TRAUMATIC INTRACEREBRAL HEMORRHAGE: PROGNOSTIC FACTORS AND OUTCOMES

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Introduction

Traumatic brain injury (TBI) is the brain disturbance due to external mechanical forces causing short- or long-term impairment of the brain functions. One of the common and dangerous outcome of traumatic brain injury (TBI) is intracranial hemorrhage. Intracranial hemorrhage can be divided into categories based on where it occurs: subarachnoid hemorrhage (SAH), intracerebral hemorrhage, subdural hemorrhage (SDH) or epidural hemorrhage (EDH). Traumatic intracerebral hemorrhage (TICH), also known as cerebral contusion or traumatic intraparenchymal hemorrhage, is reported to be linked with bad prognosis and can cause physical, mental, and cognitive impairment that might last a lifetime. Many variables, including the extent and location of the hemorrhage and the patient's clinical state at the time of presentation, affect how severe intracerebral bleeding turns out, which can determine the need of surgical intervention, length of hospital stay and the patient outcome.

Aim of the work

The aim of this study was to identify prognostic factors in patients suffering from traumatic intracerebral hemorrhage and compare patients with favorable and unfavorable outcomes.

Patients and Methods

This prospective study included patients with traumatic intracerebral hemorrhage admitted to casualty department of Alexandria Main University Hospital during the period of one year, from February 1st 2023 to January 31st 2024. Their demographic, clinical, laboratory and head CT scan imaging data were collected, Patients were followed during their hospital stay clinically and radiologically, also their modes of treatment were assessed. The Glasgow outcome score (GOS) was determined at discharge, GOS scores of 4 or 5 were defined as favourable outcome and GOS scores of 1 to 3 were defined as unfavourable outcome then favourable and unfavourable outcomes were compared.

Results

The study included 156 patients that presented with traumatic intracerebral hemorrhage, 131 (83.97%) were male while 25 (16.03%) were female. 10 patients (7.7%) died (GOS of 1), 26 patients (15.4%) were discharged with severe disability (GOS of 3), 13 patients (8.3%) had moderate disability (GOS of 4) and 107 patients (68.6%) were discharged with good recovery (GOS of 5).

Table (1): Distribution of studied patients according to the Glasgow outcome score on discharge

GOS	Number	%	Outcome classification
1: Death	10	6.4	Unfavorable outcome
2: Neurovegetative state	0	0	Unfavorable outcome
3: Severe disability	26	16.7	Unfavorable outcome
4: Moderate disability	13	8.3	Favorable outcome
5: Good recovery	107	68.6	Favorable outcome

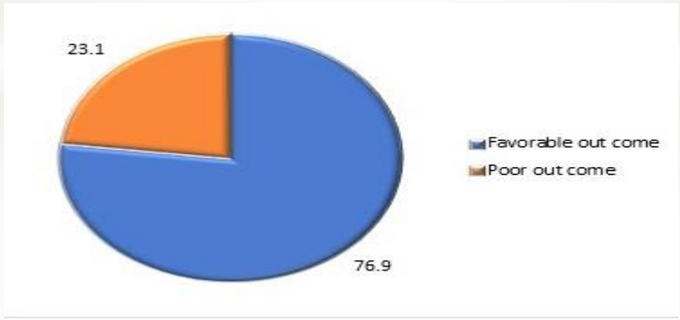

Figure (1): Distribution of studied patients according to the outcome, derived from Glasgow outcome score on discharge

The parameters that showed statistically significant relation with the outcome were lower GCS score on admission, lesion volume, progression of the lesion, coexistence of TICH with subarachnoid and subdural hemorrhage, brain edema, increase in midline shift, altered coagulation parameters and elevated liver enzymes.

Table(2): Relation between the CT findings associated with TICH and the outcome

	Group I Favorable out come "n=120"		Group II Unfavorable outcome "n=36"		Total		P value
Skull fracture	No	%	No	%	No	%	
Absent	93	77.5	26	72.22	119	76.3	0.426
Present	27	22.5	10	27.78	37	23.7	0.513 N.S.
Brain edema							
Absent	104	86.7	2	5.56	106	67.9	83.655
Present	16	13.3	34	94.44	50	32.1	0.001*
Effacement of basal cisterns							
Absent	120	99.2	18	50.00	137	87.8	11.614
Present	0	0.0	18	50.00	18	11.5	0.001*
Midline shift							
Range	0-4.5		3-15.1		0.0-15.1		0.001*
Mean	0.23		6.17		1.6		
SD	0.75		4.27		3.3		

Figure (2): Showing the mean value of midline shift observed in patients who had favorable outcome (group I) as compared to the ones with unfavorable outcome (group II)

26 (72.2%) of the patient that were evaluated to have unfavorable outcome underwent surgical treatment while 6 (5%) patients that were evaluated to have favorable outcome on discharge had undergone surgical treatment.

Conclusion

In patients with traumatic intracerebral hemorrhage, lower GCS score on admission, lesion volume, progression of the lesion, coexistence of TICH with subarachnoid and subdural hemorrhage, brain edema, increase in midline shift, altered coagulation profile and elevated liver enzymes are associated with poor prognosis. Patients with poor prognostic factors are most likely to require surgical treatment with long hospital stays.