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Original Research Article

Study of ICH Score as a Predictor of Outcome in Patient with Spontaneous Intracerebral Haemorrhage on Discharge, 30 Days and 60 Days Follow-Up

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Conflict of interest: Nil

Abstract:

Background: Intracerebral hemorrhage is associated with high morbidity and mortality worldwide accounting for 10-15% of all stroke types, so it requires a reliable prognostic marker which can predict the functional outcome. The Intracerebral haemorrhage (ICH) score was developed as a predictive tool for mortality at 30 days after hemorrhagic stroke Therefore, the present study was conducted to know study the ICH score as an outcome predictor in spontaneous intra cerebral hemorrhage.at tertiary care hospital.

Material and Methods: The study was designed as a prospective observational study conducted at Department of Medicine, Pt. JNM Medical College and its associated Dr. BRAM Hospital and Department of Neurology DKS hospital Raipur. The study spanned from March 2023 to February 2024. The study population was 159patients with Intra Cerebral Haemorrhage. The statistical analysis done using MS Excel and epi info version 7.

Results: The mean age of patients was 58.78 ±14.90 years. Among 159 patients, most of the patients were males 117 (73.58%) followed by females 42 (26.42%) ICH score increases mortality increase with significant difference.

Conclusion: The present study concludes that there is a significant role of ICH Score as a predictor of outcome in Spontaneous Intra Cerebral Haemorrhage

Keywords: ICH score, outcome, Volume, Prognostic, Spontaneous Intracerebral Haemorrhage.

Introduction

Spontaneous intracerebral haemorrhage is a form of stroke caused by a vascular rupture followed by spontaneous blood leakage in the brain parenchyma. Spontaneous intracranial hemorrhage is the second leading cause of stroke, accounting for 7.5-30% of all cases. The intracerebral haemorrhage (ICH) carries a significant mortality even after better care. [1]

Predicting outcomes following intracerebral hemorrhage (ICH) is a difficult undertaking that is based on clinical, biochemical, haematological, and radiological factors.[2,3] The Intracerebral haemorrhage (ICH) score was developed as a predictive tool for mortality at 30 days after hemorrhagic stroke.[4]The Glasgow coma scale (GCS), age above 80 years, location (infratentorial or supratentorial), volume of hematoma on baseline CT scan, and presence of intraventricular extension are the five clinical markers that go into calculating the 6-point ICH score.

The ICH score has been verified for 30-day and one-year functional outcomes in further investigations.[4,5]Studies have also examined its usefulness as a predictor of in-hospital mortality and discharge outcome in spontaneous intracerebral hemorrhage.[6]The ICH score is simple to

calculate, takes less time, is reliable, reproducible, user-friendly (no special neurology training is required), and has been validated to predict 30daysto 60 days mortality.[4-6] Intracerebral hemorrhage is associated with high morbidity and mortality worldwide accounting for 10-15% of all stroke types, so it requires a reliable prognostic marker which can predict the functional outcome of the patient and thereby reducing the morbidity and mortality by early active intervention.[1]

Hence, the present study was conducted to know study the ICH score as an outcome predictor in spontaneous intra cerebral hemorrhage.

Objective: To assess the utility of ICH Score in evaluating outcome in Intra Cerebral Haemorrhage at Discharge,30 Days and 60 Days.

Material and Methods

The present hospital based prospective observational study conducted at Department of Medicine, Pt. JNM Medical College and its associated Dr. BRAM Hospital and Department of Neurology DKS hospital Raipur. The study was conducted from March 2023 to February 2024.

A total of 159 patient's above18 years who presented to hospital with computerized tomography evidence of Intra Cerebral Haemorrhage were included in the study. Patients not giving a valid consent, intracranial space occupying lesion with bleed, haemorrhagic transformation of an Ischemic stroke, patient on anti-coagulant or thrombolytic drugs and patients with bleeding tendencies were excluded from the study. Permission from the Ethical Committee was taken prior to commencement of the study and informed written consent was taken from the participants of the study. Patient demographic and medical details was recorded in the proforma sheet along with the symptoms preceding the disease. The initial examination includes recording of vitals, clinical feature/symptoms, General physical examination, systemic examination, and assessment of ICH Score. Data entry and data analysis was done using MS Excel and epi info version 7 (available from WHO).

Results

A total of 159patients were included during the study period. The mean age of patients was 58.78 ±14.90 years.

Among 159 patients, most of the patients were males 117 (73.58%) followed by females 42 (26.42%) The majority of patients had ICH at basal ganglia 85 (53.46%) followed by lobar region 33 (20.75%), Thalamus 26 (16.35%), brain stem 09(5.66%) and cerebellum 06(3.77%).

Table 1: Distribution according to outcome: (n=159)

Outcome	No of Patients	Percentage
Survived	39	24.53
Died	120	75.47
Total	159	100.00

Table No. 1 showed distribution according to outcome among patients. The mortality among patients was,120 (75.47%).

Table 2: ICH scores and survival at various interval:

ICH score	Total number of patients	Discharged (Alive)		
	At admission (n=159)	At discharge	At 30 days	At 60 days
0	1	1 (100%)	01 (100%)	01 (100%)
1	14	8 (57.14%)	08 (100%)	08 (100%)
2	47	20 (42.55%)	19 (95%)	18 (94.73%)
3	57	15 (26.32%)	13 (86.67%)	12 (92.31%)
4	37	5 (13.51%)	02 (40%)	00 (0%)
5	2	0 (0%)	0 (0%)	0 (0%)
6	1	0 (0%)	0 (0%)	0 (0%)

Table No. 2 showed relation between discharge, 30days, 60days and ICH score at various interval. Only 1 patient having ICH Score 0 and survival was 100% at discharge, 30 days and 60 days. 14 (8.81%) Patients had ICH Score of 1 and survival at Discharge were 8 (57.14%) and 100% at 30 days and 60 days. It was observed that as ICH Score increases survival decreases with statistically significant difference. (P<0.001)

Table 3: ICH scores and mortality at various intervals:

ICH score	Total number of patients	Mortality rate (%)		
	At admission (n=159)	At discharge	At 30 days	At 60 days
0	1	0 (0%)	0 (0%)	0 (0%)
1	14	06 (42.86%)	0 (0%)	0 (0%)
2	47	27 (57.44%)	1 (5%)	1 (5.26%)
3	57	42 (73.68%)	2 (13.33%)	1 (7.69%)
4	37	32 (86.48%)	3 (60%)	2 (100%)
5	2	2 (100%)	0 (0 %)	0 (0%)
6	1	1 (100%)	0 (0%)	0 (0%)

Table No. 3 showed relation between mortality and ICH score at various interval. ICH Score at discharge of ICH Score 0(0%), 1 had 06(42.86%), 2 had 27 (57.44%), 3 had 42 (73.68%), 4 had 32 (86.48%) and 5 and 6 had 2 (100%) and 1(100%) respectively. This shows mortality increases as the ICH score increases at discharge and also at 30 days and 60 days with statistically significant difference. (P<0.001)

Discussion

Spontaneous intracerebral hemorrhage is associated with high mortality and morbidity. In spite of improvement in outcomes in ischemic stroke, outcomes in patients with ICH still remain poor with no specific medical treatment and poor consensus and controversial outcomes of surgical interventions. Various predictive models have been devised to understand the clinical course and outcome of this condition. ICH score is an important indicator for this purpose. [7,8]

Studies regarding outcome in cases of spontaneous intracerebral hemorrhage are limited. Clinical grading scales play an important role in the evaluation and management of patients with acute neurological disorders, especially traumatic brain injury and various types of stroke.[7,8] Such scales serve several valuable purposes that follow from the standardization of assessment afforded by these tools. While many grading scales are used for prognostication and treatment selection in neurological disease, the foremost purpose of these scales is to improve communication and consistency among healthcare providers. Another utility of these scales is the ability to use these scales for risk stratification for treatment selection in clinical care and enrolment criteria for clinical research.

The study aimed to study the precise relation between ICH score at admission and prognosis of patient at discharge 30 days and 60 days follow up. The patients with spontaneous intracerebral hemorrhage were examined clinically, assessed, investigated and treated as per existing practice.

In the present study, mean age of patients was 58.78 ±14.90 years with range was 23-86years. Out of 159 patients, 117 (73.58%) of them were males. The findings were in accordance to study by Hegde et al [9] (2020) Suthar et al [10] (2016) and Singh et al [11] (2020) who reported the male predominance in ICH.

In the present study, out of 159 patient the mortality among patients was 120 (75.47%) and 39 (24.53%) survived. Different authors have reported varying rates. Narayan et al [12] (2016) found mortality rate of 50% for a follow-up period of three months. Bhatia et al [13] (2013) found that 32.7%of the patients died during hospital stay. Suthar et al [10] (2016) reported that 41%of the patients died within six weeks. Ojha et al [14] (2019) found 40% of patients died during hospitalization. Mortality among these cases might be different due to differences in their initial condition or the medical care that was available at the hospital. The 30-day mortality from ICH ranges from 35 to 52%, with one-half of these deaths occurring within the first 2 days.

In the present study, only one patient having ICH Score 0 and survival was 100% at discharge, 30 days and 60 days.14 (8.81%) Patients had ICH Score of 1 and survival at Discharge were 8(57.14%) and 100% at 30 days and 60 days. It was observed that as ICH Score increases survival decreases with statistically significant difference. (P<0.001)

Piyush Ojha et al [14] (2019) observed that as minimal ICH score increases survival with significant difference. Rik Houben et al [15] (2018) in a study also observed ICH score of patients decreased with survival (24%).

ICH Score at discharge of ICH Score 0(0%), 1 had 06(42.86%),2 had 27(57.44%),3 had 42(73.68%),4 had 32(86.48%) and 5 and 6 had 2(100%)and 1(100%) respectively. This shows mortality increases as the ICH score increases at discharge and also at 30 days and 60 days with statistically significant difference. (P<0.001)Piyush Ojha et al [14] (2019) observed that as ICH score increases mortality increase with significant difference. Rik Houben et al [15] (2018) in a study also observed ICH score of patients increased with mortality (24%) Singh et al [11] (2020) found association between ICH score and mortality.

In a study by J. Claude Hemphill et al [16] (2019) ICH Score remained a significant predictor of mortality risk at 30 days (c=0.86), as well as 3 months (c=0.88), 6 months (c=0.87), and 12 months (c=0.87) post-ICH (p=0.001) for all time points. Sonia Rodríguez-Fernández [17] (2016) in a study on validation of the intracerebral hemorrhage (ICH) score in patients with a diagnosis of spontaneous ICH observed multiple logistic regression analysis showed a significant relationship between 30-day hospital mortality rate and ICH score predicted mortality, OR 1.02 (95% CI 1.01 to 1.03). The area under the ROC curve was 0.80 (95% CI 0.75 to 0.84) according to this model. This was in accordance with the present study.

Conclusion

The present study concludes that there is a significant role of ICH Score as a predictor of outcome in Spontaneous Intra Cerebral Haemorrhage. The rate of mortality increases as the ICH score increases with statistically significant difference. The overall mortality at Discharge, 30 day and 60 days had significant correlation with ICH score.

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