

# ACUTE ISCHEMIC STROKE DUE TO HYPERCOAGULATION INDUCED BY HORIZONTAL SEMICIRCULAR CANAL BENIGN PAROXYSMAL POSITIONAL VERTIGO: A CASE REPORT

**Theidi Darma Wijaya<sup>1</sup>, Kevin<sup>2</sup>**

1. General Practitioner of EMC Hospital Alam Sutera, 2. Neurologist of EMC Hospital Alam Sutera  
Alam Sutera Boulevard No.25, Pakulonan  
Correspondence: thedidarmawijaya@gmail.com

## INTRODUCTION

- Undetermined etiology only **accounted for 3% of acute ischemic stroke (AIS)** cases worldwide, one of which was hypercoagulable state.
- Here we present a case of AIS indirectly caused by dehydration induced by horizontal semicircular canal Benign Paroxysmal Positional Vertigo (HC-BPPV).

## CASE REPORT

- A 62-year old man complained **vertigo**, nausea and severe **vomiting** induced by head movement.
- History:
  - Uncontrolled hypertension
  - Type 2 diabetes
  - Coronary artery disease.

He was brought to the Emergency Department

- At presentation, he was alert and later became unresponsive (GCS E3M5V2)

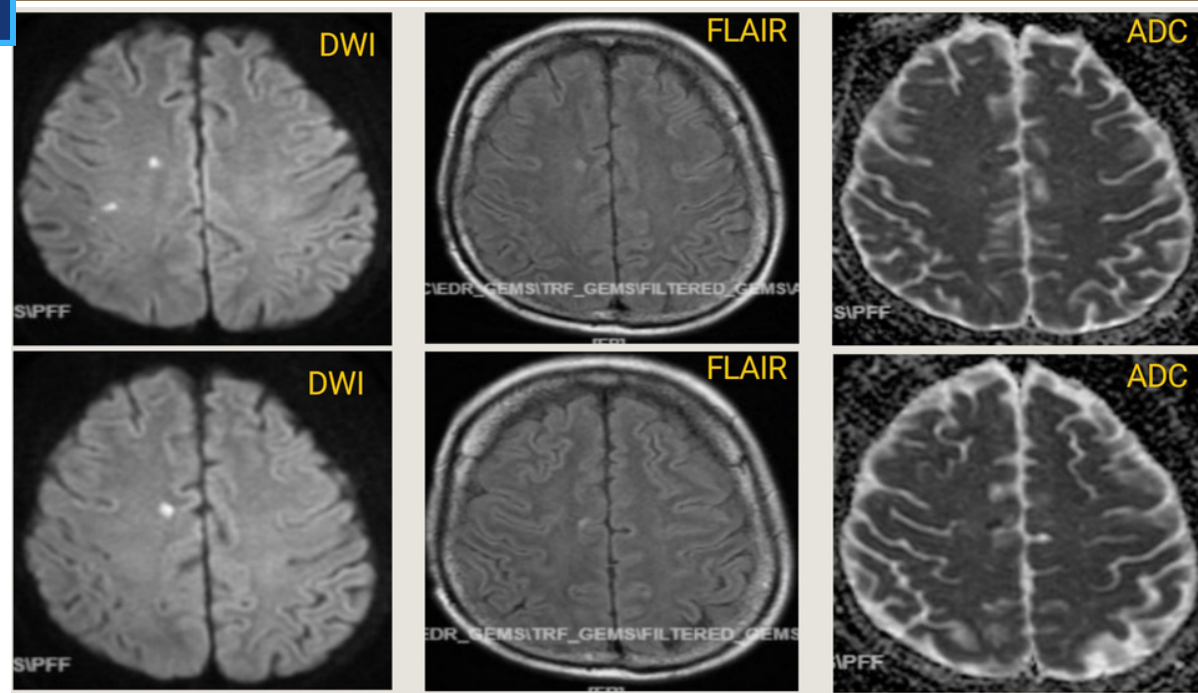
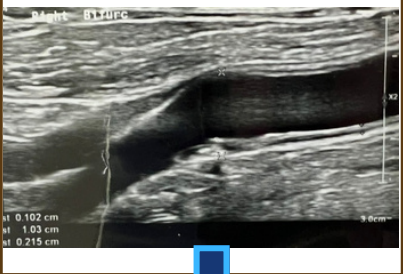
BP 70/50 mmHg  
RR 4 br/mnt  
SatO2 89%

Patient was intubated and admitted to Intensive Care Unit.

- His cardiac and pulmonary function were normal.
- On neurological examination, there was **left sided weakness** (scale 4 of 5) and **positive left Babinski reflex.**

- The laboratory results:
  - D-dimer **2,399** ng/mL
  - pO2 **67.8** mmHg
  - INR 1.05

- Trans-thoracic echocardiography test was normal
- Carotid ultrasonography showed:
  - mild stenosis at right carotid bifurcation (20.9%)
  - **Increased bilateral intima-media thickness** (Right 1.02 mm; Left 1.25 mm).

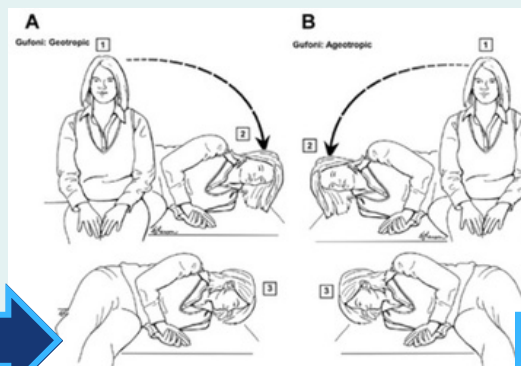


The non-contrast brain MRI showed **watershed infarction** in:

- deep white matter of the right fronto-parietal lobe
- right putamen
- right cortical parietal lobe
- left subcortical parietal lobe.

### At day-4

- The patient was awake and successfully extubated.
- His neurological findings spontaneously resolved.
- He still complained severe vertigo while turning to both sides.
- The head-roll test showed **horizontal nystagmus** with rapid phase to the right (apogeotropic nystagmus).



- Patient was given fluid resuscitation and targeted **heparin** infusion.

- He was treated with betahistine and **Gufoni canalith repositioning procedure.**

- All vertigo symptoms resolved on day-10. He was discharged home on day-16 with rivaroxaban.

## DISCUSSIONS

- This patient developed **watershed infarction** due to **hypercoagulation** caused by **untreated HC-BPPV**.
- The incidence of both BPPV and AIS increased with age.
- **Vertigo was one of AIS risk factors.** When it was combined with other classic vascular risk factors, including hypertension, diabetes, and coronary artery disease; stroke incidence increased more than 10 times.
- **IMT above 1.1 mm** was associated with more chances of **residual vertigo symptoms.**
- Fluid resuscitation and emergent anticoagulation were the treatment of choice in hypercoagulation.
- He responded well and no neurological findings persisted. Gufoni liberatory maneuver was the definitive treatment of HC-BPPV.

## CONCLUSIONS

- Ascertaining the etiology of AIS is important to guide secondary prevention agent. BPPV could result to AIS when it appears in elderly patients with multiple vascular risk factors.
- Correct identification and treatment of BPPV could prevent patient from falling into serious complications.

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