

ORIGINAL RESEARCH

Assessment of occurrence of intracerebral hemorrhage in diabetics

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ABSTRACT

Background: A brain hemorrhage, also known as intracerebral hemorrhage (ICH), is a serious medical condition characterized by bleeding within the brain tissue. The present study was conducted to assess occurrence of intracerebral hemorrhage in diabetics. **Materials & Methods:** 65 patients with intracerebral hemorrhage of both genders were selected. Parameters such as smoking, hyperlipidemia, hypertension, and diabetes, etc. was recorded. **Results:** Group I had 35 males and 30 females and group II had 33 males and 32 females. In group I and group II, smoking was seen in 52% and 31%, diabetes in 68% and 19%, hyperlipidemia in 43% and 30%, and hypertension in 82% and 36% respectively. The difference was significant ($P < 0.05$). **Conclusion:** The maximum patients suffering from intracerebral hemorrhage had diabetes as compared to healthy subjects in which prevalence of diabetes was low.

Keywords: brain hemorrhage, Diabetes, hyperlipidemia

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INTRODUCTION

A brain hemorrhage, also known as intracerebral hemorrhage (ICH), is a serious medical condition characterized by bleeding within the brain tissue.¹ This bleeding can occur suddenly and is often caused by the rupture of a blood vessel in the brain. The accumulated blood puts pressure on the surrounding brain tissue, causing damage and potentially leading to a range of symptoms depending on the location and severity of the hemorrhage.²

Ten percent of brain strokes are non-traumatic brain hemorrhages, which are the most significant and deadly kind of stroke. It is one of the consequences of hypertension, with an estimated incidence of 12 to 15 occurrences per 100,000 persons.³ With a 30% death rate and a high morbidity rate among survivors, it is an extremely serious illness. The death rate is roughly 44% in the first thirty days after bleeding, and it rises to 75% in the first 24 hours if the bleeding happens in the brainstem or pons.⁴ The average age at which this hemorrhage occurs is 55 years or older, and patients

over 70 have a seven-fold higher risk of bleeding than those under 50. Vascular abnormalities are typically the cause of bleeding at younger ages. Destructive alterations in the brain arteries, such as segmental lipohyalinosis, pseudo-aneurysm, or rupture, can result in brain hemorrhage.⁵ The present study was conducted to assess occurrence of intracerebral hemorrhage in diabetics.

MATERIALS & METHODS

The present study consisted of 65 patients with intracerebral hemorrhage of both genders. All gave their written consent to participate in the study. Data such as name, age, gender etc. was recorded. Patients with intracerebral hemorrhage were put in group I and healthy subjects in group II. Parameters such as smoking, hyperlipidemia, hypertension, and diabetes, etc. was recorded. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS**Table I Distribution of patients**

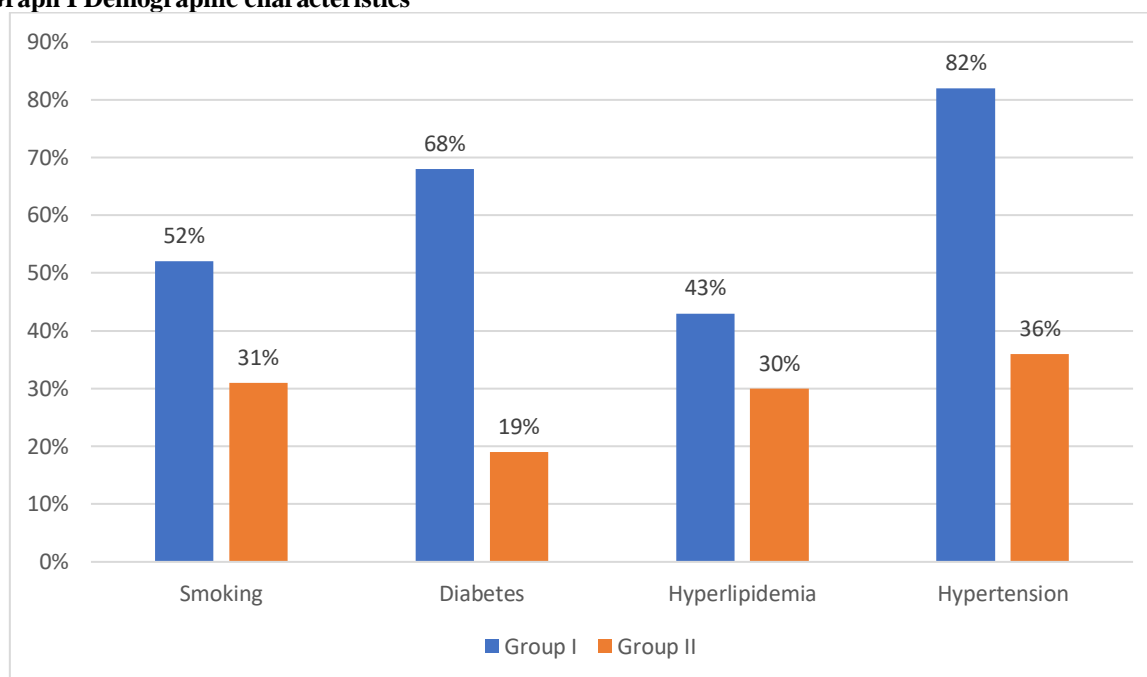
Groups	Group I	Group II
Status	Intracerebral hemorrhage	Healthy
M:F	35:30	33:32

Table I shows that group I had 35 males and 30 females and group II had 33 males and 32 females.

Table II Demographic characteristics

Parameters	Group I	Group II	P value
Smoking	52%	31%	0.02
Diabetes	68%	19%	0.01
Hyperlipidemia	43%	30%	0.04
Hypertension	82%	36%	0.01

Table II, graph I shows that in group I and group II, smoking was seen in 52% and 31%, diabetes in 68% and 19%, hyperlipidemia in 43% and 30%, and hypertension in 82% and 36% respectively. The difference was significant ($P < 0.05$).

Graph I Demographic characteristics

DISCUSSION

Common causes of brain hemorrhage include hypertension, aneurysm, trauma, arteriovenous malformations (AVMs), blood-thinning medications, and bleeding disorders.⁶ Chronic high blood pressure weakens the walls of blood vessels, increasing the risk of rupture. A weakened area in a blood vessel wall can balloon and rupture, causing bleeding into the brain. Severe head injury or trauma can lead to bleeding within the brain tissue.⁷ Abnormal connections between arteries and veins in the brain can rupture and cause hemorrhage. Certain medications, such as anticoagulants, can increase the risk of bleeding. Conditions that affect the blood's ability to clot properly can increase the risk of spontaneous bleeding.^{8,9} The present study was conducted to assess occurrence of intracerebral hemorrhage in diabetics.

We found that group I had 35 males and 30 females and group II had 33 males and 32 females. Hesami et al¹⁰ evaluated the role of diabetes mellitus as the risk of intracerebral hemorrhage. In this case-control study, 135 patients with low back pain served as the control group, while 120 patients who presented with intracerebral hemorrhage had their diabetes mellitus prevalence assessed. In patients experiencing

intracerebral hemorrhage, the mean age was 67.5 ± 12.7 years, while in the control group it was 70.5 ± 12.6 years ($p = 0.201$). Thirty-two (22.2%) control subjects and 39 (33.1%) patients with intracerebral hemorrhage had diabetes mellitus ($p = 0.054$). In patients under 60 years of age, the prevalence of diabetes mellitus was 27.8% in the case group and 7.4% in the control group ($p = 0.042$).

We found that in group I and group II, smoking was seen in 52% and 31%, diabetes in 68% and 19%, hyperlipidemia in 43% and 30%, and hypertension in 82% and 36% respectively. Inagawa T et al¹¹ investigated the risk factors for ICH in patients. A case-control study of 242 patients (137 men and 105 women with ages ranging from 34 to 97 years) with primary ICH was conducted. Hypertension, diabetes mellitus, heart disease, liver disease, alcohol consumption, cigarette smoking, and serum levels of total cholesterol, aspartate aminotransferase, and alanine aminotransferase were assessed as possible risk factors for ICH by using conditional logistic regression. The prevalence of hypertension among ICH patients was 77% and the odds ratio (OR) for hypertension was 17.07 (95% CI: 8.30-35.09), which are much higher than figures reported from Western countries. The OR for hypertension was higher in

individuals < or = 69 years of age than in those > or = 70 years of age and lower for lobar hemorrhage than for hemorrhages at other sites. High serum total cholesterol (> or = 220 mg/dl) was the second most important risk factor for ICH (OR: 2.52; 95% CI: 1.23-5.14), and low total cholesterol (< 160 mg/dl) decreased the risk of ICH (OR: 0.47; 95% CI: 0.27-0.82). In contrast, heart disease decreased the risk of ICH, and there was no observed association between alcohol consumption, cigarette smoking, or diabetes mellitus and ICH. This study conducted in Izumo suggests that hypertension is the most important risk factor for ICH and contrary to most previous studies indicates that serum total cholesterol concentration is also positively associated with the risk of ICH. In contrast, heart disease may decrease the risk of ICH. Tetri Set al¹² assessed the role of a high admission MABP and plasma glucose level together with other predictors of early death among 379 nonsurgical patients with spontaneous intracerebral hemorrhages (ICHs). The 3-month mortality rate was 28%. The patients who died within 3 months of ICH had significantly higher plasma glucose levels and MABPs at admission. After adjustments for patient sex, age, size and location of hematoma, Glasgow Coma Scale score at admission, presence of intraventricular hemorrhage, history of cardiac disease, and previous use of warfarin, history of diabetes and high MABP at admission remained independent predictors of death 3 months after ICH. A high admission plasma glucose level and history of hypertension were not independent predictors of death.

The limitation of the study is the small sample size.

CONCLUSION

Authors found that maximum patients suffering from intracerebral hemorrhage had diabetes as compared to healthy subjects in which prevalence of diabetes was low.

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