THE RELEVANCE OF CLINICAL AUTOPSIES IN A PSYCHIATRIC INSTITUTE

PRABHA S. CHANDRA¹
S.K. SHANKAR²
T. ASHA³
MEENA VYTHILINGAM⁴
T. VASUDEV RAO⁵
SARALA DAS⁶
S.M. CHANNA BASAVANNA⁷

SUMMARY

The pattern of psychiatric syndromes/mental illnesses among the 61 clinical autopsies carried out during the past decade in a psychiatric Institute in South India, is documented. Among the cases autopsied, 26.2% had clinical diagnosis of Schizophrenia, 21.3% dementia, 19.67% manic depressive Psychosis, the rest being cases of neurosis, mental retardation, alcoholism and other Psychosis. The importance of an autopsy study in understanding the pathomorphological basis of mental illness is highlighted.

Introduction

"The fact is decisive that morbid anatomy has disclosed not simple inadequacy of the nervous constitution, but destructive morbid processes as the background of the clinical picture" - this comment of Kraepelin in 1907, though made in reference to 'dementia Praecox', appears to be true for many psychiatric illnesses. Recent clinical and pharmacological studies further corroborated that structural lesions, though at times subtle, underlie the pathogenesis and evolution of mental illnesses. The classical neuropathological study of Alzheimer has demonstrated the biological basis of dementia. A similar approach in Schizophrenia, though yielding no conclusive evidence, provided some understanding of the involvement of the limbic system in the evolution of the disease.

Since the turn of the century many attempts have been made in the West to elucidate possible pathogenesis of mental illness by systematic neuropathological studies of the central nervous system of patients with psychiatric disorders. (Dastur, 1959, Daris et al 1965, Krauthammer and Klerman 1978, Martin 1984, Tomlinson et al 1970, Torvik 1982, Weinberger et al 1983). However no similar documented data is available till date from India, though psychiatry is being practised as speciality for the last four decades.

In this communication, the pattern of mental disorders among the clinical
The relevance of clinical autopsies

Autopsies carried out over the past decade in a psychiatric Institute in South India, are documented. The data presented forms the forerunner of a detailed neuropathological study of various psychiatric syndromes.

Material and Methods

National Institute of Mental Health and Neuro Sciences, Bangalore, south India, a Post Graduate Training and Research Institute, has a 650 bed psychiatric hospital as an integral part. In addition to routine care, facilities offered include an intensive care unit and investigative facilities for acute medical problems. The Institute emphasises the need for community based treatment and majority of the patients admitted are those with acute problems or exacerbations of chronic psychosis. The material presented is drawn from this psychiatric service, which has an average admission rate of 3278 (range: 2670-3892 per year). Long stay patients form only 10% of the total inpatient population. The data was collected from Neuropathology and Psychiatric clinical records from 1976 to June 1988. Cases included were those admitted with a psychiatric syndrome and managed in psychiatry wards completely or referred to Neurology/Neurosurgery services for further management or vice versa. The average death rate per year among the patients admitted in psychiatry was 11.54 (range 7-16/year) while clinical autopsies were carried out in 61 cases (average 5.0/year). A complete or partial autopsy confined to brain only was performed, 6-48 hours after death, after obtaining written consent from close relatives. Medico legal cases were excluded from the study.

The clinical histories were reviewed from the original case records and diagnosis was made using ICD-9 criteria.

Results

The raw data is presented in the table to highlight the pattern of cases and focus on some of the clinical details. Among the cases autopsied, the highest number of cases (26.2%) had clinical diagnosis of Schizophrenia, followed by dementia (21.3%) and manic depressive Psychosis (19.67%). Cases of neurosis, mental retardation, alcohol and other psychosis together constituted 32.83%. 10.17% of the autopsied patients stayed in the hospital for a duration of more than five years.

| S. No. | Age/Sex | Diagnosis | Medical/Surgical Diagnosis | Duration of Recorded illness | Cause of Death | Autopsy Findings |
|--------|---------|-----------|-----------------------------|----------------------------|----------------|-----------------|
| 1.     | 35 Y/F  | Acute schizophrenic episode | Left hemiparesis | 12 days | Cardio respiratory failure | Intracerebral haemorrhage due to rupture of cryptic angiomas |
| 2.     | 45 Y/M  | Schizophrenia-NOS | Left temporal mass | 1 month | Tentorial herniation | Astrocytoma Gr. II in left temporal lobe, secondary brain stem haemorrhage. |
| 3.     | 40 Y/M  | Acute Schizophrenic episode with alcohol | | 20 days | Subdural haematoma | Bilateral temporal lobe contusion with intracerebral and subdural haematoma, cerebral oedema. |
| 4.     | 35 Y/F  | Paranoid schizophrenia | — | 4 years | Pulmonary oedema | No diagnostic pathology. |
| 5.     | 65 Y/F  | Chronic schizophrenia | Right hemiparesis | 7 years | Cerebral infarction | Atherosclerotic cerebrovascular disease. Acute haemorrhagic infarction. Bilateral frontal atrophy. |
| Sl. No. | Age/Sex | Psychiatric Diagnosis | Medical/Surgical Diagnosis | Duration of Cause of Death | Cause of Death Recorded | Autopsy Findings |
|--------|----------|-----------------------|---------------------------|---------------------------|-------------------------|-----------------|
| 6.     | 40 Y/F   | Chronic Schizophrenia with TD | Myocardial infarction | 15 years | Respiratory failure | No diagnostic pathology. |
| 7.     | 35 Y/F   | Chronic schizophrenia with TD | Meningitis | 25 years | Meningitis with peripheral circulatory failure | |
| 8.     | 70 Y/F   | Chronic schizophrenia with TD | — | 20 years | Myocardial infarction | |
| 9.     | 55 Y/F   | Paranoid schizophrenia | Intraventricular tumour | 7 years | Raised intracranial tension with coning | No diagnostic pathology. |
| 10.    | 68 Y/F   | Chronic schizophrenia | Bronchogenic carcinoma with spinal metastasis | 12 years | Carcinoma lung with spinal metastasis | No diagnostic pathology. |
| 11.    | 24 Y/M   | Paranoid schizophrenia | Anaemia | 5 years | Peripheral circulatory failure/cerebral hypoxia | |
| 12.    | 23 Y/M   | Schizophrenia with TD | Epilepsy | 6 years | Cerebral hypoxia | |
| 13.    | 51 Y/F   | Paranoid schizophrenia with TD | Pulmonary Tuberculosis | 9 years | Respiratory failure | |
| 14.    | 65 Y/M   | Paranoid schizophrenia with alcohol dependence | Chronic meningitis | 7 years | Chronic meningitis with hydrocephalus | |
| 15.    | 40 Y/F   | Hebiphenic schizophrenia | Left internal carotid embolism | 6 years | Cerebrovascular accident | |
| 16.    | 30 Y/F   | Schizophrenia NOS | TBM with spinal arachnoiditis with hydrocephalus | 1 year | Peripheral circulatory failure | |
| 17.    | 25 Y/M   | Acute psychotic episode - Psychosis NOS | — | 1 day | Encephalitis | |
| 18.    | 47 Y/M   | Psychosis NOS | rt. intracerebral haemorrhage | 1 year | Cerebral haemorrhage | |
| Sl. No. | Age/Sex | Psychiatric Diagnosis | Medical/Surgical Diagnosis | Duration of Cause of Death Psychiatric Illness | Autopsy Findings |
|--------|---------|-----------------------|---------------------------|-----------------------------------------------|------------------|
| 19.    | 20 Y/M  | Acute psychotic episode | Neuroleptic malignant syndrome | 14 days Neuroleptic malignant syndrome | Diffuse anoxic changes - brain, |
|        |         |                       | Left motor seizures with neuroleptic malignant syndrome | 10 days Neuroleptic malignant syndrome | Diffuse cerebral anoxic changes. |
| 20.    | 36 Y/M  | Psychosis – NOS       |                           |                                               |                  |
|        |         |                       |                           |                                               |                  |
| 21.    | 70 Y/F  | Manic depressive psychosis – depressed | Subdural haematoma | 1 month Cardio respiratory failure with cachexia | Diffuse cerebral atrophy. |
|        |         |                       |                           |                                               |                  |
| 22.    | 60 Y/M  | Manic depressive psychosis – depressed | Diabetes Mellitus | 6 months Acute subdural haematoma with empyema | Left temporal abscess with subdural empyema. |
|        |         |                       |                           |                                               |                  |
| 23.    | 70 Y/M  | Manic depressive psychosis circular – depressed | Incipramine Toxicity | 13 years Diabetic coma | Mild frontal and temporal atrophy bilateral; no other diagnostic pathology. |
|        |         |                       |                           |                                               |                  |
| 24.    | 35 Y/M  | Manic depressive psychosis – depressed | Lithium toxicity | 1 year Incipramine toxicity | Diffuse cerebral congestion with change. |
|        |         |                       |                           |                                               |                  |
| 25.    | 45 Y/F  | Manic depressive psychosis – mania | Intracerebral mass lesion | 15 years Lithium toxicity | Diffuse cortical atrophy, cerebral oedema with cerebellar tonsillar herniation. |
|        |         |                       |                           |                                               |                  |
| 26.    | 45 Y/M  | Manic depressive psychosis – circular currently depressed | Post traumatic epilepsy with neurosyphilis | 2 months Cerebral oedema with coning | Multi loculated left temporal abscess with pyogenic meningitis; ventriculitis; diffuse cerebral oedema with herniation. |
|        |         |                       |                           |                                               |                  |
| 27.    | 62 Y/M  | Manic depressive psychosis – mania | Post traumatic encephalopathy | 1 1/2 years Meningovascular syphilis | Findings suggestive of meningo vascular syphilis. |
|        |         |                       |                           |                                               |                  |
| 28.    | 52 Y/M  | Manic depressive psychosis – mania | Posterior parietal mass | 20 days Cardio respiratory arrest – drug induced. | No diagnostic pathology. |
|        |         |                       |                           |                                               |                  |
| 29.    | 42 Y/F  | Manic depressive psychosis – mania | Posterior parietal mass | 5 years Status epilepticus | Diffuse cerebral anoxia. No diagnostic pathology. |
|        |         |                       |                           |                                               |                  |
| 30.    | 35 Y/M  | Manic depressive psychosis – mania | Cerebrovascular accident – right side | 4 years Cerebrovascular accident | Haemorrhage into pons, with secondary subarachnoid haemorrhage; diffuse cerebral oedema with significant coning. |
|        |         |                       |                           |                                               |                  |
| 31.    | 41 Y/M  | Manic depressive psychosis – circular currently – mania | Myocardial infarction | 4 years Silent myocardial | Large parietal subdural haematoma attached to a vein. |
|        |         |                       |                           |                                               |                  |
| 32.    | 20 Y/M  | Manic depressive psychosis – mania | Primary generalised epilepsy | 7 years Post-ictal asphyxia | Left temporal atrophy with diffuse cerebral congestion; no diagnostic pathology; postmortem CSF swab culture yielded Enterococci. |
|        |         |                       |                           |                                               |                  |
| 33.    | 30 Y/F  | Anxiety neurosis       | Epilepsy | 6 years Respiratory failure following seizure | Diffuse cerebral anoxia. No diagnostic pathology. |
|        |         |                       |                           |                                               |                  |
| 34.    | 25 Y/F  | Anxiety neurosis       | Pulmonary tuberculosis | 2 months Respiratory failure due to lung infection. | Multiple tuberculomas – brain, miliary tuberculosis. |
|        |         |                       |                           |                                               |                  |
| 35.    | 36 Y/F  | Hysterical dissociation (Possession attack) | Generalised epilepsy | 1 1/2 years Epilepsy | Diffuse cerebral congestion. No definite diagnostic pathology. |

THE RELEVANCE OF CLINICAL AUTOPSIES
| Sl. No. | Age/Sex | Psychiatric Diagnosis | Medical/Surgical Diagnosis | Duration of Cause of Death Psychiatric Recorded | Autopsy Findings |
|--------|---------|-----------------------|---------------------------|-----------------------------------------------|-----------------|
| 36.    | 40 Y/M  | Dementia              | Epilepsy                   | 6 years                                       | Raised intracranial tension due to mass lesion Tuberous sclerosis with iatrogenic meningitis. |
| 37.    | 26 Y/F  | Dementia              |                          | 2 months                                      | Progressive cerebral degeneration Cereoid lipofuscinosis – Kuff’s variety with cerebral atrophy – mild. |
| 38.    | 35 Y/M  | Presenile dementia    | GPI                       | 15 days                                       | Gastroenteritis with peripheral circulatory failure Chronic bilateral subdural haematoma with organisation; Ischemic changes left occipital cortex. |
| 39.    | 62 Y/M  | Dementia              |                          | 2 months                                      | Suspected intracranial space occupying lesion Cystic craniohypopharnyx invaginating into third ventricle and involving hypothalimus. |
| 40.    | 60 Y/M  | Dementia              | Hypertension              | 3 months                                      | Respiratory failureBinswanger’s disease. |
| 41.    | 50 Y/M  | Dementia              |                          | 3 years                                       | Intracranial space occupying lesion No diagnostic pathology. |
| 42.    | 36 Y/M  | Presenile dementia    |                          | 5 years                                       | Respiratory failure? cause Hallervorden Spatz disease. |
| 43.    | 73 Y/M  | Dementia              | Hypertension with 3 years right hemiparesis osteo-arthritis left hip joint | Multiinfarct dementia with toxaemia Multiinfarct dementia – multiple white matter infarcts with demyelination. |
| 44.    | 65 Y/M  | Dementia              | Late onset epilepsy since 6 years: TLE generalised. | 1 1/2 months                                 | Respiratory failure? septicaemia. |
| 45.    | 71 Y/M  | Dementia              |                          | 1 1/2 years                                   | Cardiac arrest Subdural haematoma – chronic |
| 46.    | 48 Y/M  | Dementia              | Bronchial asthma          | 1 month                                       | Acute bronchial asthma asphyxia Diffuse cerebral congestion with mild atrophy; No diagnostic pathology. |
| 47.    | 73 Y/M  | Senile dementia       | Diabetes mellitus         | 2 years                                       | Diabetic ketoacidosis Findings diagnostic of Alzheimer’s disease. |
| 48.    | 55 Y/F  | Presenile dementia    |                          | 1 1/2 years                                   | Acute brain stem Cereoid lipofuscinosis Kuff’s insult –? vascular variety. |
| 49.    | 50 Y/M  | Alcohol dependence    | Subdural haematoma        | 8 days                                        | Hypoglycaemia No diagnostic pathology. |
| 50.    | 70 Y/M  | Alcohol dependence    |                            | 8 days                                        | Peripheral circulatory failure Congestion of the brain. No diagnostic pathology. |
| 51.    | 73 Y/M  | Alcohol dependence    |                            | AI-40 years                                   | Delirium tremens with respiratory failure ©Diffuse atherosclerosis involving aorta, coronary arteries, cerebral vessels, with variable luminal occlusion; cerebral atrophy. |
| 52.    | 35 Y/M  | Alcohol dependence    |                            | AI-2 years                                    | Delirium tremens Diffuse cerebral congestion. No diagnostic pathology. |
| 53.    | 47 Y/M  | Alcohol dependence    |                            | AI-22 years                                   | Cardiac arrest No diagnostic pathology. |
| Sl. No. | Age/Sex | Psychiatric Diagnosis | Medical/Surgical Diagnosis | Duration of Cause of Death Recorded | Autopsy Findings |
|--------|---------|-----------------------|---------------------------|-------------------------------------|-----------------|
| 54.    | 65 Y/F  | Microcephaly with chronic schizophrenia | Gastric ulcer - bleeding | 22 years | Haematemesis circulatory failure |
| 55.    | 42 Y/F  | Mental Retardation     | Primary generalised epilepsy | 42 years | Cerebral anoxia due to seizures |
| 56.    | 22 Y/M  | Mental Retardation     | —                          | 22 years | Metabolic encephalopathy        |
| 57.    | 31 Y/F  | Mental Retardation with psychosis | Epilepsy - dilantin sodium toxicity | 30 years | Dilantin toxicity               |
| 58.    | 24 Y/M  | Mental Retardation with psychosis | Epilepsy                  | 24 years | Status epilepticus              |
| 59.    | 1 Y/M   | Mental Retardation     | Epilepsy with cataract, galacto-caemia | 6 months | Anoxia due to endotracheal tube block (?) |
| 60.    | 12 Y/M  | Mental Retardation     | Epilepsy                  | Not known | Anoxic brain damage due to cluster attacks |
| 61.    | 20 Y/F  | Mental Retardation     | Enteric encephalopathy    | 13 years | Enteric encephalopathy          |

Al = Alcohol dependence; DT = Delirium tremens; TD = Tardive Dyskinesia; © = Complete Autopsy.

**Comments**

The pathological findings among the various psychiatric syndromes revealed the importance of autopsy studies in mental illness. This is the first study from India documenting various psychiatric syndromes/illness among the autopsied cases from a Psychiatric Institute.

The importance of pathological studies lies in identifying neuroanatomical substrates for aberrant behaviour and elucidating possible causative mechanisms. In addition, recognition of secondary affective and schizophreniform syndromes forms an important aspect of such a study. The present study illustrates a wide variety of diseases of the brain, which can mimic a psychiatric syndrome. All the cases with an identifiable cause had an acute onset and rapid progression. The conditions ranged from tumour and abscesses of the temporal lobe to infective conditions like rabies, (Goswami et al 1984) and syphilis. Secondary psychiatric syndromes have been described in literature (Kranthammer and Klerman, 1978) and the present study emphasises the need for a psychiatrist to be alert in identifying these diverse conditions, for better management. An attempt was also made to relate the cause of death recorded in the case.
file to the pathological findings noted at autopsy. The disparity noted in a number of cases, highlights the importance of post-mortem analysis for realistic assessment of a case.

The revolutionary change in neuropathology with the introduction of immunohistochemistry applied to the study of receptors, enzymes, peptides, viruses and auto immune mechanism has raised valid question about the concept of 'functional Psychosis' especially in schizophrenia (Stevens, 1982). It is evident now that a multi disciplinary and multi modal approach under the broad umbrella of biological psychiatry/neurosciences, encompassing neuropathology is essential for understanding the basic mechanisms of mental illness. As in the West, a rapid autopsy service, where the brain can be removed within 1-4 hours postmortem, will facilitate collection of samples for various neurochemical, neuro immunological and receptor studies. There is an urgent need to develop a 'Brain Bank' in India, where the brains and other body fluids collected from psychiatric patients can be stored and subjected to detailed, multi disciplinary studies to understand the pathogenesis.

A detailed neuropathological evaluation of the brains collected, with special emphasis on Schizophrenia is in progress at this Institute.

Acknowledgement

We sincerely thank the Medical Superintendent, Head of the Department and Consultants of Psychiatry, the staff of Medical Record Section, NIMHANS made this postmorten evaluation possible. The secretarial assistance of Mrs. P.V. Jayalakshmi is appreciated.

References

DASTUR, D.K. (1959), The pathology of Schizophrenia A historical survey, A M A Archives of Neurology and Psychiatry, 81, 601-614.

DAVIS, R.B., GUPTA, N.C. & DAVIS, A.B. (1965), The first ten years—some phenomena of a private Psychiatric hospital, Indian Journal of Psychiatry, 7(1) 231-242.

GOSWAMI, U., SHANKAR, S.K., CHANNA BASAVANNA, S.M. & ANJALI CHATTOPADHYAY (1984), Psychiatric presentations in Rabies: A clinico Pathologic report from South India with a review of literature, Tropical and Geographic Medicine, 36, 77-81.

KRAEPLEIN, E. (1907), Introduction a’ la Psychiatric Clinique, translated from the second German Edition by Albert Devaux and Prosper Merklen, Paris, Vigot frères.

KRAUTHAMMER, C. & KLERMAN, G.L. (1978), Secondary mania: manic syndrome with antecedent physical illness or drugs, Archives of general Psychiatry, 35, 1333-1339.

MARTIN, J.B., HUNTINGTON'S DISEASE (1984), New approach to an old problem. (The Robert Wartenberg Lecture). Views and Reviews, Neurology (Cleveland), 34, 1059-1072.

STEVENS, J.R. (1982), The Neuropathology of Schizophrenia, Editorial, Psychological Medicine, 12, 695-700.

TOMLINSON, B.E., BLESSED, G. & ROTH, M. (1970), Observations on the brains of demented old people, Journal of the Neurological Sciences, 11, 205-252.

TORVIK, A., LINDBOE, C.F. & RODEG, S. (1982), Brain lesions in alcoholics – A neuropathological study with clinical correlation, Journal of the Neurological Sciences, 56, 233-248.

WEINBERGER, D.R., WAGNER, R.L. & WYATT, R.I. (1983), Neuropathological studies of Schizophrenia: A selective review, Schizophrenia Bulletin, 9(2), 193-212.