



Successful Treatment of an Unexpected Large Stroke in a Young Patient with a History of COVID-19 Infection and Implications of Strength Deficits Found on Examination for Correction of the Topography of the Penfield Motor Map

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Case Presentation

History of present illness:

41-year-old female with past medical history of COVID-19 infection (04/2020) and migraine presented to the emergency department with left facial palsy, left sided arm paralysis and left leg weakness (NIHSS 15) within 3 hours of onset.

Intervention:

Patient was given t-PA followed by mechanical thrombectomy and intensive care monitoring. CT 24 hours after t-PA showed a small SAH likely secondary to tPA administration. NIHSS improved to 5 (1 horizontal gaze deviation, easily reoriented; 1 each for left upper, lower limb and facial droop).

Clinical and Rehabilitation Course:

Nine days after presentation, on admission to inpatient rehabilitation, exam was significant for 4/5 strength on the left side (5/5 right side), mild left nasolabial flattening, tongue deviation and only unilateral (right) mentalis furrowing with normal strength in the orbicularis oculi and frontalis.. Functional examination demonstrated transfers and ambulation 60' with a rolling walker and minimal assistance.

Imaging

Head CT: No acute findings.

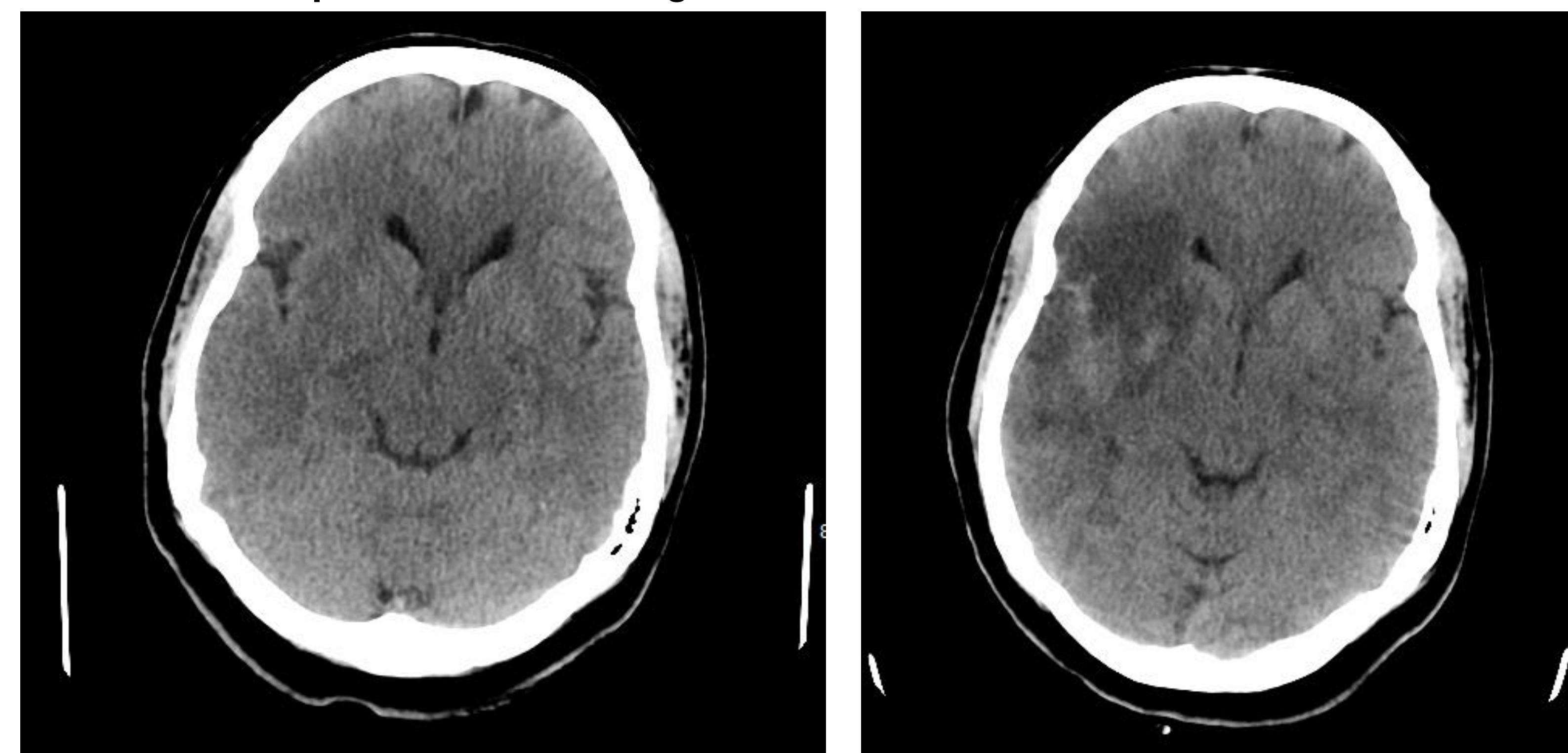
CT 24 hours after t-PA (Figure 1): Small SAH likely secondary to t-PA administration.

Repeat CT head 24 hours later did not show any interval changes.

Repeat CT Angiography: Persistent occlusion of superior portion of M2 of Right MCA.

Lower extremity venous doppler: negative. **Echocardiogram:** No thrombi.

Figure 1. CT head (Left) on the date of presentation did not show any abnormalities. CT head 24 hours after tPA (Right) showed an evolved Right Middle Cerebral Artery infarction with possible hemorrhagic conversion.



Discharge functional status

After a week, strength recovered to 5/5 in LUE except for 4+/5 in shoulder flexion/internal/external rotation. Left lower extremity was still 4+/5. She was discharged home completely independent with ADLs, iADLs and ambulation.

Discussion

The patient's physical exam was consistent with a lesion to the cortical primary motor strip region subserving the left leg, arm and face. Curiously, the known Penfield map would predict upper, not lower face weakness.

Conclusion

A high index of suspicion needs to be maintained to diagnose and aggressively treat patients with a history of COVID-19 infection who present with neurologic symptoms. Further investigation of the Penfield motor map topography is warranted to ascertain whether the upper or lower face is immediately adjacent to the hand (1,2,3).

Bibliography

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