Case Report

An unusual case of young stroke with dramatic recovery following intensive neurorehabilitation

Nittu Panjikaran, Raja lakshmi, Kurian Zachariah, Nidhi Rawat

ABSTRACT

Acute basilar artery occlusion is a neurological emergency which has the highest mortality among all ischemic stroke subtypes. Those which present comatose and have bilateral motor weakness have the worst prognosis. Here, we present a case of “Top-Of-The-Basilar” syndrome in a 34 year old male, who presented in a coma and on recovery of the same, had bilateral motor weakness and global aphasia among other deficits. He was diagnosed to have a complete occlusion of the basilar artery as documented by MR angiogram, but work-up for causes of young stroke came up negative. He was rehabilitated and regained a fair level of functional status. This syndrome is not only seen very rarely among the young, but the level of improvement seen in our patient was exceptional.

Keywords: Top-of-the-Basilar syndrome, Posterior circulation stroke, young stroke, total basilar artery occlusion

DOI: 10.5455/ijhrs.0000000119
CASE REPORT

We present a 32 year old right handed, senior executive from Tumkur with a history of psychiatric illness with aggressive behavior for the past 1 year on irregular medications. He initially presented to a local hospital with a history of severe vertigo which was managed symptomatically. Around 2 months later, he was found unconscious in his room wherein he was taken to his local hospital and on evaluation, was found to have a subtle intra-axial hyper dense infarct involving right hemi-pons on CT scan. He was managed in the ICU for 5 days with mechanical ventilation where he slowly regained consciousness but had multiple neurological deficits including quadriparesis, left sided UMN facial palsy and global aphasia. A contrast enhanced MRI scan showed multiple sub-acute infarcts in bilateral thalamo-capsular regions, right temporal and occipital peritrigonal white matter, left para-median superior cerebellum and entire pons, secondary to complete occlusion of basilar artery (fig. 1).

A diagnosis of “Top-of-the-basilar” syndrome was made. MR angiogram was done to confirm the diagnosis and the basilar artery could not be visualized (fig. 2). Carotid and vertebral Doppler was found to be normal. A work up for causes of young stroke was done including homocysteine level, ANA, APLA syndrome and coagulation abnormalities (including protein C/protein S/antithrombin-3).

Figure 1: MR angiogram where the basilar artery could not be visualized

Figure 2: Multiple sub-acute infarcts in bilateral thalamo-capsular regions, right temporal and occipital peritrigonal white matter, left para-median superior cerebellum and entire pons.
Physiotherapy Session

Day 1-3: He was on PROM of the left shoulder, elbow, wrist, fingers, hip, knee and ankle, active assisted ROM for the right shoulder, elbow, wrist, hip, knee and ankle as well as chest physiotherapy.

Day 3-10: Progressive loading of joints using tilt table was started at 40° and progressed to 85° over 7 days. He started prone on elbow positioning, pelvic bridging. Neuromuscular facilitation for left triceps, left dorsiflexors and chest physiotherapy was continued.

Days 10-20: He progressed to prone on hands with elbow gaiter and sitting with assistance. His power had gradually improved and trial of standing in parallel bars with gaiters was attained. After 1 month- his sitting endurance increased, he was coming to stand and eventually deficiency) and was found to be normal. Cardiac work-up including echocardiogram was done which was also normal.

He was then transferred to PMR department in our center for rehabilitation. On admission, his functional status was poor. He was maximally dependent for all activities of daily living. On examination, he was moderately built and nourished with normal vital signs. He was conscious and alert. Speech had improved but he still had residual motor aphasia and dysarthria. He also had left UMN facial nerve palsy and left 9th and 10th cranial nerve palsy. Bilateral motor weakness was present with reduced bulk bilaterally and spasticity in all four limbs. Deep tendon reflexes were present and plantar bilaterally extensor. Sensory system was normal, with no cerebellar signs. Range of motion on right hip flexion was 0-90 degree, he had bilateral tendo-achilles tightness but stretchable to neutral.

Occupational therapy sessions were focused on hand functions, oro-motor stimulation and to increase independence for activities of daily living. It gradually increased to bed mobility and coming to sit, gradually now coming to stand, kneeling and crawling. He is presently independent in eating, grooming, brushing, and needs minimal assistance for dressing, bathing and toileting.

Standing without gaiter with the support of a walker for an hour at present (Fig.3).

Figure 3: Patient standing up with help of walker and elbow splint
Orthoses and Prosthesis:

We had provided bilateral ankle foot orthoses for stretching out the tendo-achilles, lower limb gaiters for standing, a left resting hand splint and walker.

His spasticity was managed with range of motion and strengthening exercises and anti-spasticity medications like Tolperisone 150 mg TID and T. BACLOFEN 5 mg TID was started. Motor point block was given for bilateral gastrocnemius with bupivacaine injections. Supraspinatus block with bupivacaine was given for pain and to increase mobility of left shoulder. For his stooping posture, prone lying and para-spinal exercises was advised. He improved clinically, oral feeds were started and he was slowly weaned off the Ryle’s tube. His Foley’s catheter was removed and he started self-voiding with normal control.

Speech Therapy was given for his dysarthria with which his speech output increased, he had good auditory verbal comprehension but disarticulation was present.

Discussion

Acute basilar artery occlusion is not uncommon and is found in 6% to 10% of large-vessel intracranial strokes\(^1,2\) and has the highest mortality among all ischemic stroke subtypes. After the initial systematic report of autopsy-proven basilar artery occlusion by Kubik and Adams\(^3\), occlusion of the basilar artery has been associated with high mortality and extreme morbidity. Basilar artery occlusion is assumed to carry a grave prognosis, with mortality rates of up to 90%\(^4\).

Top of basilar syndrome is caused by infarction of midbrain, thalamus and portions of thalamus and occipital lobe\(^5\). It is due to an occlusive vascular disease often embolic, sometimes thrombotic in nature; of the rostral basilar artery\(^5\). It is associated with behavioral abnormalities including somnolence, peduncle hallucinations, memory disturbances or agitated delirium, ocular findings include unilateral or bilateral paralysis of upward or downward gaze, impaired convergence, pseudo-abduces palsy, convergence–retraction nystagmus, abnormalities of abduction, collier’s sign, skew deviation and oscillatory eye movements. Visual defects present as hemianopia, cortical blindness and Balint syndrome\(^5\). Pupillary abnormalities are variable\(^5\). Motor deficits may occur unilaterally or bilaterally\(^5\). Patients may also present with frequent TIAs with dizziness, ataxia and diplopia.

Patients with basilar thrombosis often have stuttering progression of deficits over hours to days\(^6\). Those who present in coma or with bilateral motor weakness have poor prognosis\(^6\). In these cases, intubation is often required with mechanical ventilator support is essential\(^6\). Hemodynamic instability is common with labile hypertension and sometimes arrhythmias as well\(^6\). Imaging modality of choice is the MRI which can detect very small lesions and better characterize infarcts in the brain stem and cerebellum as compared to CT scan\(^7\). Cerebral angiography is the gold standard in detecting posterior circulation occlusive disease\(^6\) but has been largely replaced by Magnetic Resonance Angiogram which has accuracy rates of upto 90%\(^8\).
Our patient was initially found comatose and on recovery from his coma, was found to have bilateral upper limb and lower limb weakness. He also had global aphasia and multiple cranial nerve palsies with early onset limb spasticity. However, through continuous, intensive rehabilitation, he showed a dramatic improvement in the short span of three months. He is presently independent in eating, grooming, brushing, needs minimal assistance for dressing, bathing and toileting and is able to stand for an hour with the support of a walker.

Conclusions

Top-of-the-basilar syndrome, though a rare entity and even more so in the young, has to be kept in mind in cases of acute young stroke presenting with history of behavioral abnormalities, frequent TIAs and stuttering progression of deficits. Diagnosis is often delayed, or even missed, as a result of the variety of clinical presentations seen with this condition. Even though, it carries a very poor prognosis, our case demonstrates that with the correct rehabilitation methods applied constantly over a period of time, a good recovery is possible provided the necessary interventions are applied early in the course of the disease.

Consent:

Informed consent was signed by the patient prior writing the report.

Conflict of interest

The authors report no conflict of interest.

References:

1. IMS trial investigators. Combined intravenous and intra-arterial recanalization for acute ischemic stroke: The Interventional Management of Stroke study. Stroke. 2004; 35: 904–911

2. Smith WS, Sung G, Starkman S, Saver JL, Kidwell CS, Gobin YP, Lutsep HL, Nesbit GM, Grobelny T, Rymer MM, Silverman IE, Higashida RT, Budzik RF, Marks MP. Safety and efficacy of mechanical embolectomy in acute ischemic stroke: results of the MERCI trial. Stroke. 2005; 36: 1432–1438

3. Kubik CS, Adams RD. Occlusion of the basilar artery: a clinical and pathological study. Brain. 1946; 59: 73–121

4. Tracey A, Baird, Keith W. Muir, Ian Bone J. Neurocrit Care. 2004;1(3):319-29

5. Bradley’s Neurology in Clinical Practice 6th Ed. Robert B. Daroff, Gerald M. Fenichel, Joseph Jankovic, John C. Mazziotta, MD, PhD

6. Primer on Cerebrovascular Diseases. Pg.300, K.M.A Welch, L. R. Caplan, D. J. Reis, B. K. Siesjo, Bryce Weir

7. "Top of the basilar" syndrome: a comparison of clinical and MR findings. Barkhof F1, Valk J. Neuroradiology. 1988;30(4):293-8

8. J Röther, K U Wentz, W Rautenberg, A Schwartz and M Hennerici Magnetic resonance angiography in vertebrobasilarischemia. Stroke. 1993;24:1310-1315