Outcome of Aspiration and Drain Placement in Chronic Subdural Hematoma

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ABSTRACT

Objective — *To find the results of chronic subdural hematoma (CSDH) treatment by aspiration and drain placement after burr-hole.*

Study design — *Descriptive study.*

Place & Duration of study — *Department of Neurosurgery, Jinnah Postgraduate Medical Centre Karachi, from August 2017 to December 2019.*

Methodology — *Patients of all age groups and both genders were included. CT scan brain was used to confirm the diagnosis of CSDH at least three weeks after the insult. Patients with recurrent CSDH were excluded. All the patients underwent burr-hole with aspiration of hematoma and subdural drain placement. Postoperative complications were noted. All patients were followed in outpatients department and CT Scan brain was repeated. All of them were observed for clinical improvement or otherwise.*

Results — *A total of 159 patients were included in the study. There were 132(83%) male and 27 (17%) female patients. CSDH was found on right side in 70 (44%) patients, left side in 65 (40.9%) patients and bilateral in 24 (15.1%)patients. In 130 (81.8%)patients there was a history of trauma, 24 (15.1%) were using medication while 5 (3.1%) patients had bleeding disorder. Preoperative GCS score was 9.62+2.45 and postoperative GCS score 13.17+1.83. Postoperative complication rate was 15.09%. Four (2.5%) patients had CSF leak, 3 (1.9%) developed pneumocephalus, and wound infection occurred in 3 (1.9%) patients. Fourteen (8.8%) patients developed recurrent CSDH.*

Conclusion — *Chronic subdural hematoma treatment with burr-hole aspiration and drain placement was found successful with minimum morbidity and mortality.*

Key words — *Chronic subdural hematoma, Burr-hole, Aspiration, Drain placement.*

INTRODUCTION:

Chronic subdural hematoma is an accumulation of blood between surface of brain and dura as result of leak from tiny bridging veins between brain and dura. These patients are frequently seen in neurosurgery practice and need intervention in symptomatic cases.[1] It is more common in patients above 65 years of age with the incidence of 3-14/10,000 patients and more common in males.[2,3] Head injury is the most common cause of CSDH.[4] Alcohol use, anti-inflammatory drugs like aspirin and anticoagulants like warfarin use are other possible causes. Diseases associated with reduced clotting factors can also lead into CSDH.[5] It occurs after 3 weeks of primary insult and appears hypodense on non-contrast CT scan.[6]

CSDH patients present with drowsiness, headache, vomiting, memory impairment, weakness, seizures

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and difficulty in speaking. It is diagnosed primarily on CT scan brain and MRI brain. There are number of surgical procedures that have been used for the management of CSDH but none of them gained the highest acceptance among the neurosurgeons. It is curable disease with low morbidity and mortality but has a high recurrence rate as compared to other postoperative complication.[7] Recurrent hematoma is the leading complication reported in 5%-33% patients after successful evacuation of CSDH.[8] It has been seen that blood degradation products and inflammatory and fibrinolytic factors found in subdural space, are responsible for higher rates of recurrence of hematoma.[9] Use of subdural drain has shown to reduce the recurrence of hematoma due to washout of blood degradation products and inflammatory and fibrinolytic factors.[9]

Postoperative subdural drain placement is not commonly performed in certain countries because many neurosurgeons question its safety and usefulness in preventing recurrence and improving functional outcome.[10] This study was conducted to document outcome of subdural drain placement after aspiration of hematoma by burr hole in terms of recurrence and functional outcome.

METHODOLOGY:

It was a descriptive case series conducted from August 2017 to December 2019 in the Department of Neurosurgery, Jinnah Postgraduate Medical Centre Karachi. Patients of all ages and genders with CSDH were included with written informed consent. Patients were divided into different age groups. All patients were diagnosed on the basis of CT scan brain after three weeks of primary insult. Patients with recurrent CSDH were excluded from the study.

Patients were admitted either through emergency or OPD. Surgery was planned in all patients according to the laterality of the CSDH. Single burr-hole was made at the dependent site of the hematoma while two burr-holes made in case of bilateral CSDH. After making burr-hole and opening up of dura, aspiration of clot was done and drain inserted in the subdural space and attached to a drainage bag for draining residual hematoma. All patients were followed with postoperative CT scan to assess any residual hematoma or collection. Follow up was done monthly for three months and at each visit symptoms were noted and CT scan done.

Data were collected on a pre designed form that included history, examination findings, investigations, operative details, postoperative complications and follow up. Data were analyzed by using SPSS 19 version and descriptive statistics were used to present results.

RESULTS:

Out of total 159 patients, there were 132 (83%) male and 27 (17%) female patients. Majority (n=129 - 81.1%) of the patients were admitted through emergency. More than half of the patients were above the 60 years of age. Drowsiness was predominant symptom present in 61.66 % of patients followed by headache in 40.3%, weakness in 38.4% dysphasia in 9.4%, memory impairment in 6.2% patients. In 70 (44.02%) patients right sided CSDH, in 65 (40.88%) left sided while 24 patients (15.09%) presented with bilateral lesion.

Trauma was the leading cause of CSDH in 130 (81.67%) patients followed by 24 (15.09%) patients who were on medication while 5 (3.14%) had bleeding disorder. Preoperative GCS score was and postoperative GCS score are given in table I.

Postoperative complication rate was 15.09%. Four (2.5%) patients had CSF leak, while pneumocephalus occurred in 3 (1.9%) patients, wound infection in 3 (1.9%) and 14 (8.8%) developed recurrent CSDH. Data of the patients with the respects to age groups, their presentation, causes and outcome is given in table I. In 79 (49.7%) patients hypertension was present while diabetes mellitus reported in 15 (9.4%). Three (1.9%) patients had jaundice. None of the patients developed neurological disorder, weakness or fits postoperatively.

DISCUSSION:

CSDH is a common neurosurgical disease of elderly patients associated with significant morbidity and mortality.[11,12] In the present study more than half of the patients were above 60 years of age. It has been found that over the last few decades the outcome of CSDH patients has improved due to the advancement in the diagnostic tools and its managements. In CSDH patients with neurological symptoms, surgical intervention is the corner stone of management, and among the different surgical techniques, burr-hole drainage is the preferred surgical approach.[13] Recurrence is common in this condition. However, a reduced recurrence rate is observed with external subdural drains.[14] Subdural drain has the advantage that it continues to drain the residual fluid and accelerates brain expansion contributing to early smooth recovery of cognitive and motor skills.[15] The disadvantage includes risk of infection, prolonged immobilization related issues

Table I: Age Groups and Outcome in CSDH Patients

Age groups	< 1 year	1-20 years	21-40 years	41-59 years	>60 years
No of patients (n %)	03 (1.88%)	08 (5.03%)	13 (8.17%)	49 (30.81%)	86 (54.08%)
Causes Trauma	03 (1.88%)	08 (5.03%)	47 (29.55%)	60 (37.73%)	60 (37.73%)
(Fall from height	03 (1.88%)	03 (1.88%)	12 (7.54%)	07 (4.4%	05 (3.14%)
+ RTA)		05 (3.14%)-	01 (0.62%)	40 (25.15%)	55 (34.59%)
Bleeding Disorder				01 (0.62%)	03 (1.88%)
Medication				01 (0.62%)	
GCS on presentation	11.33 + 2.08	10.75 + 3.19	9.46 + 2.60	9.08 + 2.16	9.82 + 2.29
GCS after surgical procedure	14.33 + 0.57	13.62 + 2.26	13.07 + 1.80	12.91 + 1.97	13.22 + 1.73
Complication		01 (0.62%)	05 (3.14%)	07 (4.4%)	11 (6.91%)
CSF Leak		-	01 (0.62%)	01 (0.62%)	01 (0.62%)
Wound infection		01 (0.62%)	-	02 (1.25%)	01 (0.62%)
Recurrence		-	03 (1.88%)	04 (2.51%)	07 (4.4%)
Pneumocephalus		-	01 (0.62%)		02 (1.25%)

like atelectasis, aspiration pneumonia, deep vein thrombosis and pressure ulcers.[16]

This surgical procedure can be performed under local anesthesia which may shorten the operative time and alleviate symptoms quickly.[7] Head trauma was the leading cause of CSDH in our study, noted in 81.8% patients which is similar to other studies where it is found in 35%-75% patients.[2,17] CSDH is clinically characterized by many symptoms. In present study, drowsiness was the predominant symptom while in Sousa et al study headache was the main complaint.[18] The reported frequency of CSDH is more on left side but in our study it was more common on right side.

In our study the recurrence rate was 8.8% which is much lower as compared to other study where it was 17.6%.[19] In present study, 84.9% patients recovered smoothly while 15.1% patients developed complication with no mortality. These results are good when compared to other studies.[20] Recurrence of the hematoma was the common complication in present study which is similar to another study.[21]

CONCLUSIONS:

Burr-hole aspiration with drain placement in chronic subdural hematoma resulted in good outcome with no mortality. Complications were minimal and treated easily. The procedure was simple and easily done.

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