Scholars Journal of Applied Medical Sciences (SJAMS) **ISSN 2320-6691 (Online)**
Sch. J. App. Med. Sci., 2015; 3(3D):1303-1306 **ISSN 2347-954X (Print)**

(An International Publisher for Academic and Scientific Resources)
www.saspublishers.com DOI: 10.36347/sjams.2015.v03i03.051

Research Article

Study of Hypertensive Intracerebral Bleeds and Surgical Outcome

Ramachandra Rama Mohan Naik[1*]. K. S. Kiran[2], M. Premjit Ray[3], G. Venugopal[4], G. Suresh[5]
[1, 4]Assistant Professor of Neurosurgery, Department of Neurosurgery, Osmania Medical College, Hyderabad, India
[2, 6]Resident, Department of Neurosurgery, Osmania Medical College, Hyderabad, India
[3]Professor & HOD, Department of Neurosurgery, Osmania Medical College, Hyderabad, India

***Corresponding author**
Dr. Ramachandra Rama Mohan Naik
Email: rammohan_naik@yahoo.co.in

Abstract: Hypertensive intra cerebral bleeds is the commonest cause of hemorrhagic stroke with high mortality. The decision about the surgical intervention in intra cerebral hematoma remains controversial. Aim of this study was to evaluate the age incidence, clinical presentation, and surgical outcome and mortality due to hypertensive intra cerebral bleeds. This study was conducted Department of Neurosurgery, Osmania General Hospital, Hyderabad from June 2011 to Dec 2014, 38 cases of hypertensive intra cerebral bleeds during the above period in whom the surgical evacuation of hypertensive intra cerebral bleeds were done are included in the study. Age/sex, presenting GCS and the site of hematoma was noted. The outcome of the patients was categorized in terms of mortality and complications. Thirty eight adult patients meeting the inclusion criteria were included in this study, basal ganglia is the commonest site of bleed with male predominate, 5th and 6th decade is commonly affected, patients with GCS less than 6 are having higher mortality.
Keywords: Spontaneous intra cerebral hematoma, Glasgow Coma Scale, External Ventricular Drainage (EVD), Glascow Coma Scale (GCS), Arterio Venous Malformations (AVM), Intra cerebral bleed (IC bleed)

INTRODUCTION

Hypertension is the commonest cause of intra cerebral bleed, followed by the AVMS and coagulation disorders.

Spontaneous intra cerebral bleed is common and devastating**.** It accounts for approximately 15% of all hemorrhagic strokes [1, 2]. It is more often due to hypertension [3, 4]. The mortality rate results from these bleeds are very high.

Estimation of the annual incidence range from 16-33 cases per 100,000 [5]. The incidence is higher in Eastern Asians [6]. There are many underlying pathological conditions associated with intra cerebral bleeds, hypertension, amyloid angiopathy, ruptured aneurysms. Early surgery in I C bleeds which require intervention will give good outcome.

Though there are no clear indications for surgery. The current practice for our surgical interventions in the following situations:

- Superficial lobar hematomas
- Clot volume between 20-80 ml with mass affect
- Hemorrhage causing midline shift and worsening neurological status
- Cerebellar hematomas > 4 cm with or without hydrocephalous [7].

The surgical procedures which we have opted were

- Craniotomy and evacuation of bleed
- Craniotomy and evacuation of bleed with or without external ventricular drainage if the hematoma is extending into the ventricle.
- In few cases only External ventricular drainage was done.

Aim

In this we have studied the age and sex incidence of hypertensive intra cerebral bleeds and associated co morbid conditions, site of bleed and different surgical options depending on the indication and complication of surgery and outcome were discussed. Laboratory investigations to exclude the clotting disorders, MRI brain with MR angiogram performed in suspected cases of Aneurysm of AVM and were excluded from the study.

MATERIALS AND METHODS

It's a prospective study evaluated 38 cases of spontaneous intra cerebral bleeds admitted in Osmania General Hospital, Hyderabad from June 2011 to Dec 2014. Our study included only intra cerebral hematomas due to hypertension and idiopathic IC bleed. The cases in which the etiology was determined to tumor, Aneurysms and AV malformations were excluded.

All patients admitted with intra cerebral bleeds with or without intra ventricular extension, the detailed neurological examination, assessment of the level of consciousness with Glascow Coma Scale (GCS) is done. C.T scan brain plain was performed for all cases of suspected bleed. Alert patients with small hematoma < 2 cm, with good GCS which were treated with medical management were excluded from the study.

Before taking up for surgery, Hypertension was controlled with medication. Preoperative anti epileptics were given for prophylaxis. Under general anaesthesia craniotomy and evacuation of bleed, with or without External ventricular drainage was performed. In certain cases only EVD was done if there is significantly amount of bleed in ventricles with hydrocephalous.

All patients were followed immediately after surgery with clinical improvement and the repeat C.T scan were done 24 hours after surgery.

RESULTS

The commonest mode of presentation of hypertensive intra cerebral bleed is giddiness followed by altered sensorium and hemiplegia. Twenty five cases (65%) were previously diagnosed with hypertension. Among 25 patients 10 patients (26%) were determined to have their medication irregularly.

As for as location of the bleed: cerebellum 4 cases (10.5%), basal ganglion 22 (60.5%), basal ganglion with intra ventricular extension 8 (21.5%), parietal lobe 3 (7.8%).

Males are mostly commonly affected 25 (65%) than females 13 (35%).

Table 1: Age distribution

Age	No.	%
20-30	2	5.2
30-40	4	10.5
40-50	10	26.3
50-60	15	39.4
60-70	6	15.7
70-80	1	2.6

Age incidence – 4th and 5th decades are most commonly: 40-50: 10 (26.5%), 56-60: 15 (39.4%)

Table 2: Site of bleed

Site of bleed	Hematoma No. of cases	%
Lobar	3	7.8
Basal ganglion	23	60.5
Basal ganglion + ventricular extension	8	21.05
Cerebellar	4	10.5
Total		39.5%

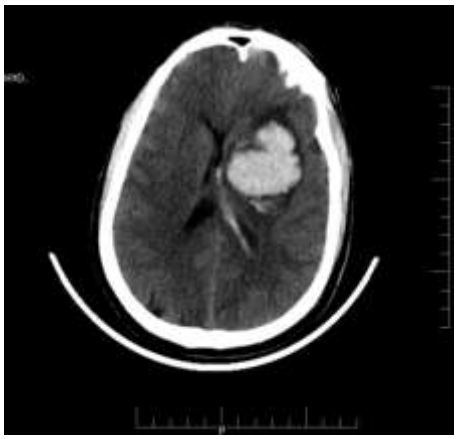

Fig. 1: Hypertensive internal capsules bleed

Fig. 2: Spontaneous cerebellar bleed

Table 3: Surgical procedure done

Craniotomy + evacuation of bleed	28
Craniotomy + evacuation of bleed + EVD	2
Only EVD	4
Sub occipital craniotomy	4

Table 4: GCS and it relation with mortality

GCS > 13-15	15	4	26.5%
GCS 7-12	18	7	38.5%
Less than 3-6	5	4	90%

DISCUSSION

Hypertensive bleed is typically located in supratentorial deep gray matter [8]. The cause of bleeding in hypertension according to Charcot and Buchard is due to rupture of micro aneurysms in intra cererbral arteries [9].

The hematoma causes mass effect on the surrounding tissue and result in damage to the tissues. At the same time, the increase in ICP affects the cerebral perfusion and venous drainage. For this reason evacuation of hematoma should be done.

Different surgical procedures like craniotomy, evacuation of bleed, decompressive craniotomy, and EVD can be considered depending on the situation

clinically as suggesting in literature [10, 11]. Mortality is high in IC bleeds when compared to the other strokes [12].

There are relatively few randomized clinical trials on which the choice of medical versus surgical management of intra cerebral bleeds can be based.

Two earliest clinical trials in 1961 and 1989 by Mc Kissock W *et al*. [13] and Juvela *et al*. [14] respectively showed better outcome with medical treatment, but the study was undertaken prior to the advent of CT scan brain.

Subsequent trails have shown somewhat better outcome with surgical treatment. This suggested that the improvement in surgical technologies were rendering the surgical treatment preferable in some cases.

A study has reported operation rates for intra cerebral bleeds spanned with a range, includes 2% in Hungary, 22% in Germany, 39% in Japan and 74% in Lithuania [15].

The choice of intervention in our institute depends on location of bleed and GCS of patient. In stable patients we avoid operating on dominant hemisphere. Attempts to evaluate the role of surgery in ICH began with M.C Kissock's trial [13] published in 1961, which showed no benefit from operative treatment.

The mortality after surgical evacuation of ICH quoted in literature is 60% [16]. In our study the overall mortality rate is 39.5% but the mortality rate varies according to site of bleed and volume of hematoma. Our series in basal ganglionic bleeds mortality rate is 60% when compared to lobar bleeds.

If high the volume of hematoma and deeper the hematoma in brain parenchyma the prognosis is worse [17] which is also shown in our series. Mortality rate is higher in intra cerebral hematoma compared to other type of stroke.

The first aim of surgical treatment is to prevent mortality and the second aim is to reduce the hospital stay. Kanaya *et al*. [11] studied 5255 cases which is a largest study reported a 22% post operative mortality.

In our study mortality is 39.5% which is consistent with mortality rate contemporary studies. Kaneko *et al*. [18] reported 7% mortality is emergency situation. 50% of patients operated in our study are of 4^{th} and 5^{th} decades.

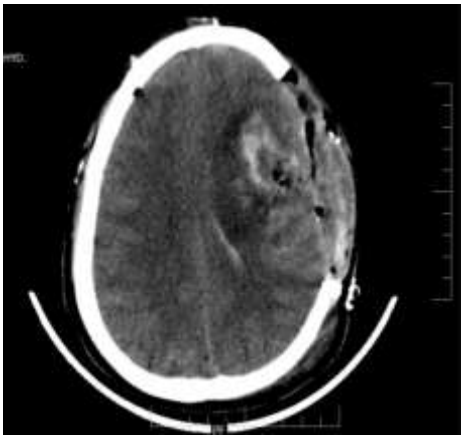

Fig. 3: Post operative image of internal capsule bleed

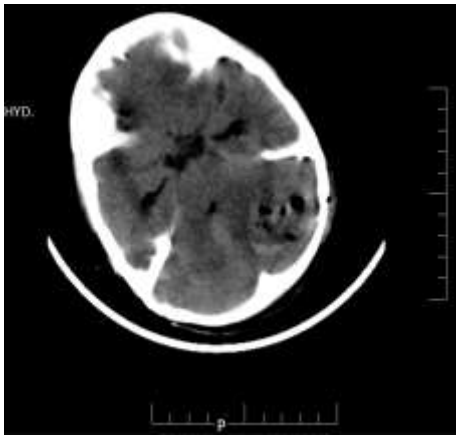

Fig. 4: Post OP image of cerebellar bleed

Males are most commonly affects – 65% earlier which is consistent with all of the studies.

65% patients were known hypertension. The ratio was consistence with the literature.

In our study 15 cases were between GCS-13-15, 18 cases were between GCS -7-12 and 5 cases were between GCS less than 6.

Neurological status at admission is the good predictor of outcome. The outcome depends on the pre operative GCS, which correlated with many of the previous studies. In our study also the patient with good pre op GCS has improved. GCS < 6 shows 90% mortality. Post operative mortality is highest 90% in patient GCS < 6. Poor GCS correlates with high mortality. Post operatively 5 patients had pneumonia needed long term ventilator support underwent tracheotomy. 3 patients developed electrolyte imbalance.

In our study it is observed that the basal ganglionic bleed 60%. Mortality is high in deeper hematoma which is also observed in the literature. Large hematomas with mass effect, if the patient is deteriorating rapidly surgical intervention is must. Neurological status at admission is the good predictor

of outcome. The outcome depends on the pre operative GCS, which correlate with many of the previous studies. In our study also GCS at the time of admission correlated with survival rate. Our findings are consistent with the conclusions of the meta analysis and STITCH Trail that patients with GCS > 9 had an improved outcome with surgery

CONCLUSION

Early surgery and evacuation of hematoma in patients with good GCS, results are good. Outcome of the surgery is good. The mortality is high in deep seated bleeds with poor GCS. Deeper the hematoma the prognosis is bad. GCS less than 4 do not benefit from surgical evacuation.

REFERENCES

1. Qureshi AI, Mohammad YM, Yahia AM, Suarez JI, Siddiqui AM, Kirmani JF *et al*.; A prospective multi-center study to evaluate the feasibility and safety of aggressive antihypertensive treatment in patients with acute intracerebral hemorrhage. J Intensive Care Med., 2005; 20(1): 34–42.
2. Sahni R, Weinberger J; Management of intracerebral hemorrhage. Vasc Health Risk Manag. 2007 Oct; 3(5): 701–709.
3. The Internet Stroke Centre; Intracerebral hemorrhage. Available from http://www.strokecenter.org/patients/about-stroke/intracerebral-hemorrhage/
4. Ann Pietrangelo; Intracerebral hemorrhage. Healthline, 2012. Available from http://www.healthline.com/health/lobar-intracerebral-hemorrhage#Overview1
5. Sacco S, Marini C, Toni D, Olivieri L, Carolei A; Incidence and 10-year survival of intracerebral hemorrhage in a population-based registry. Stroke, 2009; 40(2): 394-399.
6. Flaherty ML, Woo D, Broderick JP; The epidemiology of intracerebral Hemorrhage. In Intracerebral Hemorrhage. Carhuapoma JR, Mayer SA, Hanley DF editors; Cambridge University Press. Available from http://assets.cambridge.org/97805218/73314/excerpt/9780521873314_excerpt.pdf
7. Siddique MS, Mendelow AD; Surgical treatment of intracerebral haemorrhage. British Medical Bulletin, 2000; 56 (2): 444-456.
8. Reiser MF, Semmler W, Hricak H; Magnetic Resonance Tomography. Springer Science & Business Media, 2007: 343.
9. Love S, Louis D, Ellison DW; Greenfield's Neuropathology, 2-Volume Set, 8th edition, CRC Press, 2008: 206.
10. Fernandes HM, Mendelow AD; Spontaneous intra cerebral hemorrhage: A surgical dilemma. Br J Neurosurg., 1999; 13(4): 389-394.
11. Kanaya H; Current status of surgical therapy of hypertensive cerebral hemorrhage in Japan. Nihon Rinsho, 1982; 40: 2775-2782.
12. Sacco RL, Benjimin EJ, Braderick JP, Dyken M, Easton JD, Feinberg WM *et al*.; American Heart Association Prevention Conference. IV. Prevention and rehabilitation of stroke. Risk factors. Stroke, 1997: 28(7): 1507-1517.
13. McKissock W, Richardson A, Taylor J; Primary intracerebral hemorrhage: a controlled trial of surgical and conservative treatment. Lancet, 1961; 2: 221–226.
14. Juvela S, Heiskanen O, Poranen A, Valtonen S, Kuurne T, Kaste M *et al*.; The treatment of spontaneous intracerebral hemorrhage: a prospective randomised trial of surgical and conservative treatment. J Neurosurg., 1989; 70(5): 755–758.
15. Gregson BA, Mendelow AD; International variations in surgical practice for spontaneous intracerebral hemorrhage. Stroke, 2003; 34: 2593-2598.
16. Altaf I, Vohra AH; Surgical management of spontaneous supratentorial intracerebral hemorrhage. Pak J of Neurol Surg., 2014; 18(1): 39-43.
17. Broadrick JP, Brott TG, Duldner JE, Tomsick T, Huster G; Volume of intra cerebral hemorrhage: A powerful useful predictor of 30 day mortality. Stroke, 1993:24: 987-993.
18. Kaneko M, Koba T, Yokoyama T; Early surgical treatment for hypertensive intracerebral hemorrhage. J Neurosurg., 1977; 46(5): 579-583.