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Epilepsy in Chronic Subdural Haematoma

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Summary

We studied retrospectively 143 adult patients treated in our department from 1979 to 1991 for chronic subdural haematoma (SDH) in order to identify the incidence of seizures and the necessity for prophylactic anticonvulsant treatment. Furthermore, after review of the literature, we selected an additional 879 cases for comparison. Results indicated a low incidence of epilepsy. Before surgery 5.6% of patients in our series and 4.3% in the literature had epilepsy, whereas after surgery, the frequencies were 3% and 1.8%, respectively. According to our data, antiepileptic drugs need not be administered prophylactically in patients with chronic SDH. But the situation is different for alcoholic patients, because they have a major risk of epilepsy.

Keywords: Chronic subdural haematoma; epilepsy; prophylactic anticonvulsants.

Introduction

According to clinical experience and some classic studies in the literature[1, 18, 26, 32, 35] epileptic seizures constitute an occasional symptom in adult patients with chronic subdural haematoma (SDH). Despite the vast literature on this subject however, the real incidence of seizures before and after surgery is unclear and the usefulness of prophylactic anticonvulsive treatment has not been fully determined. We examined retrospectively 143 patients operated on in our hospital between 1979 and 1991 and collected 879 cases from the literature who were appropriate for this review.

Clinical Materials and Methods

One-hundred and forty-three adults were operated on in our department between January 1979 and July 1991 for chronic SDH. Data were gathered from clinical charts and patient interviews. Ten patients were excluded from the study because they had a previous history of seizures or alcoholism. In 25 cases the chronic SDH was bilateral. Until July 1986, all patients had received prophylactic anticonvulsant drugs from the time of surgery. After this date drug therapy was given only if seizure symptomatology was present. A total of 83 patients received anti-epileptic medication. Surgery for chronic SDH was usually performed as an emergency procedure.

Results

The patient population consisted of 107 men and 36 women, ranging in age from 18 to 98 years (average 67 years). Eight patients (5.6%) had seizures (focal motor in six cases and tonic-clonic in two) as presenting symptoms. Surgery was performed on 138 patients, of whom 134 had one or more burr holes. There were ten craniotomies: four primary and six performed after unsuccessful burr hole drainage. The five patients not operated on were treated with steroids. All patients with seizures except one were operated on. Seven patients (4.9%) died, the remainder (94.4%) improved following surgery, except one in whom the condition

Table 1. *Clinical Grading Before and after Surgery in 143 Cases of Chronic Subdural Haematoma*

Clinical grading*	Before surgery	After surgery
Grade I	1	50
Grade II	16	50
Grade III	97	35
Grade IV	29	1
Grade V	0	0
Dead	0	7

* Grade I = intact. Grade II = alert and oriented; mild symptoms, absent or mild neurological deficit. Grade III = alert or drowsy with significant neurological deficit such as hemiparesis. Grade IV = stupor or coma, response to pain with flexion, severe neurological deficit such as hemiplegia. Grade V = deep coma, extension or absent responses to painful stimuli.

remained unchanged (Table 1). In the post-operative period six patients (4.3%) suffered epileptic seizures (focal motor in four and somatosensory in two); only one of these had seizures before surgery. Four of these six patients were already being treated with anticonvulsant drugs; two had normal serum levels.

Of the 83 patients who received antiepileptic drugs, six (7.2%) had a mild allergic reaction presenting as a morbilliform rash and two (2.4%) acquired phenytoin intoxication. Follow-up was available in 120 patients for an average period of 2.6 years. None contracted epilepsy after discharge.

In conclusion, in our series, the incidence of epilepsy was 5.6% pre-operatively and 4.3% post-operatively. The antiepileptic drugs did not prevent the development of post-operative seizures. In fact, seizures were noted in 4.8% (4 of 83) of the patients treated with anticonvulsants compared with only 3.4% (2 of 55) of these who did not receive medication. These results may however have been affected by the lack of adequate monitoring of serum anticonvulsant levels in some of the patients.

Table 2. *Incidence of Epilepsy in Chronic Subdural Haematoma in the Literature; Review of 879 Cases*

Author	No. of cases	Pre-operative epilepsy	Post-operative epilepsy
Arseni[3]	93	5	not reported
Cameron[10]	108	4	2
Coblenz[13]	14	0	0
Davini[15]	47	1	0
Echlin[17]	75	4	not reported
Ectors[18]	25	1	0
Fogelholm[19]	109	0	not reported
Gjerris[22]	9	1	not reported
Kaplan[26]	9	0	0
LaLonde[29]	7	0	1
Laumer[30]	144	4	5
Lavy[31]	15	1	0
Lusins[33]	12	0	not operated
Morsier[36]	24	1	1
Probst[40]	25	0	not reported
Putnam[41]	8	2	1
Richter[43]	120	0	0
Small series[4–8, 20, 21, 23, 28, 38, 39, 42, 44–47]	35	2	0*
Total	879	26	10#

* Six not operated upon.

\# This value refers to 541 cases. The other cases were not operated on or the results were not reported.

Review of the Literature

The results are reported in Table 2. Excluding the papers of Cole and Spatz[14], Kotwica and Brzezinski[27], and McKissock[35], which we will discuss later, we collected 879 cases of adults with chronic SDH. We excluded patients with a previous history of seizures, alcoholism, and calcified chronic SDH. Many series were excluded because of an admixture of cases of acute, subacute, and chronic SDH.

Twenty-six patients (3%) had seizures before surgery. Of 541 surgical patients, ten (1.8%) had post-operative epilepsy. The remaining patients were either not operated on or their post-operative results were not reported. There was no information available about the use of anti-epileptic drugs.

Cole and Spatz[14] in 1961 were the only authors who dealt specifically with the incidence of seizures in chronic SDH. In their review, 21 of 50 chronic SDH patients (42%) had epilepsy. They explained this high incidence by the fact that many of the patients were alcoholics or had suffered from repeated head trauma. Kotwica and Brzezinski[27] in their review of 131 patients, of whom 45 (34%) were alcoholics, reported a post-operative epilepsy rate of 7%. McKissock[35] in 1960 reported 216 cases with a pre-operative epilepsy incidence of 9.3% and post-operative incidence of 3.7%. This paper was excluded from the present analysis because an unknown number of patients were not adults and had pre-existing epilepsy.

Discussion

The data reported in our review demonstrate that patients with chronic SDH have a low risk of contracting epilepsy. Before surgery the incidence of epilepsy was 5.6% in our series and 4.3% in the literature. After surgery the frequency was even lower being 3% and 1.8%, respectively. The prophylactic use of anticonvulsants in our series did not affect the development of epilepsy.

Knowledge of the pathophysiogenesis of chronic SDH can aid in our understanding of why seizures are a rare symptom with this lesion. Bleeding in the subdural space is usually a result of minor cranial trauma which causes a tear in a bridging vein, without provoking brain damage[34]. Brain injury is an important factor in the onset of epileptiform activity[11]. The intact pia-arachnoid protects the cerebral cortex from blood products which have a role in the genesis of post-traumatic epilepsy[24, 48]. According to Ectors[18], even the

internal capsule of the haematoma, once formed, may contribute to the protection of the brain, mainly during surgery. The same surgical act with drainage of the haematoma can relieve pre-existing epilepsy[9]. Cole and Spatz[14] referred to some cases in whom the seizures stopped only when the chronic SDH was evacuated. Simple reduction of the intracranial pressure may decrease epileptic activity, if present[9].

According to our data, anti-epileptic drugs should not be given to patients with chronic SDH. In fact, the risk epilepsy is not high enough to balance the morbidity caused by the anticonvulsants. Prophylaxis is generally provided when the risk of epilepsy exceeds 10 to 15%[16, 37].

We should stress that in this paper we excluded alcoholic patients because they have a major risk of epilepsy. Seizures can occur in cases of both alcohol intoxication and alcohol withdrawal[12, 25]. Furthermore alcoholics often have past repeated head trauma giving rise to brain injury. Cole and Spatz[14] reported a seizure frequently of 42% in 50 patients with chronic SDH, many of them alcoholics. Therefore, in this particular group of patients, seizure prophylaxis should be considered.

Conclusion

The data in this series and in the literature demonstrate that the incidence of epilepsy in patients with chronic SDH is very low. Prophylactic use of anticonvulsants is not recommended for unselected patients.

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