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A STUDY ON CLINICAL PROFILE, RISK FACTORS AND MORTALITY IN HYPERTENSIVE INTRACEREBRAL HEMORRHAGE IN A TERTIARY CARE HOSPITAL IN SURAT CITY

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ABSTRACT

Background: Hypertensive intracerebral hemorrhage remains a serious disease despite attempts at improving outcome by medical and neurosurgical treatment. This prompted us to conduct a study on the clinical presentation, risk factors and to assess the prognosis and mortality in hypertensive intracerebral hemorrhage.

Methodology: The present study was conducted on the 50 cases of ICH coming to the tertiary care centre of Surat. The clinical profile and risk factors of the enrolled cases were studied. The outcome (30 day mortality) of ICH patients were noted by follow-up or telephonic interview.

Results: Hypertensive intracerebral hemorrhage was most common in males, constituting 80% of the cases. The age range of the cases varied from 35 to 74 years of age. Maximum numbers of cases were in the age group between 44-74 years. A strong diurnal tendency for occurrence of intracerebral hemorrhage was noted with 94% of cases presenting during morning and early afternoon hours. Altered sensorium followed by weakness of limb/limbs constituted the most frequent presenting symptoms. History of smoking was present among 48% of cases. 34% of the cases had a history of alcohol consumption. 60% of the cases had history of tobacco chewing.

Conclusion: It was concluded that the most common presentation of cases of hypertensive ICH was altered sensorium (60%). Diurnal variation in the occurrence of hypertensive ICH was present with 94% of the cases during either morning hours or early afternoon hours. Alcohol abuse and tobacco abuse was significantly associated with 30 days mortality.

Keywords: hypertensive intracerebral hemorrhage, clinical profile, risk factor, mortality

INTRODUCTION

Intracerebral hemorrhage (ICH) is relatively common and with subarachnoid hemorrhage accounts for 15% of all stroke.[1] In the past 30 years, the incidence and prognosis of patients who suffer from ICH have been affected by two significant developments. The advent of aggressive treatment of hypertension has muted the effects of that major risk factor, while the availability of CT scan has made possible the identification of hematomas. Consequently, the bleak prognosis formerly identified with ICH has been revised, and attempts have been made to determine factors that are associated with patient course and the outcome.

It is now well recognized that ICH can have varied clinical presentations including that of transient neurological deficits with rapid improvement. Details of small ICH, their exact locations, cerebral edema, intraventricular (or) subarachnoid hemorrhage by CT scan have not only assisted in early diagnosis and predicting underlying cause of ICH, but also the evaluation of prognosis.

Hypertensive intracerebral hemorrhage remains a serious disease despite attempts at improving outcome by medical and neurosurgical treatment. Outcome is still determined mainly by the severity of bleed and overall mortality is approximately 40-50%.[2,3] Hence identification of modifiable risk factors for ICH is important to influence the incidence of ICH. This prompted us to conduct a study on the clinical presentation, risk factors, localization of hypertensive intracerebral hemorrhage and to assess the prognosis and mortality in hypertensive intracerebral hemorrhage using a clinical grading scale namely ICH score.

MATERIALS AND METHODS

The present study was conducted in the tertiary care centre, SMIMER medical college, Surat. Those confirmed cases of hypertensive intracerebral

hemorrhage that were diagnosed by clinical examination by experts and CT/MRI between February 2011 and May 2012 and who meet the inclusion criteria were enrolled in the study. The inclusion criteria for the study were the cases of ICH who had high blood pressure at the time of presentation, who were known hypertensives and those on anti-hypertensive measures. Those cases who had ICH due to head trauma, hemorrhagic transformation of infarct, subarachnoid hemorrhage, subdural or epidural hematoma, primary intraventricular hemorrhage, intracranial neoplasm, AV malformation or aneurysm, patients on oral anticoagulant therapy and age less than18 years were excluded from the study. A list of risk factors was also made and detailed information was gathered pertaining to it. The cases were investigated Diabetes Mellitus, ECG (electrocardiogram), for retinal changes by fundoscopy, Alcohol consumption (duration, frequency, amount, current alcoholic or not), chewing tobacco (any form) and smoking abuse (bidi, cigarette).

A detailed history was obtained either from the patient or from a close relative, with special reference to presenting symptoms such as altered sensorium, weakness, headache, vomiting, giddiness, seizures and also the time of the onset of illness. A detailed physical and neurological examination was attempted in all the patients with special reference to blood pressure, level of consciousness at the time of admission assessed by Glasgow Coma Scale, fundus examination, CT scan/MRI, eye movement abnormalities and facial weakness, motor weakness, pyramidal signs, cerebellar signs and neck stiffness. Laboratory investigations were conducted for routine blood examination, lipid profile and liver function test. Outcome of the ICH patients was assessed as mortality at 30 days after ICH.

Most patients who survived followed up in the medicine OPD after discharge as they were instructed to follow up on 30th day after their bleed. Those who did not follow up in OPD were contacted telephonically to know about their status, whether live or dead.

RESULTS

The total of 50 cases was enrolled in the study during the study period. The details of the patient and clinical profile are shown in table 1.

It was observed that 19 cases (38%) had associated illness. Among these, most common associated illness was ischemic heart disease (22%). Ischemic heart disease is seen in 10 male patients and one female case. History of ischemic stroke was present in 4 cases (8%), 3 males and one female. Three cases had COPD and one female had bronchial asthma. Upper motor neuron facial palsy was the commonest cranial nerve involvement, which was present in 20 cases (40%). Fundus examination was done in all cases, out of which 16 cases (32%) revealed hypertensive changes in the fundus. None of the patients had evidence of papiloedema or subhyloid hemorrhage.

Table 1: Clinical profile of cases (n=50)

	Frequency (%)
Age group	
35-44	12 (24)
45-54	10 (20)
55-64	15 (30)
65 & above	13 (26)
Presenting symptoms	
Altered sensorium	30 (60)
Weakness of limb/limbs	29 (58)
Vomitting	23 (46)
Headache	22 (44)
Giddiness	10 (20)
Seizure	3 (6)
Category of hypertension	
Hypertensives on regular medications	30 (60)
Hypertensives on irregular medications	12 (24)
Newly diagnosed Hypertensives	8 (16)
Site of hematoma	
Ganglio-thalamic	23 (46)
Ganglio-capsular	10 (20)
Lobar	14 (28)
Cerebellar	1 (2)
Pontine	2 (4)

ECG of 26 cases (52%) revealed changes of the left ventricular hypertrophy. Serum cholesterol level of 40 cases (80%) was below 200mg/dl while rest 10 cases (20%) had value >200mg/dl. Coagulation profile of the cases studied namely Prothrombin time (PT) and activated plasma thromboplastin time (aPTT) were within normal limits. Normal value PT < 14/sec, aPTT < 45/sec. Neuroimaging was carried out in all 50 cases in which CT scan brain was done in all of them. Out of 50 cases, 27 cases (54%) had left sided hematoma, 21 cases (42%) had right sided hematoma while 2 cases (4%) presented with bilateral hematoma.

DISCUSSION

In the present study, maximum number of cases i.e. 38 (76%) were between the age groups 45 to 74 years and age ranged from 35 to 74 years. All studies have shown a steep rise in incidence with increasing age. A.K. Thacker et al[4] reported, out of 50 cases of ICH, 39 (78%) were in the age group of 41-70 years and age ranged from 16-85 years.

In the present study, a strong diurnal tendency for the onset of symptoms was noted i.e. 94% of patients had their onset of symptoms either during morning hours or early afternoon hours ranging from 4:20am to 2:00pm. The study conducted by Sloan et al[5] comprising of 237 patients with ICH, established that a diurnal variation in measured blood pressure occurs, with the peak reached in the period from midmorning to early afternoon. Since the patients with ICH tend to have higher blood pressure level than patients with ischemia,[6] diurnal variation in the occurrence of hemorrhagic stroke would be expected. Altered sensorium was present in about 60% of patients in the Harvard stroke registry studied by Mohr JP et al.[7] It was the presenting symptom in 72% of the patients in the Perth

community stroke study register. Headache and vomiting at the onset has been variably reported ranging from 23% to 44%. These findings stress the important clinical point that absence of headache or vomiting does not rule out ICH. On the other hand, when present, these signs suggest ICH as the most likely diagnosis. Diabetes mellitus was present in 10 (20%) of the patients studied.

Table 2: Association between risk factors and survival after 30 days

Risk factors	Died	Survived	Odds ratio	95% CI
Sex				
Male	18	22	1.227	0.2996-5.027
Female	4	6		
Diabetes				
Diabetes present	6	4	2.25	0.5469-9.257
Diabetes absent	16	24		
Smoking abuse				
Present	13	11	2.232	0.7146-6.973
Absent	9	17		
Alcoholic				
Present	16	1	72.0	7.935-653.3
Absent	6	27		
Tobacco abuse				
Present	19	11	9.788	2.332-41.08
Absent	3	17		
Serum Cholesterol				
>=200	7	3	3.889	0.871-17.36
<200	15	25		
Volume of hematoma				
>=30 cc	18	21	6.0	0.6731-53.49
<30 cc	1	7		
Origin of hematoma				
Infratentorial	3	0	-	-
Supratentorial	19	28		

Juvela et al[8] reported diabetes mellitus in only 14 out of 156 patients with ICH. The higher percentage of prevalence of diabetes mellitus in our study could be due to the high prevalence of diabetes mellitus in general Indian population. In the present study, history of smoking was present in 24 cases (48%), all were male and 17 patients (34%) were currently smoking. Craig S. Anderson[9] reported history of smoking in 29% of patients and ex-smoking in 19% of patients out of 60% cases of ICH. However, Seppo Juvela et al[8] observed that smoking was more common in male patients with subarachnoid hemorrhage than in male patients with ICH irrespective of alcohol intake. In our study, history of alcohol consumption was present in 17 patients (24%), 9 patients (18%) were drinking currently and all the patients were males. According to the study conducted by Seppo Juvela et al[10], the severity and location of ICH, the age of the patients and the amount of alcohol consumed within one week before ICH seem to be independent factors determining outcome and hence alcohol consumption before ICH seems to be the only modifiable prognostic factor. Although numerous mechanisms exist by which heavy use of alcohol may predispose to stroke, those particularly relevant to ICH include raised blood pressure and its inhibitory effect on platelet function.[8,10] In the present study, tobacco chewing was present in 30 cases (60%) and all were male. The exact relationship between tobacco chewing and ICH has not been studied till now. There are several reports of high blood pressure among smokeless tobacco chewers than in non-users.[11] This could partly explain the high prevalence of tobacco chewing in the patient population with ICH. This excess mortality could have been due to cardiovascular and cerebrovascular causes. Thus tobacco chewing could be evaluated as an important correctable risk factor for ICH and further studies would be required to assess this co-relation.

The majority of cases of ICH occur in supratentorial compartment, mostly involving the deep structures of cerebral hemispheres, the basal ganglia and the thalamus.[12] In addition, a significant number occurs in the lobar location. This distribution was also seen in other studies. Ota Hirotsugu and Yokota Akira[13] reported 20 cases of multiple simultaneous hypertensive lobar hemorrhage in whom enhanced CT scan, MRI and angiography was done but no abnormality in the vascular structures was found.

CONCLUSION

It was concluded that the most common presentation of cases of hypertensive ICH was altered sensorium (60%). Diurnal variation in the occurrence of hypertensive ICH was present with 94% of the cases during either morning hours or early afternoon hours. Alcohol abuse and tobacco abuse was significantly associated within 30 days mortality among ICH cases.

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