

# Risk factors for solitary seizures



**ASSIGN  
BUSTER**

## DISCUSSION

The aim of this study is to find out the underlying risk factors involved in recurrence of solitary seizure in patient with normal neuroimaging, in patients in whom treatment is not initiated. This will help to guide the patients who are at risk for recurrence.

After the detailed history and clinical examination, laboratory and electroencephalogram and imaging, we analyzed the similarities and differences which will help in making conclusions from this study.

Comparisons were done with other studies conducted related to this study.

In present study total number of 110 cases from OPD (Medicine) and those admitted in wards, Command hospital, southern command, Pune with history of solitary seizure was taken after satisfying the inclusion criteria.

In a study by Mussico<sup>24</sup> in 2002, subjects less than 25 years constituted 48% as compared to 50% in present study i. e 55 cases were < 25 years. Mean age at the time of seizure was 32 years in study of VonDonselaar<sup>23</sup> in 2000 and 24.8 years in the study of Mussico<sup>24</sup>.

The mean age at the time of seizure in our study is 29.62 years. The youngest patient was of 18 year and the oldest patient was 70 year old.

Hopkins<sup>25</sup> in 1998 conducted a study in which most frequent age range was 16-29 years. . This is similar to result of VonDonselaar<sup>23</sup> (2000) concluded from his study of subjects who are 20 years or more, in which the most frequently affected age group is 30 years.

Study regarding duration of new onset seizure showed that out of 60 cases, 38 cases (63.33%) had seizure for <5Min, 17 cases (28.33%) had seizure for 6-10 Min, 5 cases (8.33%) had seizure for > 10 Min. Mean duration of seizure was 5.11 min in our study as compared to 6.23 min in a study by Bernal B, Altman NR 58 (2003). Maximum patient (30 cases; 60%) had seizure duration less than 5 min which is similar to the study done by Benbadis SR 59 et al. (1995).

Male to female ratio is 11: 1 in present study.

Annegers 26 (1996) and Bora 27 (1995) found a slight preponderance of female cases in their study.

Many authors (Von Donselaar 23 2000, Mussico 24 2002, Hopkins 40 1998) report a mild to moderate preponderance of males in their studies.

Imaging was done in all 110 cases. It was abnormal in 34 cases (31%) and normal in 76% cases. In patients with abnormal neuroimaging, antiepileptic treatment was started and remaining cases were followed up for 12 months for recurrence. Bernal B, Altman NR 58 (2003) found 37% CT head abnormality in patients presented with single seizure.

Wallace 60 (1974) conducted a study in which imaging revealed abnormality in 51 out of 132 subjects (38%). But reports in various study varies from 19% (Young 34 et al 1982) to 51% (Rogel Ortiz 50 F, 2006). CT was diagnostic in 34% case of generalized seizure shown in study by Scolloni Lanzurri G 72 (1977)

In present study, abnormal EEG was seen in 14 cases (12.73%) out of 110 cases. A Berg and D. Bettis et al 98 (2000) found abnormal EEG in 42% of cases of

singles seizure during post ictal period in their study. In study done by Vandonselar<sup>23</sup>(2000), EEG found epileptiform discharges in 29% subjects.

In present study, all patient with abnormal EEG or imaging were started on antiepileptics and remaining patient with normal EEG/ imaging were not given antiepileptic treatment (60 cases) and followed up for 1 year for recurrence. Risk factors were studied in recurrence and non recurrence group.

Various risk factors such as family history of seizures, childhood convulsion, past history/ evidence of tuberculosis, developmental delay, history of alcohol intake, head injury and sleep deprivation, abnormal neurological examination were studied and were compared with different studies.

Family history was present in 3 cases (5%) out of total 60 cases which were followed up in our study, out of 3 cases(5%) with family history of seizure, 1 case has shown recurrence, while Shinnar Sand Berg<sup>41</sup>(1998) found positive family history in 5% of cases which is similar to our study.

History of developmental delay was present in 2 cases (3.3%), and history of febrile convulsion were present in 4 cases (6.67%) among the untreated follow up group. Annegers<sup>26</sup>(1996) and Bora<sup>27</sup>(1996) have shown that neurologic deficit from birth was more common in association with seizure in males as compared to females in their studies. . 3 cases (5%) had history of Alcoholism. (Alc<sup>E</sup>1997) shown that alcohol use has been to be a powerful risk factor for a first generalized tonic clonic seizure.

Out of 60 cases which were followed, 24 cases had one or more of the above

mentioned risk factor. Out of these 24, 4 cases recurred ( 17 %). While in patients

without these risk factors i. e in 36 cases only 6 % cases (2 cases) recurred. Hence, presence of these risk factors increases the rate of recurrence in cases of single seizure.

AmericanCollegeofEmergencyPhysicianPolicy(2004)<sup>38</sup>also state that

rate of recurrence is more in those patient who has one or more of these risk factors

and should be treated with antiepileptic treatment irrespective of CT head and

EEG.

Out of total number of 6 recurrence, 1(16. 7%) occurred within 7 days, 3 (50%) occurred within next 21 days of first seizure, 1 (16. 7%) occurred within 1 to 3 months of first seizure. Hence, risk of recurrence decreased with passage of time. Scotoni<sup>49</sup>etal(1999)andDas<sup>46</sup>etal(2006)has also reported recurrence rate to be much higher in first three months.

Rate of recurrence was 10 % in our study i. e. out of 60 patients with solitary unprovoked seizure with normal neurological examination and normal neuroimaging which were followed up for 12 months, 6 cases has shown recurrence, and almost all cases recurred in first 3 months. In previous studies done, rate of recurrence varied from 16% to 71 % (Treinman<sup>DM55</sup>, 1993), but follow up duration was different. In a study byD.

Chadwick<sup>48</sup> et al (Lancet 2006), recurrence rate was 21% in follow up of 1 year, most cases recurred within 3 months which is comparable to our study. Scotoni<sup>AE</sup> et al<sup>49</sup> (1999) conducted the study rate of recurrence was 18%, duration of follow up was 6 months in this study.

Out of 60 untreated cases 6 (10.0%) had recurrence in next 12 months. 3 cases in 18-25 age group (10.34%), 1 case in 26-35 age group (5.88%), 1 case in

36-45 age group (12.50%), 0 case in 46-55 age group and 1 case in > 55 age

group (50.0%) had recurrence. In study by Mussico<sup>24</sup> (2002) in which less than 16 years age group has double the recurrence risk of seizure as compared to 16-60 years age group.

6/60 cases had recurrence out of which 4 cases were male and 2 were female, total cases in male group were 55 and in female group were 5, hence recurrence rate was 7.3% in male and 40% in female. This sex difference in our study is due to cases were taken in military hospital, male population is more

In study by D. Chadwick<sup>18</sup> et al (2006), sex difference in recurrence and non recurrence group was not very significant.

Study regarding duration of new onset seizure showed that out of 60 cases, 38 cases (63.33%) had seizure for <5 Min, 17 cases (28.33%) had seizure for 6-10 Min, 5 cases (8.33%) had seizure for > 10 Min.

The mean duration of seizure in recurrence group was  $8.17 \pm 4.44$  min as compared to  $4.7 \pm 3.0$  min in non recurrence group. Incidence of seizure recurrence is more in patients with longer duration of seizure.

Duration of seizure at initial presentation was  $10.1 \pm 5.2$  min in the recurrence group and  $6.5 \pm 4.1$  min in the non recurrence group in a study by Das C. P. et al (2006). Martinovic and Jovic et al (2004) conducted a study in which the mean duration of seizure was 26.4 min in recurrence group and 4.6 min non recurrence group in a study.

In one of 6 patients (16.6%) in recurrence group, family history of seizure was present compared to study conducted by Das et al (2006) and Hauser (1998) reported that sibling affected with epilepsy is a risk factor for recurrence of seizure in patients with solitary seizure.

In our study, history of alcohol intake was present in 16.6% cases in recurrence group as compared to 3.70% in non recurrence group which is same as those of alcohol and epilepsy study group (1997).

Earnest and Feldman et al (1988) found similar results history of alcoholism in 12% of recurrent cases after single seizure.