MANAGEMENT OF CHRONIC SUBDURAL HAEMATOMA

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ABSTRACT

Objective: The objective of this study was to assess the management strategy of chronic subdural haematoma and to find out the best treatment option.

Material and Methods: The study was conducted in the Neurosurgery Department of PGMI, Lady Reading Hospital, Peshawar. Duration of study was 6 months from 1st July, to 31st December, 2004. All the cases were included. It was a prospective observational study. No patient was excluded from this study. Both the sexes and all ages were included. After relevant investigation all patients were operated by performing single/double Burr hole or craniotomy. Out come of patients was recorded.

Results: The age range of our patients was from 1 year to 90 years. There were 13 males and 4 females and ratio was 4:1. Ten (58.8%) patients had features of raised intracranial pressure in the form of headache and vomiting and nine (52.9%) patients had come with focal neurological deficit. The GCS of patients was from 13 to 15 in fifteen (29.4%) patients, from 8 to 12 in ten (58.8%) patients, and two (11.8%) patients had GCS below 8.

Head injury was the cause in thirteen (76.5%) patients. Brain atrophy was seen in two (11.8%) cases and one patient (5.9%) had bleeding disorder. Subdural haematoma was unilateral in fifteen (88.2%) patients and bilateral in two (12%). All the patients were operated upon and two burr holes were performed in the majority (59%). Single burr hole was the other method done in five (29.4%) patients and craniotomy was done in two cases (11.8%), as the second line treatment. Respiration was done in three (17.6%) cases. Post-operative complications were recollection (17.6%), seizures (35%) and two (11.8%) had post-operative wound infection, fifteen (88.23%) patients improved after treatment and two (12%) remained static. None of them deteriorated and the mortality was nil.
**Conclusion:** Burr hole aspiration can be reasonably used as a first line of treatment for chronic subdural haematoma.

**Key words:** Chronic subdural haematoma, Burr hole aspiration, craniotomy.

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**INTRODUCTION**

Chronic subdural haematoma is an extra-axial encapsulated collection of liquefied blood within the subdural space,\(^1\) which results in compression of underlying brain tissue resulting in neurological deficit. Its early evacuation leads to rapid recovery.\(^2\) The incidence of chronic subdural haematoma is 1 to 2 per 100,000 people per year.\(^3\)

It is convenient to classify subdural hematomas into *acute*, which presents within 48 to 72 hours of injury, *subacute* which become manifest at 3 to 20 days and *chronic* lesions which do not produce symptoms until from 3 weeks to several months after injury.\(^4\)

Symptoms and signs of chronic subdural haematoma are variable and are not pathognomonic. It is a stroke mimic condition.\(^5\) The treatment can be medical in the form of steroids, bed rest and symptomatic\(^6\), when the patient refuses surgery or the haematoma is small.\(^7\)

Surgery may be in the form of craniotomy and incision of membranes or single or double burr holes, with irregular or closed system drainage\(^8\), which is helpful to prevent recurrence.\(^8\)

Endoscopic minimally invasive surgery is also being recommended\(^9\) but chronic subdural can also be the result of endoscopic third ventriculostomy or other intracranial procedures. The recurrence rate may be from 5-33%\(^10\). Bleeding tendency, intracranial hypotension and repeated hemorhages are well known factors for recurrence.\(^11\) Mortality rate in earlier literature is from 2-2.5%.\(^12\) This study was done to identify Surgical treatment which was minimally invasive and which was suitable in our conditions.

**MATERIAL AND METHODS**

This study was conducted in the Neurosurgery Department, Lady Reading Hospital, Peshawar from 1\(^{st}\) July, 2003 to 31\(^{st}\) December, 2004. It was a randomized prospective study of seventeen cases of chronic subdural who were admitted from

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[Images of CT scans of unilateral chronic subdural, chronic subdural, and chronic subdural]
OPD, Emergency and were referred from other units. Thorough clinical examination was performed in all the cases after taking detailed history from the patient and the attendants. Investigations performed were routine ones and also included BT, CT, PT and APTT. CT scan was done in all the cases. All the patients were operated upon under local or general anaesthesia depending upon the condition of the patient and the availability of the required facilities. The procedures that we adopted were, two burr hole craniostomy without drainage system, single burr hole without drainage and craniotomy. Post-operative outcome during hospital stay and clinical condition at follow up was recorded.

RESULTS

There were thirteen patients (76.5%) males and four (23.5%) females, the ages of patients were from one to 90 years and the average age came out to be 59 years. All these patients belonged to different areas of Frontier Province and majority of them were from central areas. Most frequent symptoms were headache and vomiting in ten (58.8%) of the patient while nine (52.9%) presented with focal neurological deficit as well. Majority of our patients were having Glasgow Coma scale from 8-12, and only two (11.8%) had it below 7. Predisposing factors in our patients were head injury in thirteen (76.5%) and in three patient (17.6%) no cause was identified. One patient (5.9%) had bleeding disorder.

Surgical treatment was done in all the cases, out of ten cases where 2 burr hole aspirations were done 25% had recurrence. Those were reaspirated and in one-third of them it was successful. The remaining two cases underwent craniotomy. Single burr hole with close drainage was done in five (29.4%) of cases, none of which needed reaspiration.

The clinical condition improved in 15 (88.2%) patients and 2 (11.8%) remained static. None of them expired.

These were in the form of recollection in 3 (17.64%) patients, seizures in 6 (35.3%) and 1 (5.9%) patients had post-operative wound infection.

<table>
<thead>
<tr>
<th>SEX INCIDENCE</th>
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</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Female</td>
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</tbody>
</table>

**TABLE-1**

<table>
<thead>
<tr>
<th>CLINICAL FEATURES</th>
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<tbody>
<tr>
<td><strong>Symptoms</strong></td>
</tr>
<tr>
<td>Headache + Vomiting</td>
</tr>
<tr>
<td>Focal Deficit</td>
</tr>
<tr>
<td>Behaviour Changes</td>
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<tr>
<td>Unconsciousness</td>
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</tbody>
</table>

**TABLE-2**

<table>
<thead>
<tr>
<th>GLASGOW COMA SCALE</th>
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<tbody>
<tr>
<td><strong>Number</strong></td>
</tr>
<tr>
<td>08 – 12</td>
</tr>
<tr>
<td>13 – 15</td>
</tr>
<tr>
<td>&lt; 7</td>
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**TABLE-3**

<table>
<thead>
<tr>
<th>CAUSES OF SUBDURAL HAEMATOMA</th>
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<tbody>
<tr>
<td><strong>Number</strong></td>
</tr>
<tr>
<td>Road Traffic Accident</td>
</tr>
<tr>
<td>History of Fall</td>
</tr>
<tr>
<td>Could not recall</td>
</tr>
<tr>
<td>Bleeding Disorder</td>
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</tbody>
</table>

**TABLE-4**
TREATMENT MODALITIES

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Number</th>
<th>% age</th>
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</thead>
<tbody>
<tr>
<td>Two Burr Hole Aspiration</td>
<td>10</td>
<td>58.8%</td>
</tr>
<tr>
<td>Single Burr Hole Aspiration</td>
<td>05</td>
<td>29.4%</td>
</tr>
<tr>
<td>Craniotomy</td>
<td>02</td>
<td>11.8%</td>
</tr>
</tbody>
</table>

TABLE-5

SITE OF HAEMATOMA

<table>
<thead>
<tr>
<th>Number</th>
<th>% age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unilateral</td>
<td>15</td>
</tr>
<tr>
<td>Bilateral</td>
<td>02</td>
</tr>
</tbody>
</table>

TABLE-6

DISCUSSION

The chronic subdural haematoma develops insidiously typically in an elderly alcoholic individual with some degree of brain atrophy and sufficient potential subdural space is needed. A minor blow to the head which is not even remembered may be the cause of chronic subdural. The atrophic brain is less likely than a normal brain to tamponade a beginning subdural haematoma. In our study elderly male patients were more and the cause of the chronic subdural haematoma was head injury. Chronic subdural in young patient is rare. Anticoagulants may be the cause of the disease. In elderly patients anticoagulant use should be controlled. Subdural in infant may result in head enlargement or restriction of brain growth, its existence may raise the possibility of child abuse.

No symptom or sign is pathognomonic. Personality and behavioral changes are present in upto 39%. These were present in 29% of our patients. Focal or global neurological deficit or altered consciousness should raise the suspicion especially in elderly. The investigation of choice in our study was CT. MRI was not needed. CT is usually sufficient. MRI could help in doubtful cases, and can even help in surgical decision making.

The treatment can be medical for the unwilling patients but we used surgery combined with the medical treatment, medical treatment alone was not used in any case.

The treatment of chronic subdural in our study was surgical and required less surgery than the treatment of an acute subdural haematoma.

The contained fluid was evacuated through small holes in the skull with or without a drain. It was done in nearly all of our cases with good results.

The surgical treatment evolved and passed through craniotomy and removal of membranes to burr hole evacuation, in the form of single burr hole, two burr holes with or without close system drainage. Burr hole has greater cure rate and less complications which reduces recurrence. We used craniotomy and incision of membranes in only a few cases in which the Burr hole evacuation failed or there were solid components. Craniotomy and membranectomy is usually not needed. The single burr hole and closed system drainage is more logical and less invasive as it requires less surgery, is easy to perform and can even be done under local anaesthesia and it is also recommended.

The complications are reaccumulation seizures, infection and conversion to acute subdural or even extradural haematoma. Prophylactic anticonvulsants were not needed. Reaccumulation was treated with craniotomy in two-third of the cases and remaining were reaspirated with or without drainage. Chronic subdural can also result from any intracranial surgery. Recurrence could be prevented by Burr hole and drainage, drainage volume of less than 200 ml is also associated with recurrence.
Recurrence is also associated with greater width of the haematoma and clot, presence of seizures and in diabetic, elderly patients.

The independent outcome predictions are the neurological status of the patient GCS, as well as the increasing age of the patient.

Bilateral haematomas may be present in 16-20% case. Recurrence increases with bilateral haematoma. These were bilateral in 12% in our study. Although infection is upto 2%, it was 6% in our study, we had infection in 6% and there was no mortality as majority of our patients were in good neurological status and surgery was done early. Review of contemporary surgery also shows that single burr hole with closed drainage and double burr holes with irrigation are effective and should be used as first line treatment.

CONCLUSION

The main danger of the chronic subdural haematoma is that its existence may not be recognized and it may be left untreated, causing a severe neurological deficit or death. There should be a high degree of suspicion.

The treatment is not complicated or associated with much risk, and a satisfactory outcome of the of a chronic subdural haematoma is usually easier to achieve. The success of their surgical treatment is in part related to how soon they are treated.

The superiority of one surgical method over the other could not be established in our series, but Burr hole evacuation was successful and can be used very effectively and as a first line treatment. Craniotomy could be used as a second line treatment. Craniotomy has least number of recollections but more complications. Two burr hole aspiration is affective but has more recollections. Single burr hole with irrigation and closed system is minimally invasive surgery but achieving the same results as craniotomy.

The outcome predictions come out to be the age of the patient and the neurological status of the patient at the time of surgery. Early surgery gives good results.

REFERENCES


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