

Analysis of some prognostic factors of patients with acute hypertensive basal ganglia intracerebral hemorrhage

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SUMMARY

Objective: To describe clinical features of acute hypertensive basal ganglia intracerebral hemorrhage. Subjects and methods: a descriptive study of 121 patients with acute hypertensive basal ganglia intracerebral hemorrhage at Department of Neurology, Bach Mai Hospital from June 2021 to December 2022.

Results: The mean age of the study group was 59.6 ± 11.5 . Male/Female ratio 1.9. Research shows that the rate of deterioration in the age group ≥ 65 is 51.4%, 2.5 times higher than the age group < 65 years old. Hematoma volume $\geq 60 \text{ cm}^3$ and hematoma size $\geq 3\text{cm}$ are severe prognostic factors. There is a difference between the two progression groups, this difference is statistically significant ($p > 0.05$). The rate of deterioration in the group of patients with hematoma midline shift $\geq 5\text{mm}$ (67.6%) is 6.6 times higher than the group of patients with hematoma midline shift $< 5\text{mm}$.

Conclusion: The study was conducted on 121 patients with acute hypertensive basal ganglia intracerebral hemorrhage treated at Bach Mai Neurological Center from July 2021 to December 2022. The average age of the research group was $59,6 \pm 11,5$ years old. The male/female ratio was 1.9. The results show that valuable factors in predicting poor outcome in patients with acute hypertensive basal ganglia intracerebral hemorrhage treated include: age ≥ 65 , hematoma size $\geq 3\text{cm}$, hematoma volume $\geq 60 \text{ cm}^3$ and midline shift $\geq 5\text{mm}$.

Key words: basal ganglia hemorrhage, hypertensive, prognosis.

I. INTRODUCTION

Intracerebral hemorrhage is the second most common

subgroup, accounting for about 10-20% of stroke cases¹. Hypertension is one of the main causes of intracerebral hemorrhage, with the rate of deep hypertensive intracerebral hemorrhage being twice that of lobar hemorrhage. The basal ganglia is the most common position in hypertensive intracerebral hemorrhage². So far, hemostatic agents and neuroprotective drugs have not shown any clinical improvement. Early diagnosis and prognosis are very significant for the treatment care process to reduce mortality and disability in patients. Therefore, we conducted this study to analyze some prognostic factors of acute hypertensive basal

ganglia intracerebral hemorrhage.

II. SUBJECTS AND METHODS OF RESEARCH

2.1. Research subjects

The research subjects included 121 patients diagnosed with acute hypertensive basal ganglia intracerebral hemorrhage, treated at the Neurology Center of Bach Mai Hospital from July 1, 2021, to December 30, 2022.

2.2. Methods of research

Cross-sectional descriptive study.

III. RESEARCH RESULTS

3.1. General Characteristics of the Study Subjects

Table 1. General characteristics of the study subjects

| Age | | Gender | Male | Female | Total |
|-------------|--------|--------|------------|------------|---------------|
| | | | n= 79 | n= 42 | n= 121 (100%) |
| Average age | | | 79 (65,3%) | 42 (34,7%) | 59,6 ± 11,5 |
| Age group | < 25 | | 0 (0%) | 0 (0%) | 0 (0%) |
| | 25- 34 | | 2 (25,3%) | 0 (0%) | 2 (1,7%) |
| | 35- 44 | | 6 (75,9%) | 2 (4,76%) | 8 (6,6%) |
| | 45- 54 | | 17 (21,5%) | 10 (23,8%) | 27(22,3%) |
| | 55- 64 | | 32 (40,5%) | 15 (35,7%) | 47 (38,8%) |
| | ≥ 65 | | 22 (27,8%) | 15 (35,7%) | 37 (30,6%) |

Comments: The number of male patients was higher than the female. This ratio was 1.9/1. The average age of the study group was 58.04 ± 12.66 , ranging from 25 to 82 years old. The group of patients over 55 years old accounted for the highest proportion at 38,8%, while the group of patients under 35 years old had the lowest proportion.

3.2. Analysis of some prognostic factors

3.2.1. Age group and outcome

Table 2. Age group and outcome

| | | Poor Outcome (mRs 4-6) | Good Outcome (mRs 0-3) | Total | OR | P |
|------|--------------------|------------------------|------------------------|-------|-----|-------|
| < 65 | Number of patients | 25 | 59 | 84 | 2,5 | <0,05 |
| | Percentage ratio | 29,8% | 70,2% | 100% | | |
| ≥ 65 | Number of Patients | 19 | 18 | 37 | | |
| | Percentage ratio | 51,4% | 48,6% | 100% | | |

Comments: Poor outcome percentage is 51,4% in the group of patients over 65 years old, which was higher than that in the group of patients under 65 years old (29,8%), $p < 0,05$.

3.2.2. Hematoma volume and outcome

Table 3. Hematoma volume and outcome

| Volume (cm ³) | | Poor outcome (mRs 4-6) | Good Outcome (mRs 0-3) | Total | P |
|---------------------------|--------------------|------------------------|------------------------|-------|--------|
| < 60 | Number of patients | 17 | 70 | 87 | < 0,01 |
| | Percentage ratio | 19,5% | 80,5% | 100% | |
| ≥ 60 | Number of patients | 27 | 7 | 34 | |
| | Percentage ratio | 79,4% | 20,6% | 100% | |

Comments: Poor outcome proportion in the group of patients with hematoma volume over 60 cm³ (79,4%) higher than that in group of patients having hematoma volume under 60 cm³ (19,5%), $p < 0,01$.

3.2.3. Hematoma size and outcome

Table 4. Hematoma size and outcome

| Hematoma size (cm) | | Poor outcome (mRs 4-6) | Good outcome (mRs 0-3) | Total | p |
|--------------------|--------------------|------------------------|------------------------|-------|--------|
| < 3 | Number of patients | 1 | 53 | 54 | < 0,01 |
| | Percentage ratio | 1,9% | 98,1% | 100% | |
| ≥ 3 | Number of patients | 43 | 24 | 67 | |
| | Percentage ratio | 64,2% | 35,8% | 100% | |

Comments: In the group of patients that having hematoma size under 3cm there was 1 patient with poor outcome, accounting for about 1,9%. In 67 patients with hematoma size over 3cm, there are 43 patients with poor outcome accounting for 64,2%. P value < 0,01.

3.2.4. Midline shift and outcome

Table 5. Midline shift and outcome

| Midline shift (mm) | | Poor outcome (mRs 4-6) | Good outcome (mRs 0-3) | Total | P |
|--------------------|--------------------|------------------------|------------------------|-------|--------|
| < 5mm | Number of patients | 21 | 66 | 87 | < 0,01 |
| | Percentage ratio | 24,1% | 75,9% | 100% | |
| ≥ 5mm | Number of patients | 23 | 11 | 34 | |
| | Percentage ratio | 67,6% | 32,4% | 100% | |

Comment: The rate of poor progression in the group of patients with hematoma pushing the midline ≥ 5 mm (67.6%) was 6.6 times higher than that in the group of patients with hematoma pushing the midline < 5mm, $p < 0.01$.

IV. DISCUSSION

The study was conducted on 121 patients with acute hypertensive basal ganglia intracerebral hemorrhage treated at Bach Mai Neurology Center from July 2021 to December 2022. The results showed that the average age of the study group was 59.6 ± 11.5 . The male/female ratio was 1.9. In terms of prognostic factors, the study showed that in the age group < 65 years old, the rate of poor outcome was 27.4%, in the age group ≥ 65 years old, the rate of poor outcome was 64.9%. Thus, in the age group ≥ 65 years old, the prognosis was worse, $p = 0.001$. The rate of poor outcome in the group with $V \geq 60 \text{ cm}^3$ (57.1%) was higher than that of the group with $V < 60 \text{ cm}^3$ (37.7%), however, p value < 0.05. In 54 patients with hematoma size < 3cm, there

was 1 patient with poor outcome (1.9%), in 67 patients with hematoma size ≥ 3 cm, there were 43 patients with poor outcome (64.2%), $p < 0.01$. The rate of poor outcome in the group of patients with hematoma pushing the midline ≥ 5 mm (67.6%) was 6.6 times higher than the group of patients with hematoma pushing the midline < 5mm. This result is similar to many studies in the world on prognostic factors for cerebral hemorrhage in general. According to Gebel J.M. Edward C et al. studied imaging of 142 patients with supratentorial hemorrhage within the first three hours and concluded that for patients with supratentorial hemorrhage without intraventricular hemorrhage within the first three hours after stroke, the determination of the volume of edema surrounding the hematoma was the strongest independent predictor of functional improvement after 12 weeks of treatment.⁴ Davis SM et al. studied 218 patients with intracerebral hemorrhage and concluded that the extent of hematoma was determined to be an independent predictor of

mortality and functional outcome after stroke ⁵.

V. CONCLUSION

The study was conducted on 121 patients with acute hypertensive basal ganglia intracerebral hemorrhage treated at Bach Mai Neurology Center from July 2021 to June 2022. The average age of the study group was 59.6 ± 11.5 . The male/female ratio was 1.9. The results showed that valuable factors in predicting poor outcomes in patients with patients with acute hypertensive basal ganglia intracerebral hemorrhage included: age ≥ 65 , hematoma size $\geq 3\text{cm}$, hematoma volume $\geq 60\text{ cm}^3$ and midline shift $\geq 5\text{mm}$.

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