultant infarction of an watershed area of the brain.

• Approximately 85% are acute ischemic strokes.
  – Etiology: due to either in situ thrombosis or embolism from an extra cranial or intracranial vessel.
  – Results in: focal deficits that conform to a known vascular territory of the brain.
What is a Stroke?

• Hemorrhagic Strokes make up the majority of remaining cases
  – Majority of cases or intracerebral
  – Causes signs of compromise to a focal region of the brain secondarily to increase in ICP.
  – Sx: Headache, restlessness, neuro deficits, syncope, and coma
Stroke Diagnosis

• When there is a classical presentation, a stroke ischemic or hemorrhagic is easy to diagnose:
  – Elderly patients or at least middle age with ASHD, HTN
  – Dx: CT/MRI, Carotid Dopplers, Echocardiogram
  – Tx
    • Ischemic: TPA, Vascular Intervention, ASA, Fix the Cause
    • Hemorrhagic: Reverse Coagulopathy, Surgical Intervention

Otherwise:
  – Stroke Mimics
  – Stroke Variants
Stroke Mimics/Variants

– **Stroke Mimics**: Not a True Stroke. Toxic Metabolic, Post Ictal, Atypical Migraine.

– **Stroke Variant**: 
  • Minority of the Stroke Cases
  • Presentation can be subtle, or with unusual symptomatology
  • Etiology more commonly hemorrhagic than ischemic
  • Presentation is harder to distinguish between ischemic and hemorrhagic
  • In most cases due to atypical causes
Stroke Variants

- Very young: Don’t think of young patients having strokes
- Very old: present subtle and is the dizzy vertigo benign or from a TIA/Stroke
- Drugs
- Dissections
- Chronic Migraine Process
- Miscellaneous Causes
Stroke Variant: Young Age

- Sarah Gapp in Queensland Australia presented with symptoms of a stroke
- Massage stroke to brain stem at 21.
- Family and patient filed a suit in Australia for failure to recognize, diagnose, and perform timely treatment. Pre Hospital Personal and ED docs being sued
Stroke Variant: Young Age

• Strokes Occur in the Young, Even Children.
  – Studies show strokes below age 40 can account for 1/5 of all stroke victims
    • Rheumatic Valvular Disease, Arterial Dissection and Prothrombotic States.
  – Frequently delayed in diagnosis
    • Delay in presentation
    • Failure to recognize the possibility of a stroke
Stroke Variant: The Elderly

- 74 yo female presents with acute onset of dizziness
- Sometimes worsened by movement sometimes not
- H/O HTN, NIDM, Breast CA
- BP 140/90, Has Horizontal but no Vertical Nystagmas
- CT Negative for Acute Stroke or ICB
- DX: BPV, Cerebellar Stroke?
Stroke Variant: The Elderly

• **Isolated Vertigo** in the Elderly can be caused be a cerebellar infarction with little or no other neurological symptoms
• CT is Often Negative and Symptoms Resolve
• Studies not done on efficacy of Tx cerebellar infarction with TPA
• However, the frequency of this phenomenon is extremely low.
• Stroke or TIA, or BPV?
Stroke Variant: Drugs of Abuse

• In the U.S. from sympathomimetic drugs, including cocaine and methamphetamine.
  – Cause cerebral ischemia and infarction secondary to vasoconstriction.
  – Can also cause hemorrhage
  – Can cause accelerated atherosclerosis
  – Can cause cerebral vasculitis
  – Tx: Supportive Care
  – Reverse Symptoms of Drug
Stroke Variant: Drugs

- Carbon Monoxide like Cyanide and other poisons cause Global Ischemia.
- This can occasionally result in stroke secondary to the watershed phenomenon.
  - Territory of a vessel with preexisting limited blood flow.
- Tx: Lower CO Level, Antidotes for CN
Stroke Variant: Carotid/Vertebral Dissection

• Cerebral arterial dissection is an important cause of stroke in the young
  • Dx more frequently now that there is so many more people getting advanced imaging
  • Previous cases were undiagnosed; Symptoms are transient and resolved without major sequela.
  • Questionably associated with minor trauma or neck manipulation

• Symptoms
  • Thunderclap Headache, sudden and severe. Often occipital or neck pain
  • Pain is usually unilateral (eye, face, neck), +/- Horner's syndrome, +/- Posterior fossa neurologic signs and symptoms (dizziness, ataxia, nausea, eye symptoms, facial weakness).

• Treatment
  • Anticoagulation
Stroke Variant: Aortic Dissection

• Aortic Dissection can present as a stroke
• Should be considered in any patient with symptoms suggestive of acute cardiac disease coupled with unusual combinations of neurological symptoms
• Cerebral ischemia, ischemic neuropathy, syncope, somnolence, seizures, coma, transient global amnesia, and spinal ischemia
Stroke Variant: Aneurysmal SAH

• Headache is a prominent feature (worst headache of one’s life)
• 30,000 cases in the US each year. 5-15% are missed on First Presentation. Best prognosis is when there are no Focal Signs or Symptoms. 25-50% Expire in 6 months and 30% have Permanent Neurological Deficits.
• If the headache is <6 hours, a non-contrast CT is enough of a workup. A Neuro Radiologist and a Clear History is needed. However, False Positives can occur and an infectious cause can’t be ruled out. Perry et al. BMJ 2011.
• Non-refusing LP, >50 YO, Focal Deficit, Neck Pain=SAH
• Tx: Surgery, Calcium Channel Blocker
Stroke Variant: Cerebral Venous Sinus Thrombosis (DVT of the Brain)

- Although arterial disease is more prominent as a cause of stroke, even in the young, venous disease coupled with hypercoagulability is a cause, as well.
- Headache is a predominant feature
- Risk factors: Those that Predispose Patients to Thrombo-embolic disease: Younger patients, BCP’s Factor V Leiden Deficiency, Collagen Vascular Disorder, or extension of sinus disease or previous Neuro-surgical Procedures.
- Headache can be variable; Venous Infarction causes localized Edema of the Brain, Increased Venous Pressure, Impaired Absorption of CSF, Increased Intracranial HTN.
- Dx: D-Dimer, Image Sinuses, Genetic Work Up, LP shows increased ICP.
- Tx: Anticoagulation
Stroke Variant: Hypercoagulabile States

- **Sickle cell disease.** High risk if dactylitis, leukocytosis (>13,400), and Hemoglobin below 7g/dl.
- **Patient Foramen Ovale:** Causes paradoxical systemic embolism
- **Mitral valve Prolapse: Cerebral** ischemia as a result of thromboembolic originating from the valve

Therefore, need to evaluate the heart and central circulation as a cause for stroke, by way of echocardiogram.
Stroke Variant: Hypo-Coagulability

• Anti coagulant, anti-platelet therapy can cause an hypo-coagulable state which can cause a hemorrhagic stroke.

• TTP can also be a cause
• TX: FFP, Reverse bleeding
• Epidural
• Subdural
Stroke Variant: Relationship of Migraine and Stroke

• Migraine can be a stroke mimic, with transient neurologic deficits due to the migraine itself.

• Stroke, however, appears to be more common in patients with chronic migraine.

• Some studies with a small series document completed, acute stroke in the setting of acute migraine.
Questions