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Case Report

Spontaneous intracerebral haemorrhage in young: Can we manage in a better way?

Debabrata Chakraborty¹*

¹Dept. of Neurology, Apollo Multispeciality Hospital, Kolkata, West Bengal, India



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Article history: Received 08-07-2024 Accepted 16-10-2024 Available online 20-11-2024	Intracerebral haemorrhage (ICH), a dynamic phenomenon with unpredictable course is associated with almost 50% mortality. It is sharply rising amongst the young population. The surgical intervention in ICH only when the patient deteriorates on conservative management should be given a second thought. This is because young patients with less atrophic brains suffer from a sudden rise in intracranial pressure resulting in rapid deterioration giving less time to intervene especially in odd hours. So, with the advent of
Keywords: Stroke in young	new surgical techniques, it may be wiser to administer them within 24 hours of ictus rather than wait for a sudden deterioration.
Hypertensive surge Hematoma evacuation Hemicraniectomy	This is an Open Access (OA) journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.
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1. Introduction

Intracerebral haemorrhage (ICH) is associated with high mortality: 40–50% within 30 days and deaths usually occur within the first two days of onset.¹ The incidence of spontaneous ICH among the young (aged below 50 years) is on a sharp rise and accounted for nearly 30% of admitted ICH patients.² We probably need to change our treatment plan.

2. Case Report

A 37-year-old man known hypertensive missed his regular antihypertensive medication and attended emergency with right sided weakness and mild speech impairment. At the emergency room, he was conscious, dysarthric with mild expressive aphasia. He had blood pressure was 160/90 millimetre of mercury and heart rate of 90/minute; rest vital parameters were within normal limits. The power of the right upper and lower limb was MRC (Medical Research Council scale) 4/5; had mild sensory impairment on the right The initial ECG had features of ventricular hypertrophy. We modified antihypertensives (started amlodipine ten miligram with telmisetron 40 miligram), brought down blood pressure to 120/80 millimetre of mercury; maintained it strictly along with close monitoring of vitals, GCS (Glassgow Coma Scale) and pupils with a plan for surgical intervention if he deteriorates. He improved the next day regarding power and speech. His blood counts, coagulation parameters, homocysteine level, vasculitis markers, renal, and hepatic function tests were unremarkable.

On the third day morning, patient became drowsy with fluctuations in blood pressure: blood pressure was 150/ 90 millimetre of mercury and we planned for repeat CT scan of the brain. He became drowsier on his way to scanner and blood pressure shot up to 200/100 millimetre of mercury. Repeat CT scan showed rebleeding at the same

side. The finger to nose finger and heel-shin test was positive on the right side. The NIHSS (National Institutes of Health Stroke Scale) was 7. CT scan (Computed Tomography scan) of the brain revealed left gangliothalamic bleeding with an ICH (Intracranial Haemorrhage) score of 1. [Figure 1] The basal ganglia bleed explains the expressive aphasia.³

^{*} Corresponding author. E-mail address: drdchakraborty1980@gmail.com (D. Chakraborty).

left gangliothalamic region, with massive mass effect and midline shift. [Figure 2] The dose of anti-oedema measure (mannitol) was increased (had been started initially), and the patient underwent urgent clot evacuation along with hemicraniectomy. His GCS did not improve further, and he remained in support of an artificial ventilator. Five days later, despite strict monitoring, he had another surge of blood pressure and he succumbed. Ethical clearance had been obtained for publication



Figure 1: Acute bleed in left basal ganglia and thalamus.



Figure 2: Repeat CT scan on third day showing re-bleeding at the leftganglio-thalamic region with significant edema, mass effect and mid-line shift

3. Discussion

ICH is more dynamic phenomenon rather than a single event disease and almost 70% of ICHs have been noted to expand in the first 24 hours from the onset because of persistent or re-bleeding and 26% of them had within one hour of the first CT scan.⁴ The expansion of the initial haematoma (defined by volume increment from 33 to 50%) was noted

to be significantly associated with poor outcome.⁵ The perihematomal edema (PHE) is the next concern which may last for three weeks and interestingly was noted to be more with smaller haematoma (with larger surface area). Not surprisingly, the calculation of the FUNC Score (Functional Outcome in Patients With Primary Intracerebral Haemorrhage), and modified ICH Score using 24-hour imaging had better prognostic value in predicting 90-day mortality compared with those calculated at presentation.⁶

Thus, the behaviour of the haematoma is neither predictable nor manageable with confidence and the first twenty-four hours are most crucial. The medical treatment modalities for preventing haematoma expansion or decreasing perihaematomal edema are still evolving. Besides that, there is always a challenge of the blood pressure control (cerebral perfusion pressure maintenance versus haematoma growth prevention). In an unfortunate incident in young (like in our case) a sudden surge of blood pressure despite initial control may be detrimental. The dynamic cerebral auto-regulatory mechanism is less effective in patients with basal ganglia and lobar ICH.⁷This autoregulatory failure is more a possibility in young patients who are not chronically hypertensives (the blood vessel wall is not adaptive enough to sustain very high blood pressures), yet these young patients have more frequent surges of blood pressure owing to strong sympathetic wing of the autonomic nervous system.

Surgical intervention in ICH is commonly reserved for patients who deteriorate in conservative management. In a resource poor country where patient to health staff ratio is still not up to the mark, monitoring of the patient and "surgical intervention only when patient deteriorates" is practically not possible in all cases. The situation is more challenging in younger patients: the perihematomal oedema may increase for prolonged period and more importantly because of less atrophic brain they deteriorate fast, giving not much time to intervene in many situations. A higher percentage of hematoma removal results in slower PHE growth.⁸However, in a very acute setting, release of tamponating tissue pressure in a considerable size of haematoma may cause rebleeding. So, we need to balance between the risk of haematoma expansion (post evacuation) and potential benefit of clot removal (reduction of inflammation, oedema and apoptosis).

Haematoma of over 20 millilitre was found to be unstable (defined as over six millilitre increase of haematoma compared to previous volume of blood in the CT scan taken at least six hours apart within 24 hours of symptom onset) and 50 % of them exhibited haematoma expansion.⁹Not surprisingly, very early craniotomy within four hours of the ictus resulted in re-bleeding but if surgery was done between 12-24 hours using minimally invasive surgical devices, it was safe regarding re-bleeding or haematoma expansion.¹⁰ In fact, with more advancement of surgical techniques, early

(less than eight hours) endoscope-assisted ICH evacuations have been safe and effective in selected patients of ICH.¹¹

Thus, the safety of early surgery will not only depend on the timing of surgery but also on the type of surgical technique used, how successfully the oozing vessels were coagulated and the quality of haemostatics administered.

Monitoring blood pressure significantly influences the prediction of rebleed or hematoma expansion. The strict monitoring and appropriate medication are definitely beneficial. In spite of these, there can be fatal re-expansion in patients due to perilesional edema and expansion of the ICH itself. Surgery for gangliocapsular bleed has appropriate guidelines, with clinician discretion on an individual patient basis. Although performing specific surgeries that are appropriately chosen can be beneficial, there is a lack of data on this topic. However, unanimously, we cannot ignore the importance of intensive blood pressure monitoring and management.

4. Conclusion

Hence, not only in those cases where we may predict haematoma expansion, early evacuation of haematoma rather than only craniectomy should be seriously considered as the protocol in all cases of spontaneous intracerebral haemorrhage in young unless the amount of blood is negligible. The minimally invasive procedures demand urgent research in all populations (more in the young) keeping in mind the positive outcome of ENRICH trial.¹² Such a venture will also avoid unnecessary complications of prolonged hospital stay, decreasing overall treatment costs and reduce burden on health care system.

5. Source of Funding

None.

6. Conflict of Interest

None.

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Author's biography

Debabrata Chakraborty, Senior Consultant

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