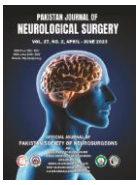

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Original Article

Relationship between Bilateral Chronic Subdural Hematomas and Postoperative Recurrence

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ABSTRACT

Objective: The association between bilateral chronic subdural hematomas and postoperative recurrence remains controversial as conflicting evidence regarding this association exists in the literature. We carried out the present study to assess whether bilateral chronic subdural hematomas are associated with increased postoperative recurrence compared to unilateral chronic subdural hematomas after burrhole drainage.

Materials & Methods: We retrospectively studied the data of all the patients operated on in our department for chronic subdural hematoma evacuation through burrhole drainage and then included the data of sixty-three patients in our study. For the sake of uniformity, only patients without postoperative drainage were included in the study. The patients operated on for unilateral and bilateral chronic subdural hematomas were then compared with each other for their association with postoperative recurrence.

Results: Forty-five patients in our study had been operated on for a unilateral chronic subdural hematoma. Eighteen patients had been operated for bilateral chronic subdural hematomas. Of the forty-five patients who operated for unilateral chronic subdural hematomas, eight (17.8%) had a recurrence. Twelve (66.7%) of the eighteen patients operated for bilateral chronic subdural hematoma had a recurrence. This difference in recurrence between the unilateral and bilateral chronic subdural hematomas was found to be very significant ($p = 0.0002$).

Conclusion: We conclude that a bilateral chronic subdural hematoma is associated with significantly increased postoperative recurrence compared to a unilateral chronic subdural hematoma following burrhole drainage.

Keywords: Bilateral chronic subdural hematoma, unilateral chronic subdural hematoma, burrhole drainage, recurrence.

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INTRODUCTION

One of the commonest pathologies encountered routinely in a neurosurgical center is a chronic subdural hematoma(ChSDH).[1-4] The estimated incidence of ChSDHs is 8.2 – 14/100,000 annually.[5] Burrhole drainage has now become the most commonly employed procedure for evacuating a ChSDH.[6, 7] Postoperative recurrence following ChSDH drainage remains a common problem, and rates as high as 33% have been reported.[8,9] Recurrence increases morbidity, the number of surgical procedures performed, and the financial costs of patient management.[3,7,10] Although multiple factors have been cited as having an association with increased recurrence, the risk factors for increased recurrence remain controversial and studies have shown inconsistent results in this regard.[1,4,11] Identification of these factors could decrease the financial burden of the disease and improve the clinical outcome.[10]

Bilateral chronic subdural hematoma is one of the subtypes of chronic subdural hematoma and constitutes about 20 – 25% of ChSDH patients.[2] It has been stated as one of the risk factors for increased recurrence.[1,2,10,12] The purported mechanism is that bilateral ChSDH occurs at a more advanced age where brain atrophy has set in leading to decreased brain expansion postoperatively that then leads to increased postoperative recurrence.[12] However the association between bilateral ChSDHs and postoperative recurrence remains controversial as conflicting evidence regarding this association exists in the literature.[4,7,10,11] We carried out the present study to assess whether bilateral chronic subdural hematomas are associated with increased postoperative recurrence compared to unilateral chronic subdural hematomas.

MATERIALS & METHODS

Study Setting

The study was carried out in Lahore General Hospital and the data of all the ChSDH surgeries performed between December 2012 and February 2014 was retrieved and analyzed. As we had acquired the data retrospectively so approval from the ethical committee wasn't required.

Inclusion Criteria

Patients operated with burrhole drainage of ChSDH were included in the study. For the sake of uniformity, only patients without postoperative drainage were included in the study.

Exclusion Criteria

Patients operated with a craniotomy or suffering from a postoperative hemorrhagic complication were excluded from the study.

Management Protocol

The ChSDH was diagnosed with CT brain in all the patients. The decision of unilateral or bilateral drainage of a bilateral ChSDH was at the discretion of the treating neurosurgeon and was based on the hematoma width and patient symptomatology. Recurrence was defined as the re-accumulation of the hematoma evident on postoperative CT, and the decision of repeat drainage based on the diagnosis of recurrence was again the discretion of the treating neurosurgeon. The duration of follow-up of all the patients was at least three months.

Statistical Analysis

The unilateral and bilateral ChSDHs were compared for their association with postoperative recurrence by performing a Chi-square test. The results were to be deemed significant if the p-value was < 0.05.

RESULTS

Gender & Age Distribution

Sixty-three patients were included in the study. Fifty-one of them were males and twelve were females. The mean age of the patients who operated for a unilateral ChSDH was 60.9 years, while for the patients who operated for a bilateral ChSDH the mean age was 66 years.

Table 1: Comparison of postoperative recurrence between the unilateral and bilateral ChSDHs.

	Unilateral ChSDH (n = 45)	Bilateral ChSDH (n = 18)	p-value
Recurrent	8 (17.8%)	12 (66.7%)	0.0002
Non-recurrent	37 (82.2%)	6 (33.3%)	(Significant results)

Postoperative Recurrence in Unilateral and Bilateral Chronic Subdural Hematomas

Forty-five patients in our study had been operated on for a unilateral ChSDH. Eighteen patients had been operated on for bilateral ChSDHs. Of the eighteen patients operated for a bilateral ChSDH twelve had their ChSDHs evacuated bilaterally while six had unilateral evacuation. Of the forty-five patients operated for unilateral ChSDHs 8 (17.8%) had recurrence. 12 (66.7%) of the eighteen patients operated for a bilateral ChSDH had a recurrence. This difference in recurrence between the unilateral and bilateral ChSDHs was very significant (p = 0.0002) as depicted in Table 1.

DISCUSSION

The incidence of ChSDH has been rising lately and is expected to rise even further as the ratio of the aged population increases.[2,11,13,14] Bilaterality has been identified in the literature as one of the risk factors for postoperative ChSDH recurrence.[1,2,10,12,15,16] The association between a bilateral ChSDH and increased postoperative recurrence remains a matter of controversy as studies have shown contrasting results in this regard. Abdullah et al,[10] in their study consisting of 62 patients concluded that bilaterality was an independent predictor of recurrence following burrhole drainage of ChSDH (P = 0.030). Huang et al,[17] had ninety-eight patients enrolled in their study. The recurrence rate of bilateral ChSDHs was 28% in their study which was significantly higher than the 9.6% recurrence rate of unilateral ChSDHs (p = 0.042). Song et al,[7] retrospectively analyzed 97 patients treated with burrhole evacuation of ChSDHs and concluded that bilaterality was significantly associated with recurrence ($p < 0.001$). Mishra et al,[18] in their recent meta-analysis also concluded that bilaterality was an important radiological predictor for postoperative recurrence of a ChSDH (p = 0.02). Studies by other authors have, however, shown contrasting results. Kong et al,[4] studied the data of 136 operated cases of ChSDHs and reported that bilaterality was not significantly associated with recurrence. Cofano et al,[11] analyzed the data of 1313 patients. They also found that recurrence didn't differ significantly between the unilateral and bilateral ChSDHs (10.4% vs. 8.8%, p = 0.39). In our study, we observed a high recurrence rate of 66.7% in bilateral ChSDHs compared to a recurrence rate of 17.8% in unilateral ChSDHs. This difference was very significant (p = 0.0002). Our findings are thus similar to the findings of a multitude of other authors[7,10,15,17-19] who also concluded that bilaterality leads to significantly increased postoperative ChSDH recurrence.

LIMITATIONS

We accumulated our data retrospectively from just one neurosurgical center. The sample size

was quite small too. For accurately defining the relationship between a bilateral ChSDH and postoperative recurrence a prospective study with data accumulated from multiple centers is required.

CONCLUSION

We conclude that a bilateral ChSDH is associated with significantly increased postoperative recurrence compared to a unilateral ChSDH following burrhole drainage.

RECOMMENDATIONS

Patients with bilateral ChSDHs have an increased risk of postoperative recurrence and therefore require close follow-up postoperatively preferably with frequent CT brains.

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Additional Information

Disclosures: Authors report no conflict of interest.
Human Subjects: Consent was obtained by all patients/participants in this study.
Conflicts of Interest: In compliance with the ICMJE uniform disclosure form, all authors declare the following:
Financial Relationships: All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work.
Other Relationships: All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.
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AUTHORS CONTRIBUTIONS

Sr.#	Author's Full Name	Intellectual Contribution to Paper in Terms of:
1.	Imran Altaf	Study design, methodology, paper writing, data collection, data analysis, and literature review.
2.	Mukhtiar Ahmed, Khawar Anwar, Junaid Cheema, and Muhammad Rizwan Sarwar	Paper writing, analysis of data and interpretation of results