

Outcome of Chronic Subdural Hematoma Patients Treated By Single Burr Hole with Subdural Drain Method.

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ABSTRACT

Objective: This study was conducted to study the clinical features and post-operative outcome of single burr-hole evacuation with subdural drain in chronic subdural hematoma. **Patients & Methods:** It's a clinical retrospective study that includes surgical management of 40 patients harboring chronic subdural hematoma and the effect of single burr hole with subdural drain on the outcomes starting from April 2010 to March 2012 at department of neurosurgery, Qena University Hospital, South Valley University and Assiut University Hospital. Surgery was performed for all patients by using single burr hole with placement of subdural drain. Patients were followed for one month after surgery. Glasgow outcome scale was used to assess the patients on follow up. All the statistical data processing, tables and graphs were conducted by the (SPSS statistical data package for Microsoft Windows). **Results:** forty patients of chronic subdural hematoma were included in this study; thirty four patients (85%) were males while six patients (15%) were females. The age range was 33-85 years. Fall was the predominant etiological factor 50%. Thirty seven (92.5%) patients presented with hemiparesis, twenty five (62.5%) with headache, thirteen (32.5%) with urinary incontinence and eight (20%) with behavior changes. On discharge, according to Glasgow outcome scale, twenty five (62.5%) patients with Gv and fifteen (37.5%) with Grade vi. There was no mortality. Two weeks post-operative all the patients were found to have Gv. One month post-operative follow up CT brain showed complete resolution of the hematoma.

Conclusion: this study showed that chronic subdural hematoma is common in male and elderly population. Most of the patient present with headache and hemiparesis. Single burr-hole evacuation with subdural drain has excellent outcome with no complications.

Key words : Subdural hematoma

Introduction

Chronic Subdural Hematoma (CSDH) is generally defined as a collection of blood or blood breakdown products between the brain and dura that has been present for at least 21 days ⁽¹⁾. This

entity has an incidence of 5/100,000 persons >70 years, predominantly in males. Age has the following predisposing factors: abnormal gait, increased capillary fragility and cerebral atrophy⁽²⁾.

Computed tomography (CT) remains the preferred diagnostic method for the chronic subdural hematoma (CSDH). Chronic SDH has a variety of imaging characteristics in CT; low, intermediate, or high density relative to brain parenchyma⁽³⁾. Chronic SDH frequently appears to be mixed density⁽⁴⁾. With current high-resolution CT scanners, homogeneous isodensity becomes rare⁽⁵⁾.

There is still debate, however, on the pathophysiology, methodology of management, and surgical treatment of CSDH⁽⁶⁾.

The concurrent study was conducted to study the clinical features and post-operative outcome of single burr-hole evacuation with subdural drain in chronic subdural hematoma.

Patients and methods

In Qena and Assiut University hospital 40 patients with chronic subdural hematomas were subjected to this study between April 2010 to March 2014.

Patient selection:

Patients with chronic subdural hematomas admitted to our departments within two years. Patients with subdural hygroma, subdural empyema, CSDH with underlying intracerebral hematoma were not analyzed because these factors would bias our study results.

Initial assessment:

All patients were assessed clinically before treatment by history taking, general and neurological examination. Data were collected in standardized patients' sheet.

Routine laboratory investigations were done to all the patients including complete blood picture (CBC), prothrombin time (PT), partial thromboplastin time (PTT), liver function tests and kidney function tests. CSDH was diagnosed on CT scan brain.

Operative technique:

All patients included in this study underwent first time surgery for a first time diagnosed symptomatic chronic subdural hematoma after written informed consent and received single burr hole, intraoperative irrigation with warm saline and intraoperative placement of a subdural drain. In all patients surgery was performed during general anesthesia and patients were placed in supine position with the head tilted on a ring head rest without Mayfield fixation. In all patients, skin incision and burr hole were placed above the biggest volume of the hematoma and dura mater was opened in cruciate manner and coagulated. Subdural irrigation was performed with warm ringer solution. After evacuation of the hematoma a subdural drain was inserted. Irrigation was continued until air is getting out and the subdural space is filled with ringer solution. Drainage system was placed just below head level. Forty-eight hours after surgery the drainage system was removed. The

patient was then allowed to sit out of bed and walk .All the patients were assessed for improvement in neurological status post-operatively. The patients were discharged by third day after surgery.

Post-operative follow up:

Patients were followed in outpatient department at two weeks intervals after operation for one month. follow up CT brain was done for all patients after one month of surgery.

Glasgow outcome scale was used to assess the patients on follow up as fallow:

Grade V: Good recovery, resumption of normal life.

Grade IV: Moderate disability, disable but independent.

Grade III: Severe disability, dependent for daily support.

Grade II: Vegetative state, unresponsive and speechless.

Grade I: Death.

Statistical Analysis:

All the statistical data processing, tables and graphs were conducted by the (SPSS statistical data package for Microsoft Windows). Frequency and percentage were calculated for variables like age, sex, mechanism of trauma, clinical features, CT scan findings and postoperative outcome. Results were presented as graphs and tables.

Results

In this study forty patients fulfilled the selection criteria. We studied the effect of single burr hole with subdural drain on the outcomes of the patients with chronic subdural hematoma at the department of neurosurgery, Qena and Assiut University Hospitals.

Table (1) lists the patient's characteristics. The age range was 33-85years, with a mean of (63.4±12.0). Gender distribution was predominantly male 34(85%). fig. (1).The male to female ratio was (5.67:1).Fall was the predominant etiological factor of CSDH in twenty patients (50%), eight patients (20%) had a history of assault from others, two patients (5%) had a history of road traffic accident and ten patients (25%) did not remember any injury to the head when asked after treatment. fig. (2).

The clinical picture of the patients was as follow thirty-seven patients (92.5%) presented with hemiparesis, twenty-five patients (62.5%) had a history of headache, thirteen patients (32.5%) patients had a history of incontinence of urine and eight patients (20%) had a history of behavioral changes. fig. (3).

CT scan of twenty-five patients (62.5%) showed right side hematoma while fifteen patients (37.5%) showed left side chronic subdural hematoma. fig. (4). There were no intraoperative complications.

There was no mortality in this series. All the patients were discharged from the hospital on the third day post-operative. On discharge, according to Glasgow outcome scale, twenty five (62.5%) patients had Gv and fifteen (37.5%) had Grade vi. fig. (5).

Two weeks post-operative all the patients were found to have Gv. One month post-operative follow up CT brain showed complete resolution of the hematoma.

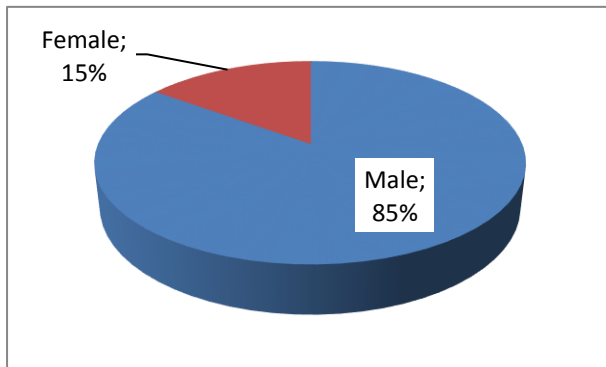


Fig 1: Sex distribution

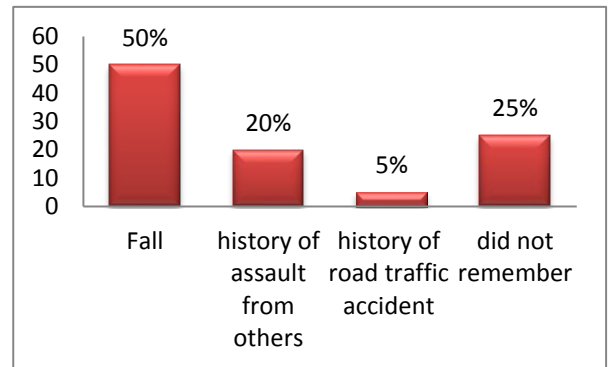


Fig 2: Mechanism of trauma

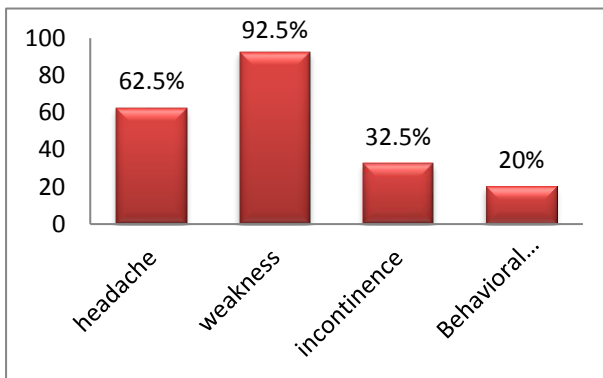


Fig 3: Clinical picture distribution

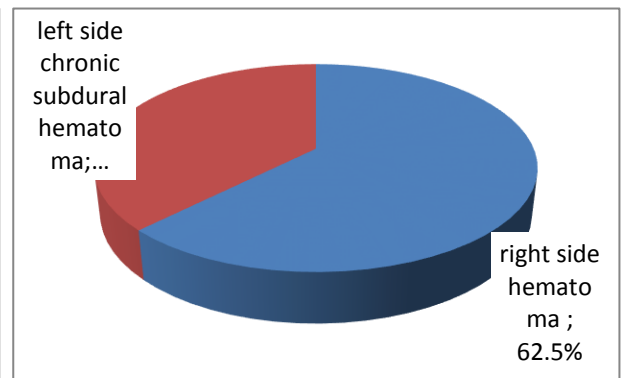


Fig 4: CT scan

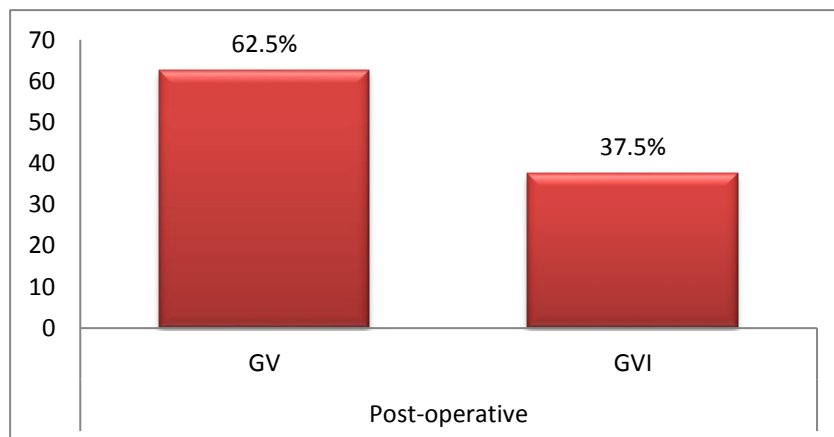


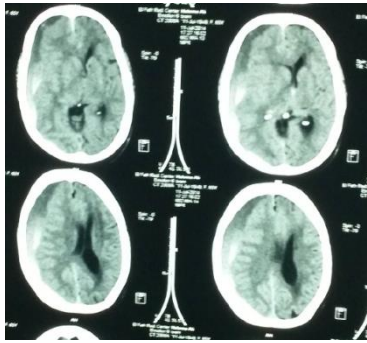
Fig 5: GOS (post-operative)

Table1. Patients' characteristics.

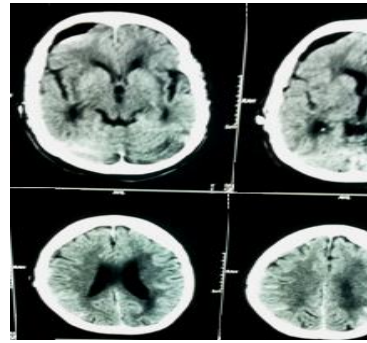
Item		Number	%
Age	<60 years	12	30
	≥60years	28	70
Sex	Male	34	85
	Female	6	15
Clinical picture	Headache	25	62.5
	Weakness	37	92.5
	Incontinence	13	32.5
	Behavioral changes	8	20
Mechanism of trauma	Fall	20	50
	Unknown	10	25
	AFO	8	20
	RTA	2	5
Site of hematoma	RT	25	62.5
	LT	15	37.5
GOS	Post-operative	GV 25	62.5
		GVI 15	37.5
	After 2 weeks	GV 40	100
	After one month	GV 40	100

Case presentation

Femal patient (73)years old subjected to head trauma in the form of fall on the ground 1 month before she developed progressive headache and left hemiplegia CT brain fig(1-3)was done for her which show right fronto temporo parietal subdural hematoma (variant aged hematoma) .Surgery was done for her as described before .improvement of the motor power observed.



Fig(6): Pre operative CT brain shows right frontopariatal CSDH



Fig(7): CT brain two days post operative

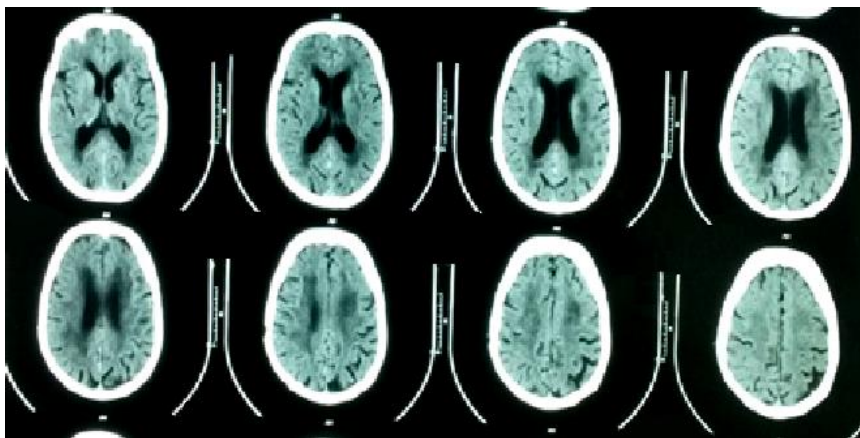


Fig (8): CT brain one month post operative shows complete resolving of the CSDH



Fig (9):Intra operative pictures shows evacuation of the CSDH and subdural drain placement

DISCUSSION

In this study forty patients with CSDHs. were included. The youngest patient was 33 years old while the oldest one was 85 years old.

Symptomatic chronic subdural hematoma is one of the most frequent diagnosis in neurosurgical practice mainly found in elderly patients. (7) In our study Twenty eight patients (70%) were equal to or more than 60 years old.

Sambasivan M conducted a large study over a period of 30 years, 2300 cases of CSDH were seen and treated. A male preponderance among the cases was seen in a ratio of 5:1. (8) In our study male to female ratio was 5.67:1.

Twenty-five to seventy percent of the patients would give a positive history of mild head trauma in the past, while 25-48% would not give any history of head injury in the past. (9-10) Fall and antithrombotic therapy are the most frequent risk factor for CSDH. (11) In our study thirty patients (75%) patients had a history of head trauma, in which twenty patients (50%) had a history of fall while eight patients (20%) had a history of assault from others, two patients (5%) had a history of road traffic accident and ten patients (25%) did not remember any injury to the head when asked after treatment. None of the patients had a history of use of antithrombotic therapy.

The most frequent presenting symptoms are headache, changes in mental status, and hemiparesis. CSDH may also present as a transient ischemic attack. (12) In our series hemiparesis was presented in thirty-seven patients (92.5%), headache was presented in twenty-five patients (62.5%), thirteen patients (32.5%) patients had a history of incontinence of urine and eight patients (20%) had a history of behavioral changes. In our series, clinical findings are very much comparable to the above mentioned studies.

Computed tomography is the most useful tool in diagnosing CSDH. It not only reveals the size, site, capsule formation, midline shift and the density of the clot but also the internal architecture. (13) In our study CT scan was done in all the cases; 62.5% had right side and 37.5% had left side CSDH.

CSDHs are one of the most common surgical problems faced by neurosurgeons. The treatment goal of CSDHs is complete drainage of the collection, using the least invasive technique without a high risk of recurrence. (14)

There is no standard method for the treatment of CSDH. However Burr-hole craniostomy is the most commonly performed procedure for decompressing the hematoma within the past 20 years. (15)

In our series single burr hole with intraoperative irrigation and subdural drain was used. All the cases are improved neurologically after the surgical treatment.

The lack of cortical re-expansion, postoperative intracerebral hematoma and tension hydrocephalus are among other complications occurring after surgery. Finally, 10% of the patients will have a permanent neurological impairment. (11) In our series there was no postoperative intracerebral complications, there were great improvement in the neurological status as twenty five patients (62.5%) had Gv GOS. and fifteen patients (37.5%) had Gvi Immediately postoperative, 2 weeks postoperative 100% of the patients had Gv. There was no mortality. In our study the overall outcome of single burr-hole with subdural drain was excellent.

Conclusion

A single dependent burr hole with subdural drain can address all the requirements of surgical exposure, namely adequate drainage, breakdown of septa and washing out of subdural space and has got excellent outcome without complications.

Limitations

The limitation of our study is the small number of cases.

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