The Journal of Teachers Association

ISSN 1019-8555 (Print) & ISSN 2408-8854 (Online)
Frequency: Bi-Annual
DOI: https://doi.org/10.62469/taj.v037i02.06

OPEN ACCESS

Website: www.tajrmc.com
Email: editor@tajrmc.com
Volume-37 | Issue-2 | Jul-Dec 2024

Clinical and Radiological Profile of Intra-cerebral Hemorrhage: An Observational Study

Ashraf Uddin Khan[1*], Niksar Akhter[2], Sharmeen Sajedeen[3]

[1] Department of Radiology & Imaging, Sheikh Sayera Khatun Medical College, Bangladesh
[2] Department of Radiology & Imaging, Sheikh Sayera Khatun Medical College, Bangladesh
[3] Department of Gynaecology and Obstetrics, International Medical College, Bangladesh

Abstract: ***Background:*** Intra-cerebral hemorrhage (ICH) is focal bleeding from a brain blood vessel. It contributes to about 10-15% of the yearly global stroke count, roughly 2 million cases, with an occurrence rate of 10-30 per 100,000 individuals. Patient outcomes depend on clinical presentation and radiological criteria. ***Aim of the study:*** This study aimed to assess the clinical and radiological profile of intra-cerebral hemorrhage. ***Methods:*** This was a cross-sectional study that was conducted in the Radiology and Imaging Department, Sheikh Sayera Khatun Medical College Hospital, Bangladesh from January 2018 to December 2018. In total 320 diagnosed intra-cerebral hemorrhage (ICH) patients, by computed tomography scan, were enrolled in this study as the study subjects. A purposive sampling technique was used in sample selection. All data were processed, analyzed and disseminated by using MS Office. ***Results:*** Participants showed a male-female ratio of 2:1, with 38% aged 61-70. Radiologically, 46% had capsuloganglionic involvement, 22% thalamus, 8% thalamoganglionic, 8% frontal. Common symptoms: altered sensorium (40%), headache (34%), seizures (28%). Leading cause: hypertension (74%). Glasgow Coma Scale: 9-12 for 57%, 13-15 for 34%, <9 for 9%. ***Conclusion:*** Aged males are mainly prone to intra-cerebral hemorrhage. The capsuloganglionic region and thalamus are the most vulnerable parts for hemorrhage. Altered sensorium, headache and seizures are the most common symptoms in such cases.

Keywords: Danazol, Evening Primrose Oil, Non-Steroidal Anti-Inflammatory Agents, Breast Pain.

Original Research Article

Correspondence:
Dr. Ashraf Uddin Khan
Associate Professor & Head, Department of Radiology & Imaging, Sheikh Sayera Khatun Medical College, Bangladesh
E-mail: drashraf163@gmail.com

How to cite this article:
Khan AU, Akhter N, Sajedeen S; Clinical and Radiological Profile of Intra-cerebral Hemorrhage: An Observational Study. Taj 2024;37 (2): 41-46.

Article history:
Received: August 27, 2024
Revised: October 19, 2024
Accepted: November 12, 2024
Published: December 01, 2024

Article at a glance:

Study Purpose: *The purpose of this study was to assess the clinical and radiological profile of intra-cerebral hemorrhage.*
Key findings: *Intracerebral hemorrhage (ICH) often presents with sudden neurological deficits, including weakness and altered consciousness.*
Newer findings: *New treatment protocols, including minimally invasive surgeries and neuroprotective agents, are being studied to improve outcomes.*
Abbreviations: *ICH: intra-cerebral hemorrhage, BP: Blood Pressure.*

INTRODUCTION

The incidence of intra-cerebral hemorrhage (ICH) varies from 11 to 23 cases per 100,000 per year and it accounts for only 10 to 15% of all strokes. It is the most fatal stroke subtype with a mortality up to 40%[1]. Intra- cerebral hemorrhage is more common than subarachnoid hemorrhage (SAH) and is much more likely to result in death or the majority disability than cerebral infarction or SAH[2]. More than 50% of the patients die and nearly half of the survivors are left in a severely disabled state, with significant social, personal, and health service costs[3]. Anatomically, intracerebral hemorrhage (ICH) can be categorized as parenchymatous, subarachnoid, epidural, subdural, supra and infratentorial hemorrhages. Etiologically, it can be categorized as primary or spontaneous

hemorrhages and secondary hemorrhages. Primary hemorrhages, mainly caused by arterial hypertensive diseases, are spontaneous. Secondary hemorrhages result from traumatic, pharmacological, or tumorous causes[4].

The precise role of surgical intervention in ICH management remains debatable; however, indications for surgical intervention are uncertain in clinical practice[3]. These depend on the presenting Glasgow Coma Scale (GCS), size, and location of the ICH, which are believed to impact outcomes after surgical removal of the ICH[5,6]. Hospital admissions for ICH have risen by 18% over the last decade, potentially due to a growing elderly population with inadequate blood pressure (BP) control and the heightened utilization of anticoagulants, thrombolytics, and antiplatelet agents. Incidence could have dropped for certain individuals due to better medical access and BP management[7,8]. The objective of this current study was to assess the clinical and radiological profile of intra-cerebral hemorrhage.

METHODS

This was a cross-sectional observational study that was conducted in the Radiology and Imaging Department, Sheikh Sayera Khatun Medical College Hospital, Gopalgonj, Bangladesh from January 2018 to December 2018. In total 320 patients who were diagnosed to have ICH, both primary and secondary, by computed tomography scan were enrolled in this study as the study subjects. Properly written consent was taken from all the participants before data collection. A purposive sampling technique was used in sample selection. The onset and severity of hemorrhage were assessed by the Glasgow coma scale[9] and neurological deficit on admission by the NIH stroke scale. The whole intervention was conducted following the principles of human research specified in the Helsinki Declaration[10] and executed in compliance with currently applicable regulations and the provisions of the General Data Protection Regulation (GDPR)[11]. A predesigned questionnaire was used in data collection. All the demographic and clinical information of the participants was recorded. All data were processed, analyzed and disseminated by using MS Office.

RESULT

In this study, among the total participants, 67% were male whereas the rest 33% were female. So, the male-female ratio of the participants was 2:1. In analyzing the ages of our total participants, we found that more than one-third of the patients (38%) were from the 61-70 years age group. Besides, 16%, 13% and the other 16% were from 31-40, 41-50- and 71-80-years age group. In analyzing the symptoms among the total of our participants we observed that altered sensorium, headache, seizures and vomiting were present in 40%, 34%, 28%, and 19% of the cases which were noticeable. Besides hemiparesis (12%), focal neurological deficits (11%), nausea (10%), quadriparesis (2%) and aphasia (2%) were found in some of the cases. In analyzing the etiological findings, we observed that in the majority of the participants (74%) hypertension was found. Besides, in 14%, 7%, 3% and 2% of the cases, trauma, aneurysm, tumor and bleeding diathesis were found respectively. In analyzing the radiological findings among the total participants, we observed that the involvement of the capsuioganlionic region was found in nearly half of the patients (46%); the thalamus was involved in 22% of the cases which was also noticeable. Besides those, the involvement of thalamoganlonic (8%), frontal (8%), cerebellum (4%), parieto-occipital (5%), occipital (3%), pons (2%), temporal (1%) and subarachnoid (2%) regions were observed in some of the cases. In this study, as per the Glasgow coma scale, among the majority of cases (57%) the score was found 9-12. Besides scores of <9 and 13-15 were found in 9% and 34% of the cases respectively.

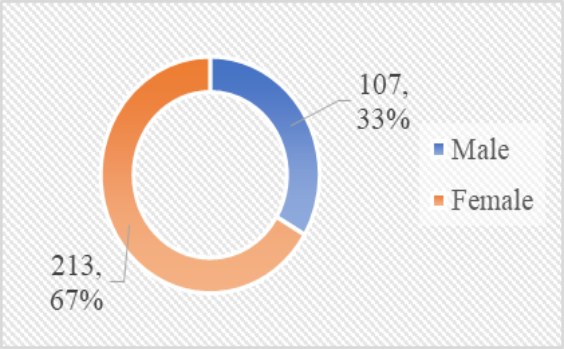

Figure 1: Distribution of participants as per gender (N=320)

Table 1: Distribution of participants as per age (N=320)

Age (in years)	n	%
31-40	20	6%
41-50	51	16%
51-60	42	13%
61-70	120	38%
71-80	51	16%
81-90	21	7%
91-100	9	3%
>100	6	2%

Table 2: Distribution of participants as per symptoms (N=320)

Symptoms	n	%
Altered sensorium	128	40%
Headache	110	34%
Seizures	91	28%
Vomiting	60	19%
Hemiparesis	37	12%
Focal neurological deficits	36	11%
Nausea	31	10%
Quadriparesis	7	2%
Aphasia	6	2%

Table 3: Distribution of participants as per etiological findings (N=320)

Variables	n	%
Hypertension	236	74%
Trauma	44	14%
Aneurysm	23	7%
Tumor	10	3%
Bleeding diathesis	7	2%

Table 4: Distribution of participants as per radiological findings (N=320)

Radiological findings	n	%
Capsuloganlionic	147	46%
Thalmus	71	22%
Thalamoganglionic	27	8%
Frontal	24	8%
Cerebellum	12	4%
Parieto-occipital	15	5%

Occipital	9	3%
Pons	6	2%
Temporal	3	1%
subarachnoid haemorrhage	6	2%

Table 5: Distribution of participants as per Glasgow coma scale (N=320)

GC scale	n	%
<9	28	9%
9-12	183	57%
13-15	109	34%
Mean ±SD	11.17 ±3.66	

DISCUSSION

This study aimed to assess the clinical and radiological profile of intra-cerebral hemorrhage. In this study, among the total participants, 67% were male whereas the rest of 33% were female. So, the male-female ratio of the participants was 2:1. In another study[12] it was reported that among their 60 study participants, the mean age was 62.78 years (SD 9.06 years) and most of them were males. In analyzing the ages of our total participants, we found that more than one-third of the patients (38%) were from the 61-70 years age group. Besides, 16%, 13% and the other 16% were from 31-40, 41-50- and 71-80-years age group. This corresponds to the middle age group with a higher prevalence of risk factors for intra-cerebral hemorrhage (ICH)[13]. Some of the previous studies have also demonstrated such findings. Moreover, Sacco et al.[14] found that age is the single most important risk factor for stroke. Among all participants, noticeable symptoms included altered sensorium (40%), headache (34%), seizures (28%), and vomiting (19%). Additionally, cases exhibited hemiparesis (12%), focal neurological deficits (11%), nausea (10%), quadriparesis (2%), and aphasia (2%). In a study[15] the altered sensorium (42.5%), headache (37.5%), convulsions (30%), and vomiting (20%) were the main presenting symptoms, which were in consonance with our study. In our study upon examining the underlying causes, hypertension was the predominant factor, accounting for the majority of participants (74%).

Additionally, 14% had trauma, 7% had aneurysm, 3% had tumors and the rest 2% had bleeding diathesis. These findings were similar to the findings of another study conducted by Zidan et al.[16] During our analysis of radiological findings in all participants, we observed that approximately 46% of patients had involvement in the capsuloganglionic region. Notably, the thalamus was involved in 22% of cases. Moreover, we identified cases with thalamoganglionic (8%), frontal (8%), cerebellar (4%), parieto-occipital (5%), occipital (3%), pontine (2%), temporal (1%), and subarachnoid (2%) region involvement. In this study, as per the Glasgow coma scale, among the majority of cases (57%) the score was found 9-12. Besides scores of <9 and 13-15 were found in 9% and 34% of the cases respectively. The GCS and the locations of bleed were comparable with other studies done by Singh et al.[17] All the findings of this current study may be helpful in further similar studies.

Limitation of the study:

This was a single-centered study with small-sized samples. Moreover, the study was conducted over a very short period. So, the findings of this study may not reflect the exact scenario of the whole country.

CONCLUSION & RECOMMENDATION

As per the findings of this current study, we can conclude that aged males are mainly prone to intra-cerebral hemorrhage. The capsuloganglionic region and thalamus are the most vulnerable parts for hemorrhage. Altered sensorium, headache and seizures are the most common symptoms in such cases. Trauma and hypertension are very common etiology for intra-cerebral hemorrhage patients. To get more specific results, we would like to recommend conducting similar studies in several places with larger-sized samples.

Funding: No funding sources.

Conflict of interest: None declared.

REFERENCES

1. Kirkman MA, Mahattanakul W, Gregson BA, Mendelow AD. The effect of the result of the STICH trial on the management of spontaneous supratentorial intracerebral hemorrhage in Newcastle. *Br J* Neurosurg 2008 Dec; 22(6):739-746.
2. Broderick JP, Adams HP, Barsan W, Feinberg W, Feldmann E, Grotta J, Kase C, Krieger D, Mayberg M, Tilley B, et al. Guidelines for the management of spontaneous intracerebral hemorrhage. Stroke 1999 Apr; 30(4):905-915.
3. Siddique MS, Mendelo AD. Surgical treatment of intracerebral hemorrhage. Br Med Bull 2000; 56(2):444-456.
4. Reichart R, Frank S. Intracerebral hemorrhage, indication for surgical treatment and surgical techniques. Open Crit Care Med J 2011 Jan; 4: 68-71.
5. Mendelow AD, Gregson BA, Fernandes HM, Murray GD, Teasdale GM, Hope DT, Karimi A, Shaw MD, Barer DH; STICH investigators. Early surgery versus initial conservative treatment in patients with spontaneous supratentorial intra-cerebral hematomas in the International Surgical Trial in Intra-cerebral Hemorrhage (STICH): a randomized trial. Lancet 2005 Jan-Feb; 365(9457):387-397.
6. Gregson BA, Broderick JP, Auer LM, Batjer H, Chen XC, Juvela S, Morgenstern LB, Pantazis GC, Teernstra OP, Wang WZ, et al. Individual patient data subgroup meta-analysis of surgery for spontaneous supratentorial intra-cerebral hemorrhage. Stroke 2012 Jun; 43(6):1496-504.
7. Qureshi AI, Suri MF, Nasar A, Kirmani JF, Ezzeddine MA, Divani AA, et al. Changes in cost and outcome among US patients with stroke hospitalized from 1990 to 1991 and those hospitalized from 2000 to 2001. Stroke. 2007; 38: 2180-4.
8. Feigin VL, Lawes CM, Bennett DA, Anderson CS. Stroke epidemiology: A review of population-based studies of incidence, prevalence, and case-fatality in the late 20th century. Lancet Neurol. 2003; 2:4353.
9. Teasdale G, Jennett B. Assessment of coma and impaired consciousness. A practical scale. Lancet. 1974 Jul 13; 2 (7872):81-4. Doi:10.1016/s0140-6736(74)91639-0. PMID: 4136544.
10. World Medical Association. (2001). World Medical Association Declaration of Helsinki. Ethical principles for medical research involving human subjects. Bulletin of the World Health Organization, 79 (4), 373 - 374. World Health Organization. https://apps.who.int/iris/handle/10665/268312.
11. Voigt, Paul, and Axel von dem Bussche. "Enforcement and fines under the GDPR." The EU General Data Protection Regulation (GDPR). Springer, Cham, 2017. 201-217.
12. Perumal, Soundara Rajan Ponnaam, Ravichandran Narayanan, and Bharani Palanisamy. "Clinical profile of intracerebral hemorrhage." Journal of Evolution of Medical and Dental Sciences 5.65 (2016): 4650-4655.
13. Girijala, R.L., Sohrabji, F. and Bush, R.L. (2017) Sex Differences in Stroke: Review of Current Knowledge and Evidence. Vascular Medicine, 22, 135-145. https://doi.org/10. 1177/ 1358863X16668263.
14. Ogun, S.A., Ojini, F., Ogungbo, B., Kolapo, K.O. and Danesi, M.A. (2005) Stroke in South West Nigeria: A 10-Year Review. Stroke, 36, 1120-1122. https://doi.org/10.1161/01.STR.0000166182.50840.31.
15. Sidram V, Kumar PCC, Raghavendra B. A Study of Clinical Profile of Intracerebral Hemorrhage and ENT Manifestations and its Surgical Outcome. Int J Head Neck Surg 2017;8(1):5-10.
16. Zidan I, Ghanem A. Intracerebral hemorrhage in children. Alexandria J Med 2012 Jun;48(2):139-145.
17. Haque, M. A., Islam, M. I., & Hasan, H. (2024). Successful Surgical Creation and Management of an Arteriovenous Fistula: A Case Report. Asia Pacific Journal of Surgical Advances, 1(1), 34-38.
18. Hussain, M. D., Rahman, M. H., & Ali, N. M. (2024). Investigation of Gauss-Seidel Method for Load Flow Analysis in Smart Grids. Sch J Eng Tech, 5, 169-178.
19. Singh TG, Ghalige HS, Karthik K, Abhilash S, Devi SR, Singh M, Kishore S, Berma D,

Prasanna Kumar N. Primary supratentorial hemorrhage – surgery or no surgery in an Indian setup. J Clin Diagn Res 2014 Sep;8(9): NC01-NC03.

The Journal of Teachers Association
Abbreviated Key Title: TAJ
Official Journal of Teachers Association Rajshahi Medical College