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Hospital stay of post burr-hole CSDH: Under scalp block

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Abstract

Background: Chronic Subdural may be defined as collection of blood and blood products in between outer dura and inner arachnoid mater for more than 21 days. Most common affected population is older age group and usually by trivial head trauma. Common operative procedure is Burr hole evacuation of haematoma. Conventionally it is done by general anaesthesia. As elderly people is most affected and they obviously have some co-morbidities like HTN, Bronchial Asthma, Renal disease, CVD that may induce more operative complicity under GA; and can be done under scalp block. Purpose of our study was to take details history, clinical examination, evaluation of hospital stay of patients underwent burr hole evacuation of chronic subdural haematoma under scalp block and GA and to choose method of anaesthesia in this regards.

Materials and Method: Our study was a randomized control, prospective variety of study. Here burr hole evacuation of CSDH under scalp block and GA, were compared to see the length of hospital stay. It was carried from March 2018 to February 2019 in Combined Military Hospital (CMH), Dhaka, Bangladesh. Total 30 cases were included in our study design and in each group 15 number of patients and all of them were above 20 years. They all were admitted and diagnosed by history, clinical examination and finally confirmed by head Computed Tomography (CT) scan. All of our patients were allocated randomly. Data of this study were collected by specially designed questionnaire and analyzed by Statistical Package for Social Sciences (SPSS) version 26.

Results: Total 30 patients were finally selected as CSDHs. They were divided in group A and group B; burr hole under scalp block & under GA respectively. Most of the patients 51-80 years age group, 24(80%) in number. Male were predominant 24(80%) and female were 6(20%) in number. In our study, it was observed that most of our patient having significant co-morbidities >83%. Patients presented to us with mostly headache 71% altered level of consciousness 23%, hemiparesis 4% & seizure 2% only. Post-op complications under scalp block only 33.33% whereas under GA were 53.33%. Hospital stay post-operatively; >1 week, under scalp block only 20% and under GA 40% patients. As most of our patients are old and having significant co-morbidities that delay post op recovery and imply complications specially under GA.

Conclusion: Burr hole evacuation is the choice of chronic subdural haematoma in most cases. But choice of anaesthesia, traditional GA or Scalp block. Scalp block has fewer complications as well as less hospital stay; as most of our patients are old and having significant co-existing diseases that delay post op recovery and induce complications under GA. So we should carefully select mode of anaesthesia during burr hole evacuation of CSDHs to reduce morbidity and expenditure as well.

Keywords: Chronic subdural haematoma, burr hole evacuation, scalp block, general anaesthesia

Introduction

CSDHs are common amongst all intracranial haemorrhages [1]. Mostly affected population is older age group [2]. Actually in CSDH old blood and its breakdown products accumulated in between arachnoid layer over the surface of brain parenchyma and the outermost layer-dura mater [3].

Regarding aetiology -trauma/torn to bridging vein of brain produce CSDH; illustrated by Trotter, although Virchow in 1857 first described chronic subdural haematoma. Pathophysiology behind the maintenance of the chronic state of subdural haematoma is still ambiguous. Accumulated blood within the potential subdural space, provoke an inflammatory reaction resulting in enveloping membrane surrounding the haematoma. Later the outer surface of haematoma is covered by a thin layer of fibroblasts and fibrin.

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And subsequently fibroblasts invade into haematoma and form a thin layer of inner surface of haematoma. Liquefaction of haematoma occurred by fibrinolysis. The liquefied haematoma either reabsorb gradually or slowly increase in size resulted CSDH [4].

Following minor head trauma, CSDH mostly develops; and in some cases chronic alcoholism, hematological disorders, epilepsy, cerebral atrophy under anticoagulant therapy provoke subdural haemorrhage [5].

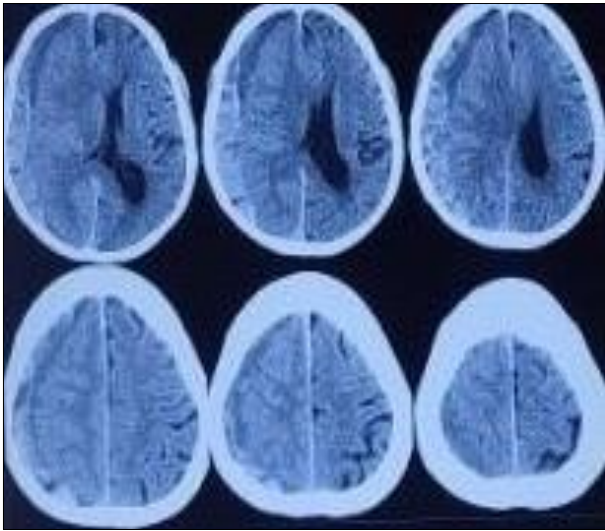


Fig 1: chronic subdural haematoma (Rt)

Regarding clinical manifestation of CSDH, usually headache, loss of consciousness, confusion and neurological deficits. Initially revealed mild symptoms but gradually deteriorates in several weeks after a minor traumatic injury [6]. In most cases surgical treatment of CSDH is not much complicated; burr hole drainage with or without closed-system drain usually adopt; although with have some variable results [7, 8, 9]. Complications of burr hole evacuation usually inadequate drainage, recollection, underlying intracerebral hemorrhage and less commonly contralateral hematoma [10, 11, 12]. And they are more pronounced in older age group as they with have co-morbidities like HTN, DM, Renal disease. Regarding mode of anaesthesia, burr hole evacuation and drainage of CSDH under GA, is conventional method. CSDH is the disease mostly affected in older age group. Aged patients usually having HTN, Bronchial Asthma, CVD and or Renal disease have had the risk of general anaesthesia. Medication of GA relatively harmful than Scalp block/ regional anaesthesia drugs. There may be less time of recovery as well as hospital stay of burr hole evacuation of CSDHs under Scalp block than GA specially aged patient.

In this background to come into a conclusion we tried to observe hospital stay of patients of burr hole evacuation of CSDH under scalp block and GA to reduce hospital acquired infection as well as cost.

Materials and Method

This study, we carried out in Neurosurgery dept. CMH Dhaka, Bangladesh from March 2018 to February 2019. It is a prospective type of study. All of our patients admitted; were above 20 years. Total 30 patients in either age and sex variables were randomly selected. They were diagnosed clinically and confirmed by radiologically as CSDH. Inclusion and exclusion criteria were followed strictly and in

no way radiologically negative included in this study subject. Informed written consent was documented. Data collection sheet were prepared with relevant information from hospital record, picture archive & communication system. Predisposing & aetiological factors, Co-morbidities, medication, surgical history was taken meticulously. Details history of patients, clinical examination- general, systemic examination including elaborately neurological examination and required investigations were done and finally diagnosis confirmed by CT scan-head. Of total 30 patients of CSDHs; 15 patients in group A was done Burr hole evacuation under scalp block and rest 15 patients in group B, underwent burr hole evacuation under conventional GA. Post-op condition including complications and hospital stay were observed of both two groups. Relevant data were collected by using preformed data collection sheets. Photographs were taken with kind permission from the patients & relevant data were collected by using preformed data collection sheets and filled-up accordingly. Regarding statistical analyses; it was done by using the SPSS version 26 for windows.

Results

In our study 30 patients were randomly selected as CSDH after inclusion and exclusion criteria. And these 30 patients were divided in group A and group B; burr hole under scalp block & under GA respectively. All of our patients were thoroughly evaluated by details history including age, sex, co-morbidities, coagulopathy, through clinical examinations and relevant investigations. Post-op condition specially complications observed keenly and addressed accordingly. In our study, distribution of cases according to gender male was 24 and female were 6 in number (Figure-2). Regarding age of patients; all of our patients in this study, age from 21 to 80 years and mostly 51-80 years of age 80% (Table-1). Common clinical manifestations of these patients, were headache 71% altered level of consciousness 23%, hemiparesis 4% & seizure 2% (Figure-3). Regarding co-morbidities of our patients; only 5 patients out of 30 CSDHs without co-morbidities and rest 25, more than 83% patients having significant co-existing diseases (Table-2). Complications post-operatively under scalp block only 33.33% whereas under GA it was 53.33% (Table-3). Post-op hospital stay of group B (under GA patients) >1 week, were 40% and group A (under scalp block) only 20% (Table-4); as most of our patients are old and having significant co-morbidities that delay post op recovery and imply complications specially under GA.

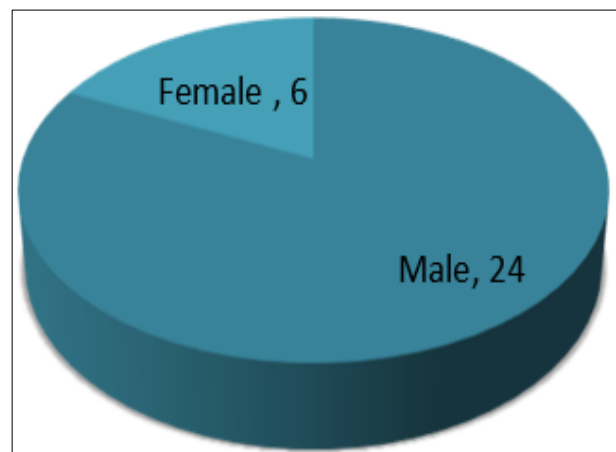
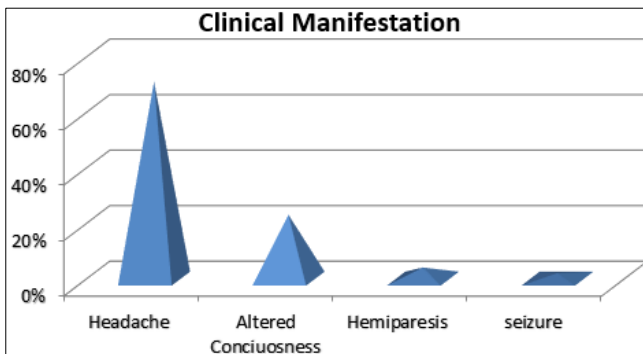


Fig 2: Distribution of patients in accordance with Gender (n=30)

Table 1: Distribution of patients according to age group (n=30)

Age (years)	(n=30)	(%)
21 – 30	1	3.33
31 – 40	2	6.67
41 – 50	3	10
51 – 60	6	20
61 – 70	11	36.67
71 – 80	7	23.33
Range (min, max)	28, 80	

**Fig 3:** Distribution of patients in accordance with common clinical manifestation (n=30)**Table 2:** Co-morbidities of the study patients (n=30)

Co-morbidities	Group A (n=30) (%)
HTN±CVD	16(53.33)
DM	4 (13.33)
IHD with antiplatelet	5 (16.67)
Nil	5 (16.67)

Table 3: Complications of the study subjects in two groups (n=30)

	Group A (n=15) n (%)	Group B (n=15) n (%)
Pneumocephalus	2 (13.33)	3 (20.00)
Acute SDH	1 (6.67)	1 (6.67)
ICH	1 (6.67)	1 (6.67)
Infection	1 (6.67)	3 (20)
Nil	10 (66.66)	7 (46.66)

Table 4: Duration of hospital stay of the study subjects in two groups (n=30)

	Group A (n=15) n (%)	Group B (n=15) n (%)
≤ 1 week	12 (80)	9 (60.0)
>1 week	3(20)	6 (40.0)

Discussion

Chronic subdural haematoma is one of the most common neurosurgical diseases facing by neurosurgeon. Burr hole evacuation of CSDH is less hazardous than craniotomy.

Regarding the mode of anaesthesia; conventional under GA or scalp block, in managing the patients of CSDHs, is a matter of debate.

In this study, 30 consecutive patients of CSDH were selected. These patients were divided into group A and group B and amongst them Fifteen (15) patients were in group A and fifteen (15) patients in group B. Patients with CSDH in group A were managed with burr hole drainage under scalp block and in group B, the patients were managed with burr hole drainage under GA. In our study mostly affected age group of CSDHs, 51-80 years were 24 (80%) subjects. In an international study, Ernestus *et al.* [13], in 1997 found affected age group of CSDHs above 60 years were 73%. Which correlates with this study.

In this study, there were male predominant; male were 24 and female were only 6 in number and male-female ratio 4:1. Sambasivan *et al.* [14], in 1997 shown that the male-female ratio of CSDHs were 5:1, which co-relates with our study.

Regarding clinical manifestations of our CSDHs patients, headache is the most common 71%. Luxon and Harrison [15, 16] showed that 64% patients having headache as an initial symptom and 77% patients as a later symptom, which co-relates with our study.

Most of our patients suffering from chronic subdural haematoma are old age group and having co-morbidities that provoke CSDHs like HTN±CVD 53.33%, DM 13.33%, IHD (with anti-platelet drug) 16.67%. So they have more chance of complications of operation under GA.

Patients under GA of any operation have delayed awakening, hallucinations, mania, and phenomena due to residual anaesthetics [17, 18].

Nausea, vomiting, fluctuation blood pressure and delayed recovery happened due to GA [19].

In a study Zhuang *et al.* [20], in 2022 showed that complications burr hole evacuation of CSDH under Local anaesthesia vs GA is 11.76% vs. 53.70%, and in our study cases post-op complications under Scalp block vs GA are 33.33% vs. 53.33% and mostly Cranial Infection 6.67% vs. 20%; which almost similar to Zhuang *et al.*, study.

Regarding hospital stay of burr hole evacuation of CSDHs patients of our study group is under GA >1 week, 40% patients whereas under scalp block only 20% patients. In a study in 2022, Zhuang *et al.* [20], showed that hospital stay of same operation under GA more time duration than local anaesthesia, which co-relates with our study. In a study 2019, Salama [21] showed that burr hole evacuation of CSDH is safe.

The limitation of our study is that, it was done in a single centre and limited number of patients; but the patients reported to this CMH Dhaka and admitted is serving soldiers and their families, serving officers with their families including parents and father & mother in laws, retired officers with their spouse, civilian employees under defense budget, retired soldiers. They live in different parts of this country and it covers to some extent at least our country, Bangladesh.

Conclusion

Old age group are vulnerable to CSDHs. They with have many co-morbidities that leads to propagation of CSDH and more prone to complications of GA. So better to treat burr hole evacuation under scalp block of CSDHs to reduce co-morbidities as well hospital stay; and deduction of costing and better outcome.

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