Original Research Paper

General Medicine

PROGNOSTIC PREDICTORS OF 30 DAY OUTCOME IN PATIENTS WITH NON –TRAUMATIC INTRAPARENCHYMAL HAEMORRHAGE

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ABSTRACT **BACKGROUND:** Cerebrovascular diseases rank first in frequency and important among all neurologic diseases. Intracranial hemorrhage includes: 1. Intraparenchymal hemorrhage 2 .Intra ventricular hemorrhage 3. Subarachnoid hemorrhage .Various factors have been studied to predict outcome including age, gender, initial mean arterial blood pressure, temperature, volume of bleed, site of bleed, intraventricular extension, mass effect and initial level of consciousness.

METHODS : This study is an observational study and was conducted in the ASRAM hospital with 100 sample size taken including patients with non traumatic intra parenchymal hemorrhage ,admitted to medical wards and ICU. This study excludes,1 Patients with history of Trauma 2. Patients with sub arachnoid hemorrhage alone 3. Patients with intra ventricular hemorrhage alone 4. Patients with previous history of intra parenchymal hemorrhage

RESULTS: Mortality is high in extremes of age groups, particularly older age group, There is no persistent relation between the age and the mortality. Incidence of intra parenchymal hemorrhage is higher in males, but the mortality rate is higher in the females. Temperature cannot serve as a prognostic predictor as the values were not applicable for bleed in all locations. Incidence of Intra parenchymal hemorrhage is high in patients who are not known hypertensives ,than in known hypertensives. Intra parenchymal hemorrhage patients in order of importance according to this study are i) Volume > 60ml ii) Glassgow coma scale<8 iii)Presence of Intra ventricular hemorrhage iv)Mean arterial pressure >145mm of Hg.

CONCLUSION: Age, Gender, Temperature do not have a significant role in detecting the 30 day mortality rate in patients with Intra parenchymal hemorrhage. A case of stroke with Intra cerebral hemorrhage with Mean arterial pressure < 145mm Hg, GCS > 8, Volume of Bleed < 30ml, in the absence of Intra ventricular hemorrhage has 80% chance of survival after 30 days with the best National institutes of health stroke scale score.

INTRODUCTION:

Cerebrovascular diseases rank first in frequency and important among all neurologic diseases.

Intracranial hemorrhage includes: **1**. Intraparenchymal hemorrhage **2**. Intraventricular hemorrhage **3**. Subarachnoid hemorrhage .Various factors have been studied to predict outcome including age, gender, initial mean arterial blood pressure, temperature, volume of bleed, site of bleed, intraventricular extension, mass effect and initial level of consciousness .It is the second cause of mortality in the World Many controversies surround the management of patients with ICH in large part because of paucity of prospective randomized controlled trial data that might more rationally guide therapy. These controversies include management of hypertension, treatment of raised ICP and appropriate use of surgical techniques.

AIM & OBJECTIVE :

To evaluate the prognostic factors in predicting 30 day outcome in patients with non traumatic intra parenchymal haemorrhage admitted to ASRAM hospital.

To find out the prognostic significance of:
a. Age b. Temperature c. Mean arterial pressure d. GCS score at admission e. Volume of Bleed

f. Location of Bleed g. Intra ventricular haemorrhage in predicting 30 day outcome assessed by NIHSS score in patients with non-traumatic intra parenchymal haemorrhage admitted to the ASRAM hospital

MATERIALS AND METHODS:

All patients with acute stroke(non traumatic intraparenchymal haemorrhage) admitted in the medical ward and ICU of department of General medicine ,ASRAM Medical college ,Eluru from 2017 to 2018

SAMPLE SIZE : 100 cases
SAMPLE PROCEDURE : Observational study
STUDY DURATION : 2017-2018

INCLUSION CRITERIA :

Patients with non traumatic intra parenchymal haemorrhage admitted to medical wards.

EXCLUSION CRITERIA:

1. Patients with history of Trauma
2. Patients with sub arachnoid haemorrhage alone
3. Patients with intra ventricular haemorrhage alone
4. Patients with previous history of intraparenchymal haemorrhage.

SOURCE OF COLLECTION OF DATA:

The following data were collected from the patients:

1. Age
2. Temperature in °F at admission
3. Mean arterial pressure. This is calculated by: Mean arterial pressure = Diastolic pressure + 1/3 pulse pressure .
4. Glassgow coma score at admission to assess the severity of the bleed. CT brain was done on the day of admission and the following data were collected
5. Volume of Bleed
6. Location of Bleed
7. Presence / Absence of Intra ventricular haemorrhage

RESULTS AND OBSERVATIONS :

Total No. of cases studied = 100
No. of deaths in 30 days = 51
No. of patients survived after 30 days = 49
No. of male cases = 72
No. of female cases = 28
No. of Hypertensive cases = 32
No. of non-hypertensive cases = 68

AGE AS A PROGNOSTIC PREDICTOR OF IPH:
 The most frequent age group affected is 51 – 60 years in wide range 41 – 70 years. Mortality is high in extremes of age groups, particularly older age group. There is no persistent relation between the age and the mortality. This may be due to diverse etiology/coexistent morbidities .So, age cannot serve as a definite prognostic predictor.

GENDER AS A PROGNOSTIC PREDICTOR OF IPH:

Type of Patients		No of Deaths	Mortality Rate
Number of Male Patients	72	35	48.61%
Number of Female Patients	28	16	57.14%

Incidence of intra parenchymal hemorrhage is higher in males.

Male: Female ≈ 3 : 1. But the mortality rate is higher in the females

TEMPERATURE AS A PROGNOSTIC PREDICTOR OF IPH:

Temperature		No of Deaths	Mortality Rate
>103o F Patients	15	10	66.66%
<103o F Patients	85	48	48.23%

Patients with brainstem bleed had temperature more than 103°F.

Temperature cannot serve as a prognostic predictor as the values were not applicable for bleed in all locations.

Hypertension as a prognostic predictor of IPH:

Type Of Patient	No. Of Patients	No. Of Deaths	Mortality Rate(%)
Hypertension	32	10	31.25
Non-hypertension	68	41	60.29
Total	100	51	

Incidence of IPH is high in patients who are not known hypertensives than in known hypertensives.

Mortality is higher in non-hypertensive IPH.

This may be explained by:
i.   They are hypertensives not detected earlier.
ii.   Adaptation of the cerebral vessels to the increased pressure in known hypertensives.

MAP AS A PROGNOSTIC PREDICTOR OF IPH:

Type of Patients		No of Deaths	Mortality Rate
MAP >145 mmhg Patients	26	21	80.76%
MAP <145 mmhg Patients	74	30	40.54%

The mortality rate in patients with MAP >145 is almost double that of patients with MAP <145.

So, MAP serves as an important prognostic predictor of 30 day outcome in non-traumatic intra parenchymal haemorrhage patients.

GCS AS A PROGNOSTIC PREDICTOR OF IPH

TYPE OF PATIENT	NO. OF PATIENTS	NO. OF DEATHS	MORTALITY RATE(%)
GCS<8	57	49	85.96
GCS>8	43	2	4.65
TOTAL	100	51	

Higher the GCS score, higher is the survival rate.

GCS at admission also correlates with the morbidity rate.

Patients with ↑ GCS score has lesser morbidity i.e. NIHSS < 6/42.

So, GCS can serve as an important predictor of both mortality and morbidity of non traumatic IPH.

VOLUME OF BLEED AS A PROGNOSTIC PREDICTOR OF IPH:

Type of Patient	No. of patients	No. of deaths	Mortality rate (%)
Volume <30 ml	51	10	19.6
Volume 30 - 60 ml	37	30	81.08
Volume >60 ml	12	11	91.66
Total	100	51	

Mortality rate is less when the bleed is less than 30 ml.

Mortality rate for bleed more than 60 ml and 30 – 60 ml is more or less nearer.

Bleed less than 30 ml has a good prognosis and more than 30 ml has a bad prognosis.

So, volume of bleed is an important prognostic predictor of non-traumatic IPH.

LOCATION OF BLEED AS A PROGNOSTIC PREDICTOR OF IPH

Location of Bleed	No of Patients	No of Deaths	Mortality Rate
Ganglio capsular	49	23	46.94%.
Lobar	24	12	50%
Thalamus	20	10	50%
Brain stem	7	6	85.71%

Basal ganglia is the most common site of bled followed by the lobar, thalamus and brainstem. Mortality is high with brainstem haemorrh age

IVH AS A PROGNOSTIC PREDICTOR OF IPH :

TYPE OF PATIENT	NO. OF PATIENTS	NO. OF DEATHS	MORTALITY RATE (%)
IVH(+)	48	40	83.33
IVH(-)	52	11	21.15
TOTAL	100	51	

RELATION BETWEEN GCS AND NIHSS SCORE AT 30 DAYS

Type of patient	No. of patients alive	Patients with NIHSS < 6	Patients with NIHSS > 6	Morbidity Rate (%)
GCS < 8	8	0	8	100
GCS > 8	41	35	6	15
Total	49	35	14	

GCS is directly related to decreased NIHSS score.

Higher the GCS, lower the NIHSS score.

PROGNOSTIC PREDICTORS OF 30 DAY MORTALITY INNON TRAUMATIC IPH

Factor	No of Patients	Number of Deaths	Mortality %
MAP > 145	26	21	80.76
GCS < 8	57	49	85.96
Volume > 60ml	12	11	91.66
IVH (+)	48	40	83.33

The prognosis predictors of 30 day mortality in non-traumatic IPH patients in order of importance according to this study are i) Volume > 60ml, ii) GCS < 8 , iii) Presence of IVH, iv) MAP > 145mm of Hg.

DISCUSSION:
MORTALITY RATE:
100 patients were included in this study and 51 patients died at the end of 30 days. The 30 day mortality rate was 51% compared to literature which varies from 20 to 60%.

AGE:
Intra parenchymal haemorrhage was common in the 50-70yrs age group and death was also common in this age group. But Age as such was no found to have direct correlation with 30 day mortality.

GENDER:
In our study, IPH was common in males and it was found that a male has a 3 times risk of developing IPH. But the mortality rate was high in females. Again this was not a significant prognostic factor in determining 30 day mortality.

TEMPERATURE:
Only 15 patients out of 100 patients had temperature above 103F and out of them 100 patients died – 8 of them where of Brainstem Bleed. So, temperature cannot be applied as a significant prognostic factor in determining 30 day mortality for IPH in all locations.

HYPERTENSION:
In 100 patients, 32 patients were known hypertensives and the mortality rate was half in the patients compared to the non

hypertensives. This may be either due to the reason that they are undiagnosed hypertensives or due to the difference in the pathogenesis of a acute rise in BP and a chronic rise in BP.

Further studies regarding the endothelial damage in these patients may clarify these queries.

MAP:
Among the 51 dead patients 21 had a MAP of more than 145mm Hg. MAP is found to be a more significant predictor than the systolic or diastolic BP.

GCS:
Out of 51 dead patients nearly 49 patients had a GCS score < 8 at admission. GCS has got a very strong correlation over the 30 day mortality than any other factor.

VOLUME OF BLEED:
Though a difference is made as mild, moderate and massive bleed, there was no significant mortality difference between moderate and massive bleed. This may be changed by increased availability if neurosurgical care to some of these patients and the mortality can come down. But there was a significant reduction in the mortality in patients with bleed < 30ml..

LOCATION OF BLEED:
Basal ganglia was the common site of Bleed. Nearly 50% cases were Basal ganglia Bleed. 25% Lobar Bleed,, 20% Thalamic Bleed and 5% Brainstem bleed. According to studies also this was the approximate incidence. In this study mortality was higher in Brainstem bleed , but the thalamic bleed did not show a better prognosis . The mortality rates of Thalamic Ganglio capsular and Lobar bleed were similar.

IVH:
Thalamic Bleed with IVH has got a good prognosis compared to lobar bleed with IVH. In my study, presence of IVH in any bleed carried a poor diagnosis.

GCS and NIHSS:
GCS is the single most important factor in predicting both the mortality and morbidity. Patient admitted with high GCS had a low NIHSS score and low GCS had a high NIHSS score.

ICH SCORE :
ICH score consists of GCS score , ICH volume , intraventricular hemorrhage – yes or no ? , Infra tentorial origin of ICH – yes or no ?

Age < 80 years or > 80 years , this ICH score ranges from 0 to 6 points , which predicts the mortality rate in intracerebral hemorrhage .

FEATURE	FINDING	POINTS
GCS	3-4	2
	5-12	1
	13-15	0
AGE	> 80	1
	< 80	0
LOCATION	INFRATENTORIAL	1
	SUPRATENTORIAL	0
ICH VOLUME	> 30CC	1
	< 30CC	0
INTRAVENTRICULAR BLOOD	YES	1
	NO	0
ICH SCORE		0-6POINTS

ADDITIONAL DATA FROM THE STUDY
1. Left side bleed is more common than right side.
2. Diabetes Mellitus is not a common co-morbid condition with intracerebral bleed.
3. Patients who survive the acute stroke in haemorrhage do well than the infarct patients.
4. The common age group is 40 – 60 years.
5. Incidence of ICH is high in males but the mortality is high in females.

CONCLUSION:
Age, Gender, Temperature do not have a significant role in detecting the 30 day mortality rate in patients with IPH.

i) Volume of Bleed ii) GCS at admission iii) Presence of IVH iv)

Mean Arterial Pressure have a significant role in detecting the 30 day mortality in IPH patients.

™ Location of bleed at sites other than Brainstem did not have a difference in mortality in this study. Studies with larger number of patients with different locations of Bleed may throw some light on this aspect .

™ A case of stroke with ICH with MAP < 145mm Hg, GCS > 8, Volume of Bleed < 30ml, in the absence of IVH has 80% chance of survival after 30 days with the best NIHSS score.

™ Early detection of HT and prompt management can prevent the occurrence of event.

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