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Case Report

Slow But Steady: Long-Term Outcome After Intracerebral Haemorrhage With Continuous Rehabilitation, Judicious Pharmacotherapy, And Surgical Interventions, A Case Report

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Abstract

Background and Clinical Significance: Outcome data on intracerebral hemorrhage (ICH) is limited, and functional outcome is considered less favorable after ICH. Most recovery is considered to happen within the first few months, and people with severe post-ICH disability are often excluded from long-term rehabilitation.

Case Presentation: We describe the case of a hypertensive male in his 70s who suffered a massive ICH (ICH score of 4) and acute hydrocephalus. After intensive therapy followed by long-term rehabilitation, the patient recovered to a modified Rankin scale of 4 and a Barthel index of 40, overcoming complications like seizures, obstructive sleep apnea, and psychiatric issues.

Conclusions: The highlighting point in our case was the importance of long-term rehabilitation in moribund stroke patients and how effective coordination between the patient's family and the treating team becomes fruitful. Our case also demonstrated that the Barthel index provides a more accurate representation of functional recovery than the modified Rankin scale.

Introduction and Clinical Significance

Intracerebral haemorrhage has a mortality rate of up to 65% at one year, almost 85% at five years, and the functional outcome is considered less favorable compared to ischaemic stroke [1] unless the acute management, chronic treatment, rehabilitation, and family support are extraordinary. We report a unique case of how a patient with massive intracranial bleeding survived and later improved.

Case Presentation

A 70-year-old man with a history of hypertension (modified Rankin scale 0) developed acute onset weakness in his left upper and lower limbs, followed by progressive drowsiness, after an episode of significant emotional stress. Acute hydrocephalus (ICH score of 4) resulted from an acute intracerebral haemorrhage that involved the right caudate, thalamus, and occipital lobe with intraventricular extension. [Figure 1]

In the emergency room, he had a GCS score of 3 and required urgent intubation and ventilation. We brought down the blood pressure immediately from 180/100 millimetres of Hg to 140/90 millimetres of Hg and explained to the family that the patient would have a high chance of mortality (thirty-day mortality rate 97%) and likely severe morbidity even if he survives.[2] The family, believing differently and considering his robust health prior to stroke (modified

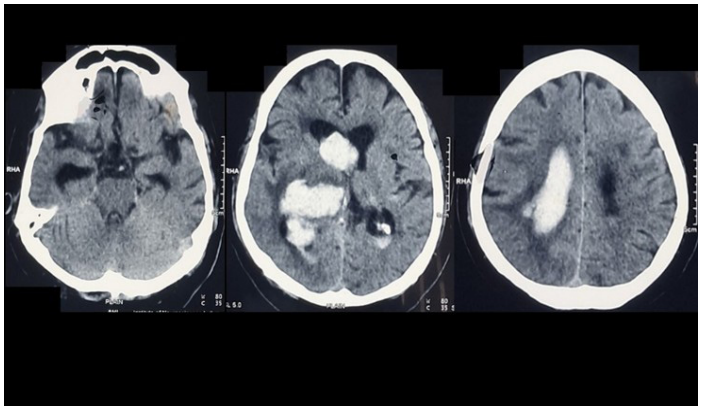

Figure 1: *Acute intracerebral haemorrhage at right caudate, thalamus and occipital lobe with intraventricular extension leading to acute hydrocephalus*

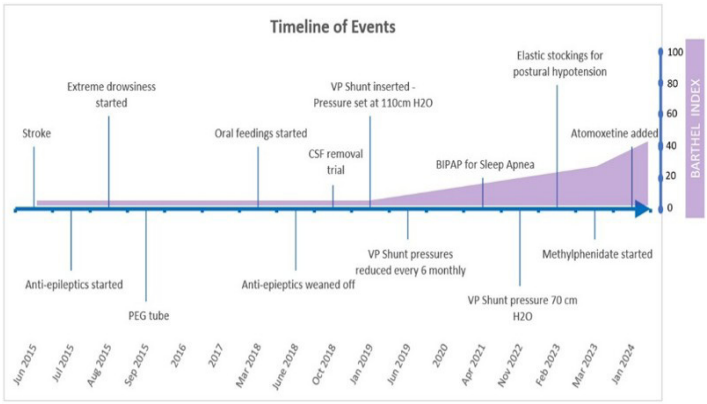

Figure 2: *The timeline of recovery – Time of stroke, EVD, VP shunt, CPAP, antiepileptic withdrawal, Stimulant use in X axis; and Barthel Index in Y axis*

Rankin scale of 0), decided to pursue "brain surgery." Consequently, we proceeded with the urgent placement of external ventricular drainage (EVD), which later became blocked and required removal. His sensorium did not improve to any extent, and we attempted to note whether it can improve after lumbar puncture (keeping the hydrocephalus in mind). We drained 30 millilitres of CSF, but this did not help either. After a few weeks, his GCS gradually improved to E2M5VT on its own, leading to the weaning off of the ventilator and the closure of the tracheostomy. We noted epileptiform discharges in his EEG and added antiepileptic drugs. His Barthel Index and mRS score at discharge were 0 and 5, respectively, and remained unchanged for the next two years. We discontinued antiepileptic drugs later because the EEG showed no seizure activity. Henceforth, his sensorium showed further improvement (Barthel index 5), and he began opening his eyes, occasionally responding with a single word. His cognitive function and motor activity remained status quo next year, but the family insisted on further treatment based on his intermittent response to stimuli. Therefore, we performed a therapeutic lumbar puncture, and this time, he showed remarkable improvement. Consequently, we inserted a programmable ventriculoperitoneal shunt, setting the pressure at 120 mm H2O, which we later reduced to 60 mm H2O over six months. This intervention resulted in enhanced alertness; the patient began speaking two to three words and moving his right leg on command. His Barthel index improved to 20. Over the next two years, his condition stabilized, but he developed increased daytime sleepiness. We initiated BIPAP therapy, which significantly improved his sensorium within two months. However, intermittent sleepiness persisted, prompting us to introduce methylphenidate at 5 mg daily, gradually increasing to 60 mg once daily. His arousal improved significantly but exhibited confusion between remote past and present events, leading us to initiate atomoxetine therapy. After eight years, the patient achieved a Modified Rankin Scale of 4 and a Barthel index of 40 (partially dependent). [Figure 2].

Discussion

Despite well managed hypertension, the patient experienced a catastrophic cerebral event, underscoring the need for improved hypertension control and monitoring, particularly in aging populations. Hypertension is the most prevalent risk factor in Asia compared to the Western population, and includes higher morning and nocturnal blood pressure levels.[3] Additionally, emotional lability and labile hypertension in the elderly can precipitate such events.[4]

Our patient had a massive intra-cerebral haemorrhage with intraventricular extension and an ICH score of 4, with a chance of 97% mortality at one month.[2] Despite the use of numerous grading scales to determine the outcome in ICH, none is sufficiently reliable for counselling patients with ICH about their short- or long-term (beyond three months) functional outcome. This often results in therapeutic pessimism, preventing many ICH patients from receiving intensive rehabilitation following a trial period. The family not only persisted with continued rehabilitation but also sought surgical intervention based on their day-to-day observations. Our case demonstrates how a terminally ill patient's supportive family maintained an excellent rapport with the doctors, resulting in the best possible outcome.[5] This also shows that our current prediction scores aren't very good for long-term use. It shows that they could be even better if we added more factors: infratentorial versus supratentorial location, cortical atrophy, and white matter disease burden.[6] Notably, aside from the severe ICH and IVH, our patient did not exhibit any other risk factors.

The initial few months following a stroke are a typical period when patients experience the most significant improvement. However, as demonstrated in our case, dedicated long-term rehabilitation can also yield substantial benefits. Stroke rehabilitation necessitates a long-term commitment, ideally extending for at least five years post-event.[7] An optimal model for long-term post-stroke care

is crucial, as patients in the chronic phase (more than six months after the stroke) should have continuous access to rehabilitation services to prevent complications arising from immobilization. Research demonstrates that delayed rehabilitation can still be beneficial. This is because functional improvements can happen over a long period of time, and it is still important to manage secondary complications like sleep disorders, remote symptomatic epilepsy, and psychiatric complications with the right medications. When assessed six months post-ictus, neuropsychiatric symptoms were prominent in nearly 55% of ICH patients, according to a study. Atomoxetine combined with motor training appears safe and improves aphasia and motor outcomes after strokes.[8] Research indicates that coadministration of modafinil and atomoxetine enhance the incentive effects of modafinil and sensitizes exploratory behaviour.[9] Further research is necessary to develop guidelines for rehabilitative measures in such challenging cases, as post-stroke behavioural and cognitive issues are a significant concern and can substantially influence outcomes. Our case also highlights that the Barthel index is a better representative of functional recovery compared to the modified Rankin scale (a score of 3-6 is considered poor).

Conclusion

Hypertension is the most important risk factor for life-threatening intracerebral haemorrhage and can be prevented by careful monitoring of antihypertensives and blood pressure. Ambulatory blood pressure monitoring is probably the right way to get guidance to control blood pressure in elderly.[10]

People, especially older adults, may forget taking the antihypertensives when daily routine is disrupted and special arrangements may be made for their remembrance and blood pressure measured on getting opportunities.

Obstructive sleep apnoea and psychiatric manifestations are important aspects during the recovery phase of intracerebral haemorrhage and should not be ignored for best outcome.

A good rapport between doctors and patient's family is required while tackling a catastrophic haemorrhagic stroke to ensure the most fruitful outcome possible and avoid any medico-legal issue.

Besides hypertension management in haemorrhagic stroke, we should focus on aggressive treatment and judicial rehabilitation. We should not stop rehabilitation prematurely as there is a scope of improvement many times even though stroke severity was high during the initial presentation.

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References

1. Sennfält S, Norrving B, Petersson J, Ullberg T. Long-Term Survival and Function After Stroke: A Longitudinal Observational Study From the Swedish Stroke Register. Stroke. 2019;50(1):53-61.
2. Hemphill JC 3rd, Bonovich DC, Besmertis L, Manley GT, Johnston SC. The ICH score: a simple, reliable grading scale for intracerebral hemorrhage. Stroke. 2001 Apr;32(4):891-7.
3. Turana Y, Tengkawan J, Chia YC, Nathaniel M, Wang JG, Sukonthasarn A et al. Hypertension and stroke in Asia: A comprehensive review from HOPE Asia. J Clin Hypertens (Greenwich). 2021 ;23(3):513-521.
4. Reddin C, Murphy R, Hankey GJ, Judge C, Xavier D, Rosengren A et al. JAMA Netw Open. 2022;5(12):e2244836.
5. Tsouna-Hadjis E, Vemmos KN, Zakopoulos N, Stamatelopoulos S. First-stroke recovery process: the role of family social support. Arch Phys Med Rehabil. 2000;81(7):881-7.
6. Woo D, Comeau ME, Venema SU, Anderson CD, Flaherty M, Testai F et al. Risk Factors Associated With Mortality and Neurologic Disability After Intracerebral Hemorrhage in a Racially and Ethnically Diverse Cohort. JAMA Netw Open. 2022;5(3):e221103.
7. Sarzyńska-Długosz I. An optimal model of long-term post-stroke care. Front Neurol. 2023 ;14:1129516.
8. Ward A, Carrico C, Powell E, Westgate PM, Nichols L, Fleischer A et al. Safety and improvement of movement function after stroke with atomoxetine: A pilot randomized trial. Restor Neurol Neurosci. 2017;35(1):1-10.
9. Yepez JE, Juárez J. Atomoxetine promotes incentive value of modafinil and sensitizes exploratory behavior. Pharmacol Biochem Behav. 2023; 230:173618.
10. Chakraborty D. Are We Enough Cautious Regarding Blood Pressure Management in Older Adults as a Stroke Preventive Measure? Neurol India. 2025;73(2):356-357.

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