CRYPTOGENIC STROKE
PUBLIC HEALTH
CONFERENCE

Shyam Prabhakaran, MD, MS
Associate Professor of Neurology
Director, Stroke Research
Northwestern University
Stroke: Multiple mechanisms

- **15%** Vessel rupture
- **85%** Artery occlusion

- **25-30%** Atherothrombotic
  - Stenotic artery feeding area of infarction

- **20%** Cardioembolic
  - A thrombus or other material dislodges from the heart

- **15-20%** Lacunar/Small Vessel
  - Small, deep infarct

- **5-10%** Other/Uncommon
  - Dissection, drugs of abuse, vasculitis

- **25-30%** Cryptogenic
  - Unknown cause
1. Occult AF

2. Plaque embolism

3. Hypercoagulable state
Recurrence rates by subtype

- Lacune
- Cardioembolic
- Uncertain cause
- Athero-stenosis

Survival free of recurrent stroke (%)

Years after stroke

P = 0.12
Cardioembolic OAC reduces risk by nearly 70% in AF

Atherothrombotic Surgery reduces risk by nearly 70% in carotid stenosis

5-20% Lacunar/Small Vessel

Risk factor control and AP drugs

Cryptogenic Unknown cause

25-30% Other/Uncommon

Targeted treatments based on cause

No specific or targeted treatments
• “You don’t know what caused my stroke!!”
• “Am I a ticking time bomb?”
• “I am a mystery should I get a second opinion?”
• “If I don’t know what caused it, how can I prevent another one?”
• “You looked for everything and I must not have some of the bad causes of stroke. I guess that is a good thing!”
Vulnerable plaques: carotid and intracranial imaging

- 68-year old man with 1st CS
  - MRI showed small left MCA infarct
  - MRA head/neck, TTE/TEE “negative”
  - 30-day monitor negative for PAF
  - Started on aspirin and statin
- 2nd event 1 month later
  - CTA < 50% stenosis in left ICA stenosis
  - MRI showed new infarct in left MCA
  - Started on aspirin and Plavix
Vulnerable plaques: carotid and intracranial imaging

- 3rd event 6 months later
  - MRI showed another left MCA infarct
  - High-resolution carotid MRA showed vulnerable plaque
- Underwent carotid endarterectomy
- No events since then
Continuous monitoring: uncovering AF in CS

- 56 year old female, no risk factors
- Left thalamic infarct with thrombus in PCA
- Negative work-up
  - Normal TTE/TEE, MRA head/neck
  - No AF on several days of telemetry
- Implanted with Reveal XT
  - AF detected at 60 days post-stroke
- Started on apixaban for stroke prevention
Small stroke, but thrombus suggested embolism
Research in CS

• Unique opportunities from collaboration across hospitals and regions
  • Get With The Guidelines Stroke
    • Potential to study epidemiology, practice patterns, and outcomes in CS patients
Research in CS

• NIH-funded StrokeNET
  • Network of 100+ hospitals with 25 hubs to conduct large-scale, high impact trials efficiently and quickly
Public Impact

• 25-33% of all ischemic strokes have no known cause!
• Help patients find answers they currently don’t receive
• Parse CS into discrete and treatable causes
• Test new ideas for management of CS with well-designed research studies
• With targeted approaches treatments, we can reduce proportion labeled “cryptogenic” and reduce recurrent strokes