Journal of Advanced Medical and Dental Sciences Research

@Society of Scientific Research and Studies

Journal home page:www.jamdsr.com doi:10.21276/jamdsr Index Copernicus value [ICV] =82.06

(e) ISSN Online: 2321-9599; (p) ISSN Print: 2348-6805

Original Research

Assessment of correlation of diabetes and intracerebral hemorrhage

[1]Manoj Gupta, [2]Ravi Gupta

[1]Assistant Professor, Department of General Medicine, Major S D Singh Medical College & Hospital, Farrukhabad, Uttar Pradesh, India;
[2]Assistant Professor, Department of Radio Diagnosis, Major S D Singh Medical College & Hospital, Farrukhabad, Uttar Pradesh, India

ABSTRACT:
Background: Non-traumatic brain hemorrhage, also known as spontaneous or atraumatic brain hemorrhage, occurs when a blood vessel in the brain ruptures without any external physical injury. The present study was conducted to correlation of diabetes and intracerebral hemorrhage. **Materials & Methods:** 74 patients with brain hemorrhage of both genders were selected. Patients were put in group I and equal number of controls with low back pain in group II. All were subjected to assessment of glycated hemoglobin level, fasting and random blood measurement. Cases were subjected to CT brain. The site of hemorrhage was recorded. **Results:** The mean age was 65.2 years in group I and 68.4 years in group II. Smoking was seen in 60 in group I and 21 in group II, hypertension in 65 in group I and 28 in group II, diabetes mellitus was seen in 40 in group I and 36 in group II and hyperlipidaemia in 38 in group I and 12 in group II. The difference was significant (P< 0.05). Prevalence of DM was seen in 15 males and 20 female and 25 males and 16 females in group I and II respectively. Age <60 years comprised 22 and 21 and age >60 years 18 and 15 patients in group I and II respectively. The difference was non-significant (P> 0.05). The region of hemorrhage was Pons in 3 among diabetics, midbrain in 2 diabetics, Putamen in 18 diabetics and 12 non- diabetics, cerebellum in 2 diabetics and 4 non- diabetics, Lobar in 2 diabetics and 8 non- diabetics and thalamus in 13 diabetics and 10 non- diabetics. The difference was non- significant (P> 0.05). **Conclusion:** Authors found that could not find a significant relationship betweendiabetes mellitus and intracerebral hemorrhage.
Keywords: Non-traumatic brain hemorrhage, Diabetics, Pons

Received: 19 February, 2019 Accepted: 24 March, 2019

Corresponding author: Ravi Gupta, Assistant Professor, Department of Radio Diagnosis, Major S D Singh Medical College & Hospital, Farrukhabad, Uttar Pradesh, India

This article may be cited as: Gupta M, Gupta R. Assessment of correlation of diabetes and intracerebral hemorrhage. J Adv Med Dent Scie Res 2019;7(4):185-188.

INTRODUCTION

Non-traumatic brain hemorrhage, also known as spontaneous or atraumatic brain hemorrhage, occurs when a blood vessel in the brain ruptures without any external physical injury. This type of hemorrhage can have various underlying causes and can lead to severe neurological damage or even death if not treated promptly.[1]

The death rate is roughly 44% in the first 30 days after bleeding, and it rises to 75% in the first 24 hours if the bleeding happens in the brainstem or pons.[2]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.[3] Hemorrhage at younger ages is typically caused by abnormalities in the vessels. Destructive alterations in the brain arteries, such as segmental lipohyalinosis, pseudo-aneurysm, or rupture, can result in brain hemorrhage.[4]Numerous risk factors for the development of non-traumatic brain hemorrhage have been identified by recent investigations, including hypertension, hyperlipidaemia, arteriovenous malformation, coagulopathies, vasculopathy, smoking, and infections.World Health Organization (WHO) data indicates that there are 150 million diabetic people globally, and by 2025, this number is predicted to rise to almost 300 million individuals. Furthermore, in underdeveloped countries, diabetes can be regarded as the biggest challenge of the twenty-first century due to its enormous expenses.[5] The present study was conducted to correlation of diabetes and intracerebral hemorrhage.

MATERIALS & METHODS

The present study was conducted on 74 patients with brain hemorrhageof both genders. All were informed regarding the study and their written consent was obtained.

Data such as name, age, gender etc. was recorded. Diabetes, hypertension, hyperlipidaemia, smoking and the site of hemorrhage were extracted from patients' medical records. Patients were put in group I and equal number of controls with low back pain in group II. All were subjected to assessment of glycated hemoglobin level, fasting and random blood measurement. Cases were subjected to CT brain. The site of hemorrhage was recorded. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Demographic characteristics

Groups	Group I	Group II	P value
Age (years)	65.2	68.4	0.95
Smoking	60	21	0.01
Hypertension	65	28	0.01
Diabetes mellitus	40	36	0.87
Hyperlipidaemia	38	12	0.04

Table I shows that mean age was 65.2 years in group I and 68.4 years in group II. Smoking was seen in 60 in group I and 21 in group II, hypertension in 65 in group I and 28 in group II, diabetes mellitus was seen in 40 in group I and 36 in group II and hyperlipidaemia in 38 in group I and 12 in group II. The difference was significant (P< 0.05).

Table II Assessment of prevalence of diabetes mellitus

Parameters	Group I	Group II	P value
Male	15	20	0.64
Female	25	16	
Age <60 years	22	21	0.90
Age >60 years	18	15	

Table II, graph I shows that prevalence of DM was seen in 15 males and 20 female and 25 males and 16 females in group I and II respectively. Age <60 years comprised 22 and 21 and age >60 years18 and 15 patients in group I and II respectively.The difference was non- significant (P> 0.05).

Graph I Assessment of prevalence of diabetes mellitus

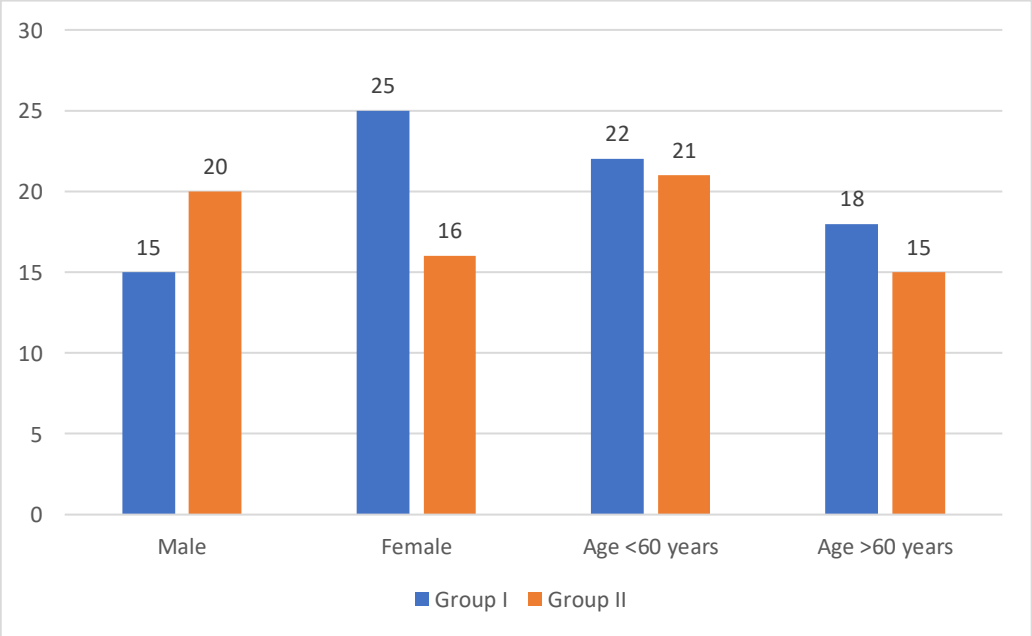

Table III Diabetes and hemorrhage regions in cases

Region	Diabetic (40)	Non- diabetic (34)	P value
Pons	3	0	0.57
Midbrain	2	0	
Putamen	18	12	

Cerebellum	2	4	
Lobar	2	8	
Thalamus	13	10	

Table III shows that region of hemorrhage was Pons in 3 among diabetics, midbrain in 2 diabetics, Putamen in 18 diabetics and 12 non- diabetics, cerebellum in 2diabetics and4 non- diabetics, Lobar in 2diabetics and 8 non-diabetics and thalamus in 13diabetics and10 non- diabetics. The difference was non- significant (P> 0.05).

DISCUSSION

Ten percent of brain strokes are non-traumatic brain hemorrhages, which are the most significant and deadly kind of stroke.[6] It is one of the consequences of hypertension, with an estimated incidence of 12 to 15 occurrences per 100,000 persons. With a 30% death rate and a high morbidity rate among survivors, it is an extremely serious illness.[7,8]The death rate after a bleeding event is roughly 44% in the first 30 days, and 75% in the first 24 hours if the bleeding happens in the brainstem or pons.Chronic high blood pressure can weaken blood vessel walls, making them more susceptible to rupture. Aneurysmsare weakened areas in blood vessel walls that can balloon out and burst.Abnormal tangles of blood vessels can rupture.[9]Conditions like haemophilia or the use of anticoagulant medications can increase the risk of bleeding.Deposits of amyloid protein in the walls of the brain's blood vessels, common in elderly individuals, can cause vessel fragility.Certain brain tumors can cause bleeding.[10]The present study was conducted to correlation of diabetes and intracerebral hemorrhage.

We found that mean age was 65.2 years in group I and 68.4 years in group II. Smoking was seen in 60 in group I and 21 in group II, hypertension in 65 in group I and 28 in group II, diabetes mellitus was seen in 40 in group I and 36 in group II and hyperlipidaemia in 38 in group I and 12 in group II. Hesami et al[11]assessed the role of diabetes mellitus in the occurrence of intracerebral hemorrhage. In this case-control study, the prevalence of diabetes mellitus was evaluated in 120 patients presenting with intracerebral hemorrhage and in a control group of 135 patients with low back pain. The mean age was 67.5±12.7 y in patients with intracerebral hemorrhage and 70.5±12.6 years in the control group (p=0.201). Diabetes mellitus was found in 39 patients with intracerebral hemorrhage (33.1%) and 30 (22.2%) control subjects (p=0.054). The prevalence of diabetes mellitus in patients younger than 60 years was 7.4% in the control group and 27.8% in the case group (p=0.042).

We found that prevalence of DM was seen in 15 males and 20 female and 25 males and 16 females in group I and II respectively. Age <60 years comprised 22 and 21 and age >60 years 18 and 15 patients in group I and II respectively. We found that region of hemorrhage was Pons in 3 among diabetics, midbrain in 2 diabetics, Putamen in 18 diabetics and 12 non-diabetics, cerebellum in 2 diabetics and 4 non-diabetics, Lobar in 2 diabetics and 8 non- diabetics and thalamus in 13 diabetics and 10 non- diabetics. Jorgensen et al[12] in their study found that the diabetic stroke patient was 3.2 years younger than the nondiabetic stroke patient (P < .001) and had hypertension more frequently (48% versus 30%, P < .0001). Intracerebral haemorrhages were six times less frequent in diabetic patients (P = .002). Initial stroke severity, lesion size, and site were comparable between the two groups. However, mortality was higher in diabetic patients (24% versus 17%, P = .03), and diabetes independently increased the relative death risk by 1.8 (95% confidence interval [CI], 1.04 to 3.19). Outcome was comparable in surviving patients with and without diabetes, but patients with diabetes recovered more slowly. Mortality increased with increasing glucose levels on admission in nondiabetic patients independent of stroke severity. This was not the case in diabetic patients.

The shortcoming of the study is small sample size.

CONCLUSION

Authors found that could not find a significant relationship betweendiabetes mellitus and intracerebral hemorrhage.

REFERENCES

1. Flemming KD, Wijdicks EF, Li H. Can we predict poor outcome at presentation in patients with lobar hemorrhage? Cerebrovasc Dis. 2001;11(3):183-89.
2. Tatu L, Moulin T, El Mohamad R, Vuillier F, Rumbach L, Czorny A. Primary intracerebral hemorrhages in the Besancon stroke registry. Initial clinical and CT findings, early course and 30-day outcome in 350 patients. Eur Neurol. 2000;43(4):209-14.
3. Qureshi AI, Palesch YY, Martin R, Novitzke J, Cruz-Flores S, Ehtisham A, et al. Antihypertensive Treatment of Acute Cerebral Hemorrhage Study I. Effect of systolic blood pressure reduction on hematoma expansion, perihematomal edema, and 3-month outcome among patients with intracerebral hemorrhage: results from the antihypertensive treatment of acute cerebral hemorrhage study. Arch Neurol. 2010;67(5):570-76.
4. Sarwar N, Gao P, Seshasai SR, Gobin R, Kaptoge S, Di Angelantonio E, et al. Emerging Risk Factors C. Diabetes mellitus, fasting blood glucose concentration, and risk of vascular disease: A collaborative meta-analysis of 102 prospective studies. Lancet. 2010;375(9733):2215-22.
5. Gat-Yablonski G, Shalitin S, Phillip M. Maturity onset diabetes of the young-- review. Pediatr Endocrinol Rev. 2006;3(Suppl 3):514-20.
6. Holmkvist J, Almgren P, Lyssenko V, Lindgren CM, Eriksson KF, Isomaa B, et al. Common variants in maturity-onset diabetes of the young genes and future risk of type 2 diabetes. Diabetes. 2008;57(6):1738-44.

7. Ikram MA, Wieberdink RG, Koudstaal PJ. International epidemiology of intracerebral hemorrhage. Curr Atheroscler Rep. 2012;14(4):300-06.
8. Cui G, Zhang Y, Tong W. Risk factors for intracerebral hemorrhage and coronary heart diseases over a 3-year period in patients admitted to some hospitals of Tongliao city of Nei Monggol Autonomous Region: Retrospective analysis on case data. Neural Regeneration Research. 2007;2(9):569-73.
9. Megherbi SE, Milan C, Minier D, Couvreur G, Osseby GV, Tilling K, et al. Association between diabetes and stroke subtype on survival and functional outcome 3 months after stroke: data from the European BIOMED Stroke Project. Stroke. 2003;34(3):688-94.
10. Woo D, Haverbusch M, Sekar P, Kissela B, Khoury J, Schneider A, et al. Effect of untreated hypertension on hemorrhagic stroke. Stroke. 2004;35(7):1703-08.
11. Hesami O, Kasmaei HD, Matini F, Assarzadegan F, Mansouri B, Jabbehdari S. Relationship between intracerebral hemorrhage and diabetes mellitus: A case-control study. Journal of clinical and diagnostic research: JCDR. 2015 Apr;9(4):08.
12. Jorgensen H, Nakayama H, Raaschou HO, Olsen TS. Stroke in patients with diabetes. The Copenhagen Stroke Study. Stroke. 1994;25(10):1977-84.