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Endovascular Cure of a “Locked-In” Patient

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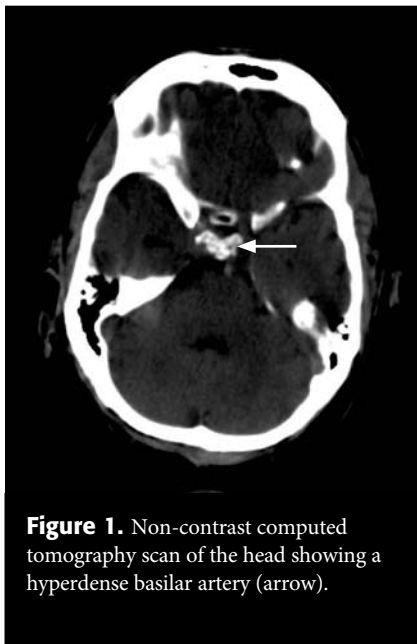


Figure 1. Non-contrast computed tomography scan of the head showing a hyperdense basilar artery (arrow).

We report the case of a 60 year-old right-handed gentleman who became acutely “Locked-In” several days after a lower extremity orthopedic procedure. He underwent emergent endovascular treatment and had complete resolution of his neurologic findings except for mild dysarthria and dysphagia. Endovascular intervention for posterior circulation thrombosis is highly effective when patients are treated within 24 hours.

Case

FC is a 60 year-old right-handed gentleman that underwent uncomplicated total knee arthroplasty and was started on low dose warfarin therapy for deep venous thrombosis prophylaxis. On postoperative day number two the patient had an acute change in his neurologic status. A computed-tomography scan of his head was obtained showing a hyperdense basilar artery. He was emergently transferred to our institution.

On arrival the patient was lethargic but able to follow commands with eye blinks only. His pupils were equal and reactive but he only had vertical

gaze. The right extremity minimally withdrew to stimulation. Computed-tomography angiogram of the head showed a dominant right vertebral artery with occlusion just distal to the posterior inferior cerebellar artery origin extending to just below the superior cerebellar arteries.

The patient was taken emergently to the Endovascular Neurosurgery Suite and the right femoral artery accessed. The right vertebral artery was selectively catheterized and digital subtraction angiography performed revealing complete occlusion of the right vertebrbasilar junction without distal runoff or PCA filling. A Hyperglide balloon was positioned at the VB junction and seven inflations were performed, revealing a focal stenosis at the junction. A Gateway 4 balloon was positioned next and inflated to six atmospheres of pressure. Subsequent angiographic runs revealed complete resolution of the thrombus and filling of both PCAs and SCAs, as well as the basilar perforators. A Wingspan 4x5x20 stent was then deployed at the location of the stenosis resulting in complete resolution of the stenosis and thrombus. Additional angiographic runs showed distal occlusions bilaterally in the P4 segments; these were treated by placing an SL-10 microcatheter in the P4 segments and injecting 150,000 units of Urokinase on the right and 200,000 units on the left.

Post-procedurally the patient remained intubated for less than twenty-four hours. His neurologic exam improved to normal except for mild dysarthria and dysphagia and a right upper extremity drift without associated weakness. Magnetic resonance imaging of his brain revealed acute infarcts in the left pons, right occipital lobe, right dentate nucleus, both mesial temporal lobes, and the right posterolateral thalamus. He was gradually mobilized with the assistance of physical therapy/occupational therapy and eventually discharged in good condition.

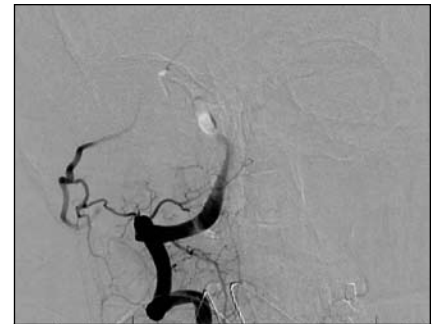


Figure 2. Digital subtraction angiography AP projection of a selective right vertebral injection showing complete obstruction of flow at the right vertebrbasilar junction.

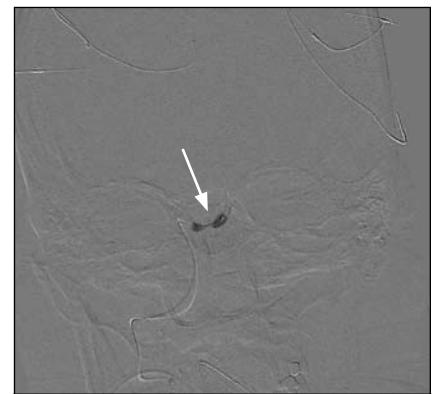


Figure 3. Digital subtraction angiography AP projection demonstrating inflation of the Hyperglide balloon at the right vertebrbasilar junction. Note the microcatheter extending into the proximal basilar artery and the “waist” (arrow) on the balloon reflecting the location of the obstruction.

Discussion

Unlike anterior circulation thromboses, the time window for posterior circulation thrombosis treatment extends up to 24 hours after the ictus. Cases of complete improvement in an adolescent treated 20 hours¹ and a child almost 50 hours after symptom onset² are



Figure 4. Digital subtraction angiography LAT projection of a right vertebral injection after Hyperglide balloon inflation. Note the improved filling of the basilar artery. A Gateway balloon has been advanced to the vertebrobasilar junction.

reported. However, we recommend treating up to 24 hours post-ictus only. An additional study reviewed outcome predictors for basilar artery thrombosis and found that recanalization after thrombolysis and low NIH stroke scale at admission were associated with a favorable outcome; initiating thrombolysis early after ictus as well CT evidence of a hyperdense basilar artery were positively associated with recanalization rates.³ “Locked-In” Syndrome resulting from acute basilar artery thrombosis is curable but requires the patient be quickly diagnosed and transferred expeditiously to a specialized center with a highly experienced endovascular neurosurgical team.

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