A case of unilateral thalamic infarction presenting as vertical gaze palsy

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Background

- Vertical gaze palsy is usually associated with lesions of the the posterior commissure, the interstitial nucleus of Cajal, and the rostral interstitial nucleus of the medial longitudinal fasciculus.
- Vertical gaze palsy due to paramedian thalamic infarction has rarely been reported.
- We describe a patient presenting as vertical gaze palsy due to unilateral thalamic infarction.

Case

- **Chief complaint and present illness**
  - A 76-year-old woman was admitted to the emergency room with sudden onset of vertigo and vertical diplopia.
- **Past history**
  - She was on treatment for hypertension and diabetes for 15 years.
- **Physical examination**
  - The vital signs during initial evaluation were : blood pressure 160/110 mmHg, heart rate 88 beats per minute, respiration rate 20 breaths per minute, and tympanic temperature 37°C.
- **Neurological examination**
  - The size of the pupil was 3.0 mm on the right side and 3.5 mm on the left side.
  - His visual field and acuity were normal.
  - There was no strabismus or spontaneous nystagmus at the primary position.
  - Horizontal and vertical vestibuloocular reflex was normal.
  - Vertical eye movements showed bilateral upward and downward gaze paralysis **(Fig. 1).**
- **Laboratory findings**
  - **CBC**
    : Hb 13.3g/dL, WBC 10,870/μL, PLT 240,000/μL
  - **Blood chemistry**
    : BUN 23.9mg/dL, Cr 1.51mg/dL, Na^+ 137.4meq/L, K^+ 4.7meq/L, Cl^- 107.5meq/L, Ca^{2+} 9.4mg/dL, ALT 234IU/L, AST 381IU/L, LDH 1360IU/L, Glucose 124mg/dL, CPK 3,789IU/L, Ammonia 41uMol/L, prolactin 57.56ng/ml
- **Imaging findings**
  - Magnetic resonance imaging of the brain revealed an acute ischemic infarct in the right medial thalamus without midbrain involvement **(Fig.2).**

Figure 1. Images of the patient in nine diagnostic positions of gaze. Upward and downward gaze palsy were observed.

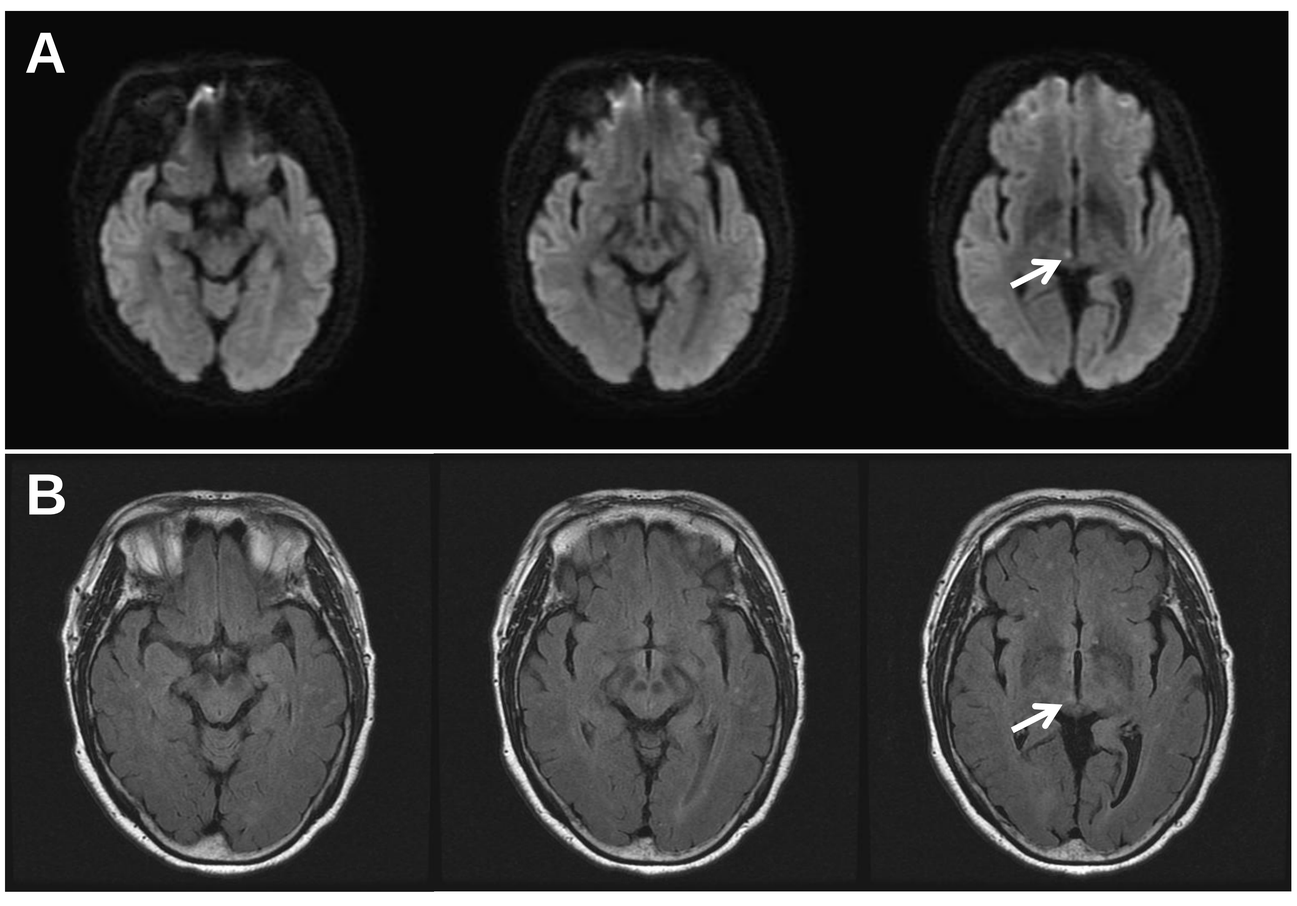

Figure 2. Brain MRI of the patient. Diffusion-weighted image (A) and fluid attenuated inversion recovery image (B) showed an acute ischemic infarct in the right medial thalamus (arrows) without midbrain involvement.

- **Treatment and progression**
  - She was treated with antiplatelet agents.
  - Three months later, bilateral vertical gaze paralysis completely improved.

Discussions

- The supranuclear pathways involved in vertical gaze palsy is not clearly known.
- Interruption of supranuclear fibers as they transverse the medial thalamus to the pretectal and prerubral areas, could possibly lead to vertical gaze palsy.
- Vertical gaze palsy with unilateral thalamic lesion may be presumed to be caused by interruption of the frontobulbar fibers in the medial thalamus.
- We report a rare case of bilateral vertical gaze palsy due to unilateral thalamic infarction without midbrain lesions.