ADOLESCENT MANIA, EEG ABNORMALITY AND RESPONSE TO ANTICONVULSANTS: A THREE-YEAR FOLLOW-UP STUDY

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ABSTRACT

We had reported earlier (1998) a high percentage of moderate to severe EEG abnormalities (43.75% of cases) amongst adolescent manic population. Sixteen adolescent manics, with a mean age of 14.9 years, diagnosed according to ICD-10 were taken up for the initial study. Present study is the three-year follow-up report of 67.75% (11 out of 16) of the original patient population. All these patients were subjected to 21-channel EEG and anticonvulsant drugs were started to all. Follow-up data showed that 3 out of 6 patients, who discontinued medications, were relapsed during this 3 years period. But none of the 5 patients, who regularly took prescribed medicines, relapsed during the same period. Significance of these findings in relapse prevention and the role of anticonvulsants, particularly in relation to adolescent mania, have been emphasized.

Key words: Adolescent Mania, EEG Abnormality, Anticonvulsants, Maintenance Therapy

The criteria for the diagnosis of adolescent mania have been accepted as that of an adult person with a manic episode. But it has been a well-established fact that childhood and adolescent manics have more protracted course of the illness with mixed clinical features and more pronounced cycling pattern (Hsu, 1986; McGlashan, 1988; Geller and Luby, 1997). Concepts of rapid cycling (Dunner et al, 1977), ultradian cycling (Kramlinger and Post, 1986) and complex cycling (Geller et al, 1995) illnesses are more commonly seen in the phenomenology of adolescent mania. These factors are responsible for poor treatment response (Cole et al, 1993) and difficulty in planning an adequate antimanic treatment programme for the adolescent manic population. Literature on adult manics suggested that intermittent lithium therapy is worse for outcome than continuous non-interrupted therapy (Ahrens et al., 1995). Strober et al (1990) reported similar results in adolescents with bipolar-I illness.

That affective disorder patients show higher percentage of EEG abnormality is known for more than two decades (Hays, 1976; Abrams and Taylor, 1979; Kadrimas and Winokur, 1979; Cherian et al, 1990; Inui et al, 1998). But the literature on EEG abnormalities in the adolescent manic population is sparse till date. Brumback and Weinberg (1977) found mildly disorganized EEG in 5 out of 6 children with mania prior to treatment with lithium carbonate. Aich et al (1998) reported moderate to severe EEG abnormality in 43.75% of their adolescent manics.

Many researchers have advocated treatment of mania with anticonvulsants in the past (Post & Udhe, 1983; Nolen, 1983; McElroy et al, 1988; Pope et al, 1991; Hayes, 1993; Keck et al, 1993). But very little literature is available on the treatment of adolescent mania with anticonvulsants. Himmelhoch and Garfinkel (1986) reported the use of carbamazepine for lithium resistant adolescent manics with mixed clinical presentation.
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Papatheodorou and Kutchner (1993) reported promising results with divalproex sodium treatment in late adolescent and young adult manics. We have not come across any follow-up study regarding the use of anticonvulsant drugs as the maintenance treatment for adolescent manic population, which prompted us to take up the present study. The aim of the present study were to see the clinical outcome of a group of adolescent manics after 3 years of initial contact and to probe into the possible role of anticonvulsant drugs as a 'maintenance treatment' in the prevention of relapse.

MATERIAL AND METHOD

The study was conducted at the Child Psychiatric Unit of the Central Institute of Psychiatry, Kanke, Ranchi in the state of Bihar, India.

Initial sample selection: Sixteen ICD-10 diagnosed adolescent manics (First Manic Episode and/or Bipolar Affective Disorder, present episode Mania) were included in the study after carefully excluding the presence of associated mental retardation, organic mood disorder, and seizure disorder. Family history of epilepsy was also an exclusion criterion. Mean age of the original sample population was 14.9 years (SD = ±1.36). All patients were subjected to paper EEG after their admission in the ward. Repeat EEG, whenever possible, were performed during symptomatic remission. All these patients were subjected to anticonvulsant treatment (except in one case where the patient was already on lithium carbonate before first contact with us) during their inpatient stay as well as during their outpatient follow-up period. Associated treatments like antipsychotic drugs, sedatives were prescribed on individual basis, as and when required, during their inpatient stay. But they were mostly on monotherapy, with either carbamazepine or sodium valproate, during their maintenance phase therapy.

Follow up: Long-term follow-up was planned for these patients to note their clinical outcome. Most of them were followed up intermittently and their progress was noted. The second half of 1999 completed three-year period from the initial contact. Letters were sent to the home addresses of all those patients who did not report for review during this period. Those who failed to report even after the first request letter, a specially designed questionnaire was sent again with a request to fill and post them back to the first author (TKA).

Description of the EEG Analysis

Twenty-one channel EEG's were recorded with 8 montages. Total duration of a single EEG recording was about 25 minutes. EEG data were interpreted by a trained electro-encephalographer (SHN) who was blind to the clinical data of these patients.

Analysis of the EEGs was done under two broad headings: the background activity and the transient events. Transient events were further categorized into 3 groups: normal activity, borderline events and abnormal activity. Abnormal activities were further grouped into abnormal slow, abnormal fast and abnormal paroxysmal events. Final impression on the severity of the EEG abnormality was noted as follows: i) Mild - Those with mild background abnormality and occasional abnormal transient events, ii) Moderate - Those with moderate background abnormality and/or more frequent abnormal transient events, iii) Severe - Those with persistent abnormal slow background and/or gross abnormal paroxysmal activity.

At the end of three years detail data was available for 8 patients, who either came for natural follow-up or reported after receipt of first letter. Questionnaire data was available for 5 patients. We lost three patients during follow-up who did not respond to questionnaire also. One patient's diagnosis was changed subsequently and thus excluded from the present study for the further analysis. One patient, who initially received lithium carbonate but later on shifted to anticonvulsant after a relapse, was also excluded from the final analysis, to maintain the homogeneity of the sample.
Thus, the present study is being reported from the follow-up data of 11 adolescent manics, constituting 67.75% of the original sample population.

RESULTS

TABLE 1
SOCIO-DEMOGRAPHIC AND CLINICAL CHARACTERISTICS

| Characteristic | Total | Mean | SD ± |
|----------------|-------|------|-------|
| Mean age of initial sample population (N=16) | 14.9 years | (SD ± 1.36) |
| Mean age of onset of illness (N=16) | 14.0 years | (SD ± 1.80) |
| Mean age of present year sample population (N=11) | 18.2 years | (SD ± 1.32) |
| Sex | | | |
| Male | 10 | | |
| Female | 1 | | |
| Family History | | | |
| Affective disorder | 2 | | |
| Other mental illness | 2 | | |
| Illness character | | | |
| Manic episode | 8 | | |
| *BAD Mania | 3 | | |
| Psychotic feature | | | |
| Mood-congruent | 7 | | |
| Mood-incongruent | 4 | | |
| EEG abnormality | | | |
| Nil | 1 | | |
| Mild | 4 | | |
| Moderate | 2 | | |
| Severe | 4 | | |
| **Anticonvulsants prescribed: | | | |
| Carbamazepine | 6 | | |
| Valproate | 5 | | |
| Combined | 1 | | |

Thus, we see that three out of six patients who discontinued medication relapsed. But none of the 5 patients with regular medication relapsed during the same period. None of the 3 bipolar mania patients relapsed during the period of observation. Only one of the 3 patients relapsed, had a history of bipolar affective disorder in first degree relative. One of the four patients with severe EEG abnormality had a recurrence of illness following medication lay-off. We could repeat the EEG of Two out of 4 patients with severe EEG abnormalities after the remission of episode. Repeat EEG in both these patients did not reveal any abnormality.

DISCUSSION

There are studies reported on the treatment
outcome of adult manics (Tohen et al., 1990; Solomon et al., 1995). But similar studies in the adolescent group are rare. A naturalistic study finding on adolescent manics (Strober et al., 1995), where patients were kept on antimanic treatment throughout their teenage years, strongly support long-term maintenance lithium because subjects who discontinued lithium had a significantly higher relapse rate. In the present study also all the 3 cases relapsed following discontinuation of medication either by the patient himself or by the treating physician (Table 2). But instead of lithium, present study tried to focus on the possible role of 'anticonvulsants as a maintenance therapy' in adolescent manic population. In the present study, all the patients were put on anticonvulsant drugs, either carbamazepine or valproic acid or in combination of both. None of our other 5 patients with regular anticonvulsant maintenance therapy had recurrence of illness during this three-year follow-up period.

Post et al. (1998) recently reviewed the use of anticonvulsants as mood stabilizers in the last two decades of the 20th century. The use of anticonvulsants in the treatment of affective disorder is presently an established treatment entity in bipolar affective disorder especially in rapid cycling illness. But their role in treating adolescent manic population, is still not fully established. Though there are few successful reports of treatment of adolescent manics with anticonvulsants, no naturalistic follow-up report is available yet on the subject. Thus, though our patient population is a smaller one, findings of the present study are significant. Also, response of adolescent manics to anticonvulsant drugs supports the 'kindling hypothesis' (Post et al., 1982,1986) in the maintenance of manic symptomatology.

Amongst patients (4) with severe EEG abnormalities only one patient had a recurrence of illness following medication layoff. Also, in 2 cases abnormal EEG that was recorded during active phase of the illness, when repeated during the remission period showed no abnormality. These findings possibly indicate that 'abnormal EEG' is a state marker rather than a 'trait marker' of the illness.

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