Clinical profile of Solitary Seizures

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Abstract

Background : Solitary seizure is one of the controversies in neurology. This study was taken up to study the clinical profile of solitary seizure and the factors related to seizure recurrence with a view to evolve guidelines for management. **Methods :** We studied 150 cases of solitary seizure. All our patients were males. The age varied from 18-52 years. The diagnosis of seizure was confirmed with history. Apart from clinical neurological examination, blood counts, urinalysis and screening investigations to exclude possible underlying metabolic disorders were done. Inter-ictal EEG and contrast enhanced CT scan were done. **Results :** CT scan was abnormal in 28 cases. EEG was abnormal in 33; clinical abnormality was noted in 15 cases. Median follow up duration was 1.2 years. 18 patients had seizure recurrence. Type of seizure, EEG findings (normal or abnormal) and treatment with antiepileptic drugs did not have any effect on seizure recurrence. Seizure recurrence was less common in presence of CT scan abnormality though it was not significant statistically. Routine laboratory tests of blood count, blood sugar and urinalysis were normal in all cases. **Conclusion :** In cases of solitary seizure, type of seizure, results of EEG and CT scan findings are not likely to predict seizure recurrence. Treatment with antiepileptic drugs does not prevent seizure recurrence. Laboratory investigations like blood counts, urinalysis and blood sugar estimation are unlikely to be of value in routine work-up of these cases.

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Key Words : CT scan abnormalities; EEG abnormalities; Seizure recurrence; Solitary seizure

Introduction

The management of solitary seizure is a controversy in neurology. The likelihood of seizure recurrence after a first unprovoked seizure has profound social, vocational and emotional implications for the patients [1]. There is wide individual variation in the management of these cases ranging from mere observation to detailed investigations and full treatment for long duration. In this study, an attempt has been made to resolve some of these controversies and evolve a standard line of management for cases of solitary seizures.

Material and Methods

We studied 150 consecutive cases of solitary seizure who reported to our neurology services between July 1995 and August 1997. All the patients who had had only one seizure till the time of examination (at least six weeks after the first seizure) were taken as cases of solitary seizure. Those cases under follow-up who had seizure recurrence later but had only one seizure in the first year of observation, were also included in the study in order to find out the factors related to seizure recurrence. Those cases where the diagnosis of seizure was not certain were excluded. Cases of seizure following trauma to central nervous system (CNS) infections, metabolic disorders like hypoglycaemia and alcohol related seizures were not included.

A detailed history was taken to ascertain the diagnosis of seizure, to find out the type of seizure and underlying primary disorder if any. Clinical, neurological and systemic examination of all the patients was done.

Laboratory investigations like complete blood count, urinalysis, blood sugar were done in all cases and serum electrolytes, liver function tests, ELISA for cysticercosis, X-ray chest were done where indicated. Interictal EEG was recorded at least once in all cases. CT scan of head was done in 119 cases and was repeated in six. CT scan could not be done in 31 cases as they were managed under field conditions.

We carried out statistical analysis of our results using standard computer software. We analysed four variables for their possible correlation with seizure recurrence. These four variables were - seizure type (partial or generalised), EEG finding (normal or abnormal), CT scan finding (normal or abnormal) and antiepileptic drug treatment (treated or untreated). A univariate analysis was carried out by a qualified statistician to see if any of these four variables had a significant bearing on seizure recurrence.

Results

We studied 150 cases of solitary seizures between July 1995 and August 1997. All our patients were males as this hospital primarily caters for serving soldiers of Armed Forces. The details of the cases are shown in Table 1. Their age ranged from 18 to 52 years with a mean of 28.9 years. The duration of observation varied from 1 month to 12 years; the median period of follow-up was 1.2 years. Generalised tonic-clonic seizure was seen in 128 cases. 22 patients (14.66%) presented with partial seizure; out of these secondary generalisation was seen in 13 patients.

Recurrence of seizure was seen in 18 cases after the initial seizure. The interval between the first and second seizure in these cases varied from 1 year to 12 years. The age of the

Table 1**Details of cases of solitary seizure**

	No	%
Recurrence	18	12.00%
GTCS	128	85.34%
PS	22	14.66%
EEG-normal	127	78.00%
EEG-abnormal	33	22.00%
CT-normal	91	76.40%
CT-abnormal	28	23.60%
Treated	102	68.00%
Untreated	48	32.00%
Total	150	

GTCS - generalised tonic-clonic seizure, PS-partial seizure

patients who had recurrence ranged from 22-39 years. While recurrence was seen in 11.7% cases of generalised tonic clonic seizure (15 cases), it was seen in 13.6% (3 cases) cases of partial seizure. Only one of these patients had a post-ictal deficit. EEG abnormality was seen in four of these 18 patients (22.2%), compared to 21.96% in the group who did not have seizure recurrence. CT scan showed abnormality in only two of the 14 cases where CT scan was done. 10 of these 18 patients had received anti-epileptic drugs for at least two years after the first seizure. Two patients had received anti-epileptic drugs for very short period (1 month and 6 months). In all those who were not on treatment earlier it was started after seizure recurrence. Two of the patients gave history of epilepsy in their first degree relatives.

EEG abnormality was seen in 33(22%) cases. 4 of the patients with EEG abnormality had seizure recurrence. No clinical neurological deficit was seen in any of the patients with EEG abnormality. CT scan had been done in 20 of these cases and was abnormal in 8.

Out of the total of 119 CT scans, 91 cases (76.4%) were normal; it was abnormal in 28 (disc or ring enhancing lesion in 8, calcified or nodular hyperdense lesion in 9 and small cystic lesion in 2 patients). Out of these, 19 cases had generalised tonic clonic seizure and 9 had partial seizure (with or without secondary generalisation). Only two of the patients showing a CT scan abnormality had a seizure recurrence; in one of these a small cystic lesion was seen and in the other two hypodense lesions were seen (one each in right frontal and left parietal).

Out of the 150 cases, 102 patients (68%) received antiepileptic treatment while the rest, 48 (32%) were under observation without antiepileptic treatment. Out of the patients who were treated, 12 (11.7%) had recurrence, while 6 of the untreated group (12.5%) had seizure recurrence.

Statistical analysis indicated that seizure recurrence was not significantly associated with any of the four variables (partial or generalised seizure; EEG normal or abnormal, CT scan normal or abnormal; untreated or treated with antiepileptic drugs). When all variables were included for the selection of the most important variable, no such variable could be identified and selected.

Discussion

Solitary seizure is a common neurological problem. Most cases of epilepsy start with a solitary seizure. The first seizure may be only an isolated episode and not necessarily the onset of epilepsy which by definition, is characterised by the occurrence of two or more seizures [2]. Considerable controversy exists regarding the management of solitary seizure. Views differ regarding their treatment, investigations and factors related to the recurrence of seizure. In order to study the factors related to seizure recurrence, cases of seizure who behaved like 'solitary seizure' at least in the initial first year but had recurrence later, were taken to be cases of solitary seizure, since the chances of seizure recurrence is maximum in the first year [1,3].

The chances of seizure recurrence after solitary seizure have been found to be from 27 to 78% [4]. In our study we found a recurrence rate of 12%. The lower recurrence rate in our study could be explained partly due to regional variation in the etiological factors of seizure cases and partly because this study was carried out only in male patients.

We found that seizure recurrence was not significantly different in generalised tonic clonic seizure (11.7%) as compared to partial seizures (13.6%). Similar observation was made by Gupta et al [5].

In our study, also we did not find any significant difference in seizure recurrence between the treated and untreated group. There is no convincing data demonstrating that early treatment has any favourable effect on the recurrence rate [4, 6]. However, Elwes and Reynolds recommend immediate treatment after a first seizure as it might reduce the recurrence rate and improve subsequent prognosis [7, 8]. Treiman suggests that first seizure should be treated if it is accompanied by a predictor of subsequent seizure like epileptiform or focal EEG abnormality, focal neurological abnormality or cerebral imaging abnormality [3]. First seizure trial group found that treatment with antiepileptic drugs led to a significant reduction of the risk of seizure recurrence after a first unprovoked seizure [2].

Some workers have noted increased seizure recurrence with abnormal EEG [5, 8, 9], others have noted increased seizure recurrence with normal EEG [1]. Edmondstone found EEG to be of uncertain value [10]. In our study, EEG abnormality was more frequent in the group with seizure recurrence, however, it was not statistically significant. Eadie noted that EEG appearances strongly suggestive or virtually diagnostic of particular seizure type were less frequent in the solitary seizure group than in multiple seizure group [11].

Interestingly, contrary to the common belief and

observations of many workers that CT scan abnormality was associated with higher seizure recurrence, we found somewhat higher seizure recurrence in cases with normal CT scan though it did not reach statistically significant proportion. This variation is probably due to the type of CT scan abnormalities that are commonly encountered in India and many other tropical countries. In these countries, contrast-enhancing ring and disc lesions are frequently encountered [12,13]. Irrespective of the cause which is not obvious many times, these lesions are comparatively innocuous. Either with or without specific treatment they resolve over next few months. On the other hand, cases of idiopathic epilepsy in our study must have fallen in the group where CT scan was normal. So, it is not surprising that seizure recurrence was less common in our patients with CT scan abnormality.

Some workers have advised antiepileptic treatment if any of the predictors of recurrence are present [3]. But, our study questions the validity of those predictors at least in developing countries.

Routine tests of haematology like haemoglobin estimation, blood count, and urinalysis were done in all the cases but were not found abnormal in any patient. Similarly, serum calcium estimation and blood urea was found to be normal in all the 82 cases where it was done. Thus, the value of these tests in routine work-up of cases of solitary seizure is doubtful. Edmondstone also found the role of these investigations to be of minimal value [10].

Our study indicates that in cases of solitary seizure, recurrence of seizure does not depend upon seizure type nor on presence of EEG abnormality or CT scan findings. Seizure recurrence is not less in those treated with antiepileptic drugs as compared to those who are not treated. Routine laboratory investigations like blood count, urinalysis, and blood sugar estimation have very limited value in the work-up of cases of solitary seizure,

except in special circumstances. However, these observations need to be confirmed by a larger study before they can be taken as guidelines for the management of cases of solitary seizure.

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MEDICAL PHILATELY

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