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EPILEPTIC PSYCHOSIS: A RETROSPECTIVE STUDY

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SUMMARY

The files of 60 cases who received a diagnosis of epileptic psychosis in the period 1980–1985 were reviewed. Unclassifiable psychosis and paranoid hallucinatory states were the most common presentations. Except for the gap between onset of epilepsy and psychosis, there were no other predictors of type of psychosis. Shorter psychotic episodes tended to be characterised by pressure of speech, inappropriate affect, generalised epilepsy and more past episodes. Memory deficits were more often associated with a longer gap between onset of epilepsy and psychosis, and the presence of hallucinations.

Introduction

The relationship of epilepsy to psychosis has been recognised for centuries, but it was most clearly stated by the French and German authors of the last century. Bouchet and Cazauveilh (1825) were the first to clearly describe cases where the two were associated. Hughlings Jackson (1880) found epilepsy to be the cause of insanity in 6% of insane persons. There were basically two schools of thought after that. One group of workers believed in the antagonism between psychosis and epilepsy. Glaus (1931) found a lower than expected prevalence of epilepsy in schizophrenia. This theory also resulted in the development of electroconvulsive therapy (Meduna 1937). Landolt (1958) expounded this hypothesis in his writings on forced normalisation in the electroencephalogram when psychosis intervened in an epileptic.

Kraeplin (1922) was one of the strong proponents of the association between epilepsy and psychosis. Descriptions of epileptic psychosis gained support from the pioneering studies of Hill (1953), Pond (1957) and Slater et al. (1963). Most of these epileptic psychosis were thought to be related to schizophrenia. Similar findings have been reported from Nigeria (Asunti and Pillutla 1967) and Japan (Hara et al. 1980).

The third possibility is that epilepsy and psychosis occurred together coincidentally. Davison and Bagley (1969) in their extensive review found that schizophrenia like psychosis and epilepsy occurred far more frequently than would be expected by chance coincidence. Thus this possibility seems unlikely.

Monroe (1959) suggested that there was a continuum between schizophrenia and epilepsy with a group of behavioural disorders neither typically schizophrenic nor typically epileptic. This group demonstrated a link between their psychotic

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behaviour and intermittent limbic ictal activity. Subsequently he proposed the 'episodic behavioural disorders' as a unique syndrome with a continuum represented on one extreme by a limbic ictal process and on the other extreme by a learned or motivated pattern of deviant behaviour. Theoretically the duration of the subcortical ictus is important. If momentary, it correlates at times with a creative idea or an inspirational act or thought or on other occasions with a single impulsive act. If prolonged it leads to a precipitous change in behaviour which can simulate almost any form of psychopathology (Monroe 1978).

We have tried to show the intimate links between epilepsy and psychosis in this introduction. It obviously refers not only to the area of epileptic psychosis but even to primary psychiatric diagnosis. In this study we will try and study various relationships between factors in interictal psychosis, to further try and understand this entity.

Material and Methods

All cases who had received a diagnosis of epileptic psychosis NOS according to ICD-9 (WHO 1975) in the period 1980 to 1985 in the Psychiatry out patient department of National Institute of Mental Health and Neuro Sciences, Bangalore formed the sample for this study. Those cases where the diagnosis was not definite were excluded from this study. Basic socio-demographic data, in the form of age, sex and other background variables were recorded. Details of epilepsy, clinical phenomenology and other details about the psychosis were also recorded, as was the treatment before and after the onset of psychosis. Statistical analysis was done using the t test and chi square test wherever appropriate.

Results

There were 60 cases who finally received the unequivocal diagnosis of epileptic psychosis who were taken up for further analysis. There were thirty males and females each in this sample. The mean age at consultation was 28.13 years (SD 8.03, range 12–65). Twenty two of the patients hailed from urban background and the rest were from rural homes. 10% of the patients had a family history of epilepsy and 6.7% of psychosis. There was a history suggestive of cerebral insult in 11.7% of the probands.

The average duration of the psychosis was 2.15 years with a SD of 3.32 (range 1 day to 14 years). Clinical phenomenology is shown in table 1.

Table 1
Pheonomenology

Psychomotor Activity		
Increased	...	19
Decreased	...	2
Hallucinations		
Auditory	...	7
Visual	...	4
Both	...	1
Delusions		
Grandiose	...	8
Persecutory	...	18
Irrelevant Talk	...	12
Pressure of Speech	...	7
Catatonic Features	...	1
Inappropriate Affect	...	7
Elation	...	2
Depression	...	6
Irritability	...	8
Decreased Attention	...	14
Memory Disturbances	...	8
Immediate	...	6
Recent	...	5
Remote	...	6
Disorientation	...	6

Table 2
Epileptic Psychosis

	Schizophreniform	Paranoid hallucinatory	Grandiose irritable	Depressive	Catatonic	Others	Significance
n	4	18	10	5	1	22	
Age (years)	35.75 SD = 13.08	30.67 SD = 7.87	24.4 SD = 4.8	28 SD = 3.35	23	26.64 Sd = 7.46	NS.
Sex Male	1	7	9	2	1	10	1
Female	3	11	1	3	0	12	NS.
Duration of Psychosis (years)	0.03 SD = 0.01	1.20 SD = 1.58	2.51 SD = 3.34	1.12 SD = 1.48	0.5	3.42 SD = 4.49	NS.
Grand Mal epilepsy	4	15	10	5	1	18	NS.
TLE	0	3	0	0	0	1	NS.
Age of onset of epilepsy	14.33 SD = 7.59	17.89 SD = 9.40	13.22 SD 6.23	17.2 SD = 6.62	13	16.47 SD = 10.39	NS.
Gap epilepsy Psychosis (yrs)	6 SD = 4.32	11 SD = 7.44	8.4 SD = 7.38	9.8 SD = 6.73	9.5	16 SD = 5.5	$x^2 = 10.11$ P<0.05

We tried to classify the psychosis into 5 discrete groups and a miscellaneous group (Table 2). Paranoid–hallucinatory states were marked by predominant delusions and / or hallucinations. Schizophreniform (non–paranoid hallucinatory) psychosis were marked by inappropriate affect or formal thought disorder. Grandiose irritable probands had an affect of elation or irritability with or without grandiose delusions. Depressive patients along with a depressed affect had other associated thought contents. In the miscellaneous group there were disturbances in psychomotor activity and irrelevant talk, and no clear cut features allowing for their grouping into any psychosis. The only significant statistical finding was that the gap between onset of epilepsy and psychosis was shorter for schizophreniform psychosis and longer for the miscellaneous group. However there were some other trends, which did not reach statistical significance. The schizophreniform group tended to be older at the first consultation. There were more males in the grandiose–irritable group. The schizophreniform and catatonic psychoses were shorter and the miscellaneous longer. Most of the temporal lobe epileptics had a paranoid–hallucinatory profile. The epilepsy had an earlier age of onset in the schizophreniform and grandiose–irritable groups.

With regards to the epilepsy, 53 patients had generalised seizures, 4 had temporal lobe epilepsy and in 3 the type of epilepsy was not specified. The onset of epilepsy was at the mean age of 17.09 years (SD 9.96, range 4–32 years.) The gap between the onset of epilepsy and psychosis was 9.30 years (SD 7.22, range 1.5 to 24 years).

Nineteen of the patients had psychoses which were shorter than 15 days on presentation and 37 had longer psychoses. In 4 cases this information was not available. The shorter episode group showed some statistically significant differences which are shown in Table 3. They tended to have more pressure of speech and inappropriate affect, were most likely to be

having grandmal epilepsy and past episodes of psychosis and had longer gaps between the present episode and the onset of epilepsy.

Table 3
Duration of Psychosis

	Duration	
	Less than 15 days	More than 15 days
n	19	37
Age (mean)	30.68 yrs SD = 8.97	26.92 yrs SD = 7.48
Sex Male	10	16
Female	9	21
Pressure of speech	5	2*
Inappropriate affect	6	1*
Grand Mal epilepsy	19	30*
Gap between epilepsy and psychosis	11.17 yrs SD = 7.94	6.80 yrs* SD = 6.48
Past episodes	5	2*

* P<0.05

To see whether the group of memory deficits was a spillover from the acute confusional states associated with epilepsy, which are not included in this study, we compared these 8 cases, with the other 49 where no memory disturbances were clearly documented. The only significant differences which emerged were that the group with memory deficits had more hallucinations and a longer gap between the onset of epilepsy and psychosis, as shown in Table 4 (only significant differences.)

Electroencephalograms were done in ten cases. 4 were normal and 6 abnormal. Generalised background slowing was seen in 3 cases. Focal seizure discharges were seen in unilateral temporal areas in 2 cases and bilaterally in one. All 3 of the latter cases had received a diagnosis of temporal lobe epilepsy.

Table 4
Memory Defficits

	Memory Deficits	
	Present	Absent
n	8	49
Age (mean)	30 years SD = 3.67	27.85 years SD = 8.47
Hallucinations	5*	7
Gap between epilepsy and psychosis	13.86 years* SD = 8.87	7.50 years SD = 6.91

* P<0.05

46 of our cases had not received any prior therapy. When comparing these groups for age of onset, type of psychosis and gap between onset of epilepsy and psychosis, no significant differences emerged. Next we looked at therapeutic strategies used in treatment of epilepsy and psychosis. Phenobarbitone and diphenylhydantoin combinations were most commonly used for control of seizures. Carbamazepine when used, was used for the control of epilepsy and psychosis in 6 cases, and along with haloperidol in 3 cases. Haloperidol was used alone in 20 cases, trifluperazine in 9 and chlorpromazine in 7. In 8 cases drug combinations were used for the control of psychosis.

Discussion

In this paper we have tried to describe the profile of epileptic psychosis as seen in our centre, and to see what patterns emerge. We have first to address ourselves to the nosological status of epileptic psychosis. The category in ICD–9 is epileptic psychosis NOS, which in other words implies that only atypical psychosis which seem likely to have an etiological relationship with epilepsy should be coded here. This leaves out a large group of clas-

sical, so-called functional psychosis, where there is also a history of association with clinical seizures. The use of the multiaxial classificatory system of DSM III (APA 1980) overcomes this and when this is more widely used we may perhaps be able to further validate this diagnostic category. However what is left in this category in ICD–9 is by definition the atypical psychosis related to epilepsy.

There have been only two Indian reports in this area. Agnihotri et al. (1972) reported 7 cases. Neki and Chawla (1975) reported 60 cases 20 of whom had a confusional state. In 2 of their cases psychosis preceded the onset of epilepsy. Their cases with a depressive psychosis had an earlier onset. They found epileptic psychosis to be characterised by fleeting delusions, unrelated hallucinations, visual hallucinations, apathetic mood in depressed patients and normal premorbid personalities.

Earlier studies have also shown an almost equal sex distribution, as in our study (Toone 1981). However as Taylor (1971) points out the prevalence of epilepsy is much more in males. He thought that either females are more prone to psychiatric complications of epilepsy or psychotics are drawn from a special sub–population which has an equal sex ratio. Gurrie et al. (1971) have found an equal sex distribution in temporal lobe epileptics, and Toone (1981) uses this finding to support the second hypothesis of Taylor.

Recent genetic studies have not found an excess of family histories of psychosis among families of probands (Slater et al. 1963) and in our sample also this is not markedly so.

The classification of inter-ictal psychosis has been into schizophrenia like psychosis, paranoid psychosis and affective psychosis (McKenna et al. 1985). Although catatonic features have been described, this is an unusual presentation. Hill (1953) coined the term chronic paranoid hallucinatory states, which was described well by Slater et al. (1963). This was the largest well defined group in our series and accounted for almost a third of cases. This is consistent with recent findings, such as those by Bruens (1971). Other schizophreniform psychosis have also been described (Slater et al. 1963 ; Flor Henry 1969 ; Bruens 1971) but we found only a small number of them in our sample.

Most of the earlier work on epileptic psychosis was confined to schizophrenia. Bruens (1971), like us, found grandiose delusions to be the second most common type of delusion. Betts (1974) in their study of epileptic patients admitted for psychiatric care found 17% to have endogenous depression and 14% reactive depression. However, it is not clear whether these patients were psychotically depressed or not. Pathological elevation of mood has however been uncommonly reported. There were no cases in two Maudsley series (Toone and Driver 1980). However we have found a significant subpopulation with this type of psychosis in our group ; this obviously merits further study.

The average age of onset was in the third decade in our series. This is earlier than the expected for the various psychosis described and in accordance with earlier work (Toone 1981).

Most of the work on types of epilepsy has tended to implicate temporal lobe epilepsy (Gibbs 1951) although there have been critics of this view (Small et al. 1962, Standage 1973) and our findings would fall into the latter category. Only 3 out of 10 EEG's showed temporal foci. There are various possibilities which can be used to explain why this has emerged in our series. Generalised epilepsy is the most common

type of epilepsy we see in India, unlike that in other countries (Stevens 1966). Also details of aura and onset could have been missed in focal becoming generalised epilepsy, which is marked by its absence in our series. The epilepsy usually starts in adolescence (Toone 1981) as in our series. Shukla (1984) has reported on psychiatric syndromes and symptoms associated with temporal lobe epilepsy and their lateralisation value. However our study has not been informative about this aspect.

We took up comparison of groups with short durations of psychosis and memory deficits to see whether some of the cases we had taken up could more appropriately have been classified among the acute confusional states. There were no indication for this from our findings.

We did find one large group, of over one third of our patients, who could not be classified into any syndrome. This group had a longer gap between onset of epilepsy and psychosis and a longer history of psychosis on presentation. It would be interesting to speculate whether this group would form a continuum in some way with epileptic personality change.

In this study we have thus tried to define and delineate various characteristics and associations in interictal epileptic psychosis from a point of view of phenomenology, etiology and therapy. There have been some limitations in our study. Firstly, with the ICD–9 only the 'not otherwise specified' category could be taken up for this study ; an improvement as we have mentioned would have been the use of the multiaxial classificatory system of DSM III. Secondly, as this has been a retrospective study details about some areas like prodrome and aura of epilepsy, and investigations could not be obtained to our satisfaction and had to be excluded in some places for analysis. Nevertheless we have tried to confirm existing knowledge about epileptic psychosis, and hope that some of the findings we have generated will facilitate more work in this area in India.

References

AGNIHOTRI, B.R. TEJA, J.S. PRABHU, G.G & VIRMANI, V. (1972) A study of psychiatric, Psychological and social disturbances in epileptics. *Indian Journal of Psychiatry*, 14, 171–182.

AMERICAN PSYCHIATRIC ASSOCIATION (1980) DSM III : Diagnostic and Statistical Manual for mental disorders. 3rd edition. Washington : American Psychiatric Press.

ASUNTI, T., PILLUTLA, V.S. (1967) Schizophrenia like psychosis in Nigerian epileptics. *British Journal of Psychiatry*, 113, 1375–1379.

BETTS, T.A. (1974) A follow up study of a cohort of patients with epilepsy admitted to psychiatric care in an English city. In Harris P, Maudsley C (eds) Epilepsy : Proceedings of the Hans berger Centenary Symposium. Edinburgh : Churchill Livingstone p 326.

BOUCHET, M. CAZAUVEILH, M. (1825) De l'epilepsie considere dans ses rapprots avec l'alienations mentale. *Archiv Generale de medicine*, 93510–542.

BRUENS, J.M. (1971) Psychosis in epilepsy. *Psychiatrica, neurologia, neurochirugica*, 74, 174–192.

CURRIE, S., HEATHFIELD, K.W.G. HENSON, R.A.SCOTT, D.F. (1971) Clinical course and prognosis of temporal lobe epilepsy, *Brain*, 94 : 173–190.

DAVISON, K., BAGLEY, C.R. (1969) Schizophrenia like psychosis associated with organic disorders of the central nervous system. In Herrington R.N. (ed) Current problems in neuropsychiatry. *British Journal of Psychiatry*, Special Publication No. 4.

FLOR HENRY, P. (1969) Psychosis and temporal lobe epilepsy. *Epilepsia*, 10 ; 365–395.

GIBBS, F.A. (1951) Ictal and non–ictal psychiatric disorders in temporal lobe epilepsy. *Journal of Nervous and mental Diseases*, 113, 522–528.

GLAUS, A. (1931) Ueber combinationen von schizophrenie and epilepsie. *Z Neurologie Psychiatry*, 135 ; 450–500.

HARA, T. HOSHI, A. TAKASE, M. SAITO, S. (1980) Factors related to psychiatric episodes in epileptics. *Folea Psychiatrica et neurologica Japan*, 34, 329–330.

HILL, D. (1953) Psychiatric disorders of epilepsy. *Medical Press*. 229, 473–475.

JACKSON, B.J. (1880) Temporary mental disorders after epileptic paroxysms. *West Riding Lunatic Asylum Medical Reports* 5.

KARAEPLINE, E. (1922) Psychiatrie vol. 3, 8th ed. Lupzig : Johan Abrosius Barth.

LANDOLT, H. (1958) Serial electroencephalographic investigations during psychotic episodes in epileptic patients and during schizophrenia attacks. In Lorentz de Hass AM(ed) Lectures in Epilepsy. Amsterdam : Elsevier Publishing Company p 91–133.

McKENNA, P.J., KANE, J.M. & PARRISH, K. (1985) Psychotic syndromes in epilepsy. *American Journal of Psychiatry*, 142, 895–904.

MEDUNA, L.V. (1937) Die konvulsionstherapie der schizophrenie. Halle.

MONROE, R.R. (1959) Episodic behaviour disorders – schizophrenia or epilepsy. *Archives of General Psychiatry*, 1, 205–214.

MONROE, R.R. (1978) Brain dysfunction in aggressive criminals. Lexington : D.C Heath and Company.

NEKI, J.S. & CHAWLA, H.M. (1975) Epileptic psychosis – a clinical study. In K.S. Mani, A.E Walter, P.N.Tandon (Eds) Proceedings of National Symposium on Epilepsy in Bangalore.

POND, D.A. (1957) Psychiatric aspects of epilepsy. *Journal of the Indian Medical Profession*, 3, 1441–1451.

SHUKLA, G.D. (1984) Temporal lobe epilepsy : Phenomenology and psychosexual manifestations. *Indian Journal of Psychiatry*, 36, 26–36.

SLATER, E., BEARD, A.W., GLITHEROE, E. (1963) The schizophrenia like Psychosis of epilepsy. *British Journal of Psychiatry*, 109, 95–150.

SMALL, J.G., MILSTEIN, Y. & STEVENS, J.R. (1962) Are psychomotor epileptics different? *Archives of Neurology*, 7, 187–194.

STANDAGE, K.F. (1973) Schizophreniform psychosis among epileptics in a mental hospital. *British Journal of Psychiatry*, 123, 231–232.

STEVENS, J.R. (1966) Psychiatric implications of psychomotor epilepsy. *Archives of General Psychiatry*, 14, 461–471.

TAYLOR, D.C. (1971) Ontogenesis of chronic epileptic psychosis : a reanalysis. *Psychological Medicine*, 1, 247–253.

TOONE, B. (1981) Psychoses of epilepsy. In Reynolds, E.H. Trimble, M.R. (ed) Epilepsy and psychiatry. New York. Raven Press.

TOONE, B.K. DRIVER, M.V. (1980) Psychosis, epilepsy and laterality. Quoted in Toone B (1981) Psychoses of epilepsy in Reynolds, E.M. Trumbler, M.K. (ed) Epilepsy and Psychiatry. New York : Raven Press.

WORLD HEALTH ORGANISATION (1975) International Classification of Diseases 9th 3d. Geneva : WHO.