



THE AIR MARSHAL SUBROTO MUKERJEE
MEMORIAL ORATION OF 1984

The Borderland of Episodic
Unconsciousness

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Introduction

At the outset let me thank the Armed Forces Medical Services, particularly the Institute of Aviation Medicine at Bangalore and the Air Force for electing me as your Distinguished Orator for 1984.

When I see the men who have preceded me to this Oration, outstanding personalities such as Dr Raja Ramanna, Prof Ramalingaswamy, Dr C Gopalan, Prof Baldev Singh, Air Commodore Peter Howard of the Royal Air Force, Prof B Ramamurthi, and General Hoon; I stand before you with the utmost humility for the honour you have done me, and the privilege you have accorded me. Among the distinctions I have received, this will stand as one, which I shall always cherish.

On my onward journey in becoming the Neurologist that I am, I would like to pay tribute to my teachers in Neurology the Late Allan A Bailey, Edward Ashenhurst and Donald W Baxter of Canada, Sir Wiley McLissock, Mr Lawrence Walsh, Dr Dennis Williams, Sir John N Walton and Dr JB Foster, all of the United Kingdom.

These men put me "on the road" initially, and to them I owe my success completely. Finally I would like to remember Raymond Garcin who inspired me to pursue Academic Neurology when I visited him at Paris in the Salpetriere in 1962.

What about the man in whose name this Oration rests? My knowledge of the late Air Marshal Subroto Mukerjee is only from hearsay and reading. It is amazing how a single individual has influenced the thinking of our Air Force, and he must have been a very special person of great distinction. Air Marshal Subroto Mukerjee has been described as the Father of the Indian Air Force, and the Institute of Aviation Medicine, which is the first of its kind in Asia and owes its existence to his original patronage and support. Therefore it is only apt that this Oration should commemorate the life of such a great man.

Last, I wish and hope that I have done my job as an Orator in the manner in which it was expected of me.

The Borderland of Episodic Unconsciousness

The words consciousness and unconsciousness need definitions. They mean various things to various people. The word consciousness has several connotations, such as neurologic, medical, psychologic and of course philosophic. To the physician and neurologist the word consciousness means, "the state of awareness of the individual about himself and the environment." This awareness is known subjectively as thoughts, feelings and mood and can be expressed through language or behaviour. The individual's awareness of the environment is known through appropriateness of his response to environmental stimuli. To the psychiatrist the word consciousness presents no problems. But the word unconsciousness, from a psychoanalytic point of view stands for the repository of all those experiences, symbols and images which form the psychic background of the individual but not reaching the level of consciousness. To the philosopher the whole business of consciousness is puzzling. 'Not only do I know,' says the philosopher, 'but I also know that I know.' This problem of self-consciousness, by nature of which a person feels himself as a separate entity with experiences, thoughts, and feelings, and himself as an experiencing continuous self, raises metaphysical problems! Professor Sir John Eccles, Nobel Laureate and Neuro-physiologist considers this self-consciousness as unique to man, and says that one has to be agnostic about the presence of self-consciousness in animals. Fortunately I am a Neurologist and not a philosopher, and for ordinary day to day discussion, I will confine myself to the first definition, i.e., "Consciousness is awareness of oneself and the environment." The word unconsciousness means just the opposite, "a disturbance in the state of awareness of oneself and the environment." Sleep is a physiologic state of unconsciousness and can be interrupted by states of awareness called dreams. Sleep and dreams will be excluded from this discussion.

Episodic disturbance of consciousness is a very important medical problem. It is one of the most common reasons for referral to a neurological clinic. A soldier faints at a parade, a girl swoons at the sight of blood, an old man gets a convulsion on the road, and a boy of twelve drops to the ground at the school prayer meeting. All these people have disturbances of consciousness, but the causes would

be entirely different in each case. When confronted with such a problem the physician should ask himself—Is it a fit?, a faint?, a fall? or a funny turn?? The patient who presents with episodic unconsciousness can be put under one of the following categories.

1. Seizure disorder which includes all types of epilepsy.
2. Syncope and its causes.*
3. Transient ischaemic attacks.
4. Drop attacks.
5. Psychogenic seizure.

Most cases will fall under the first two categories and these can resemble one another very closely and cause great diagnostic confusion.

As with all clinical problems, the first step is to get a good history. *An eye-witness account is perhaps the most important single step in the ladder towards diagnosis.* Friends, relatives or the person who saw the episode must be closely questioned as to the circumstances under which the incident occurred. If necessary a written account must be obtained. *The history is so important,* that we have at our Departments of Neurology at the Voluntary Health Services Medical Centre, and The Public Health Centre in Madras, designed a special seizure case sheet in which all the relevant information needed is printed in a questionnaire form so that no important point is overlooked. (See Table 1) We have found this method so helpful that only rarely has our provisional diagnosis been challenged by special investigations. The importance of a good history and initial clinical assessment is borne out by two important studies, one at Boston and the second at Pittsburg.

In the Boston study¹ a diagnosis was established on the basis of initial assessment in 172 of 198 consecutive patients. Of the remaining 26 patients no diagnosis could be established despite intensive investigation.

* The reader is referred to the excellent Paper by H.J.M. Barnett, M.D., called HEART in Ischaemic Stroke—A Changing Emphasis, appearing in *Neurologic Clinics*—Vol. 1—No. 1, February 1983, Published by W.B. Saunders Co., U.S.A.

Table I

The T S Srinivasan Department of Clinical
Neurology & Research

EPILEPSY CLINIC

Statistics for the year 1983

Total No of cases	:	100
Males	:	53
Females	:	47
Type of Epilepsy		
Grand mal	:	60
Simple partial with Secondary generalisation	:	16
Complex partial	:	14
Petit mal	:	1
Febrile Fits	:	3
Partial simple	:	2
Psychogenic Seizure	:	2
Syncope	:	2
Total	:	<u>100</u>

In the study done at Pittsburg² the cause of syncope was evident from the initial history and physical examination in 89 of 210 patients admitted to the wards. Of the remaining 121 patients on further investigation, the diagnosis could be fairly established in another 13 patients only, at an average cost of 2463 dollars per patient. Sophisticated investigations therefore do not necessarily aid in the final diagnosis.

History³ should include details about the actual attack, the prodromal symptoms and the post-episode phenomena. Syncope related to cough, micturition,⁴ defaecation⁵ and pain⁶ can be easily recognised. Pre-syncope activity like effort, postural change, movements of the neck, or use of the arm may help in the differential diagnosis. A history of heart disease or diabetes, or intake of drugs likely to cause orthostatic hypotension must be sought.

The physical examination must be thorough and special attention must be paid to the nervous system and the cardiovascular system. One should look for abnormal cardiac rhythm, absent pulses, bruit over

the neck vessels, and postural hypotension. Auscultation of the heart must be done thoroughly. A detailed neurological examination must be carried out.

As a neurologist, I am very interested in the problem of epilepsy and have found *that a good history from an intelligent observer has often provided the diagnosis at the first consultation.* The terminology in seizure disorder is becoming more and more complicated but a working knowledge of the classification of epilepsy is important both for the rational therapy and prognostication.

After a good history and a thorough physical examination, some basic investigations can be done. These should include a complete blood count, packed cell volume and sedimentation rate to exclude anaemia and blood dyscrasia. A plain X-ray of the chest and an electrocardiogram must be taken. A complete electroencephalogram must be done. Echocardiogram can be obtained* in special situations, where Mitral valve disease, atrial myxoma or hypertrophic cardiomyopathy are suspected.

One of the most important causes for syncope is a cardiac arrhythmia. Many cardiac arrhythmias are transient and may be missed on a routine electrocardiogram. One of the most important advances in the study of the cardiac rhythm is continuous ambulatory electrocardiographic monitoring. This method is simple and very useful in the diagnosis of suspected arrhythmias which might be the cause of an unexplained syncopal attack. Sometimes a cardiac cause can be found for conditions masquerading as epilepsy.⁷ However interpretation of electrocardiographic data requires astute judgement. Even in healthy people complex arrhythmias can be detected during a 24 hour ambulatory monitoring.^{8, 9, 10} Through this is a valuable technique¹¹ the arrhythmias detected by ambulatory monitoring may not correlate with symptoms.¹² GD Schott⁷ et al stress the importance of cardiac arrhythmias causing transient cerebral symptoms. They discovered cardiac arrhythmias in 20 per cent (10 out of 55) of patients referred to the neurologic department as possible

* A very careful cardiac investigation includes two dimensional echo cardiography, 48 hours Holter monitoring and radio nucleid angiography, and search for platelet or coagulation disorder - Barnett, 1983.

idiopathic epilepsy. Eight (8) of these ten (10) patients became asymptomatic with either a pacemaker or anti-arrhythmic drugs. To overcome this difficulty of interpretation of electrocardiographic data some authors advocate the use of detailed intracardiac electrophysiologic studies.¹³ The studies include programmed pacing measurement of sinus node recovery time, sino-atrial conduction time, atrio-ventricular conduction and His-Bundle electrocardiograms. But even with such detailed electrophysiologic studies the diagnostic yield is often low. In a study of 34 patients with unexplained syncope Sajad Gulamhusein et al¹⁴ could detect diagnostic abnormalities in only four (4) patients. The authors concluded that the diagnostic yield of electrophysiologic testing is low in a patient population that has no electrocardiographic abnormality or clinical evidence of heart disease on routine examination. Hence, continuous ambulatory electrocardiographic monitoring is an excellent investigation to evaluate episodic unexplained syncope. But detailed electrophysiologic studies of the heart to detect rhythm abnormalities are not recommended.

If by history and the detailed examinations mentioned above an abnormality of the heart can be ruled out the question arises: "It is not in the heart is it in the head" ?¹⁵

If syncope can be ruled out, one is faced with the problem of seizure disorders. It is important to know the International Classification of Epilepsy* suggested by the International League Against Epilepsy. The history is the most important first step in the diagnosis of seizure disorders. The history is followed by a routine electroencephalogram. Special investigations like sphenoidal EEG and computerised Axial Tomography are indicated in special situations.

If one rules out syncope and epilepsy by investigation, there remains a group of rare disorders which need to be considered by the neurologist. Of these conditions perhaps psychogenic seizures merit special attention. This is a very interesting field and the confusion that can arise is revealed by confusion in terminology itself.^{16, 17} The various terms used are hysterical seizures, psychogenic seizures,

hysterical conversion reaction and pseudo-epilepsy. The term hysterical seizures is not an appropriate one, as many of these patients may not, and often do not have hysterical personalities. We prefer the term psychogenic seizures to underscore the fact that the apparent seizure has a psychogenic basis. This should not be confused with true epilepsy precipitated by emotional factors.

The diagnosis of psychogenic seizures and their differentiation from true epilepsy can often be made on clinical grounds alone. In psychogenic seizures there is usually no physical injury, tongue biting or incontinence. The seizure pattern is bizarre and may not correspond to one of the classical types of epilepsy. But this is not true in every case.

More often than not the differentiation between true and psychogenic seizures is so difficult, that the most accomplished Clinician would feel frustrated. When such a situation arises the physician asks for an electroencephalogram. This has the following obvious limitations.

1. A normal EEG does not rule out epilepsy nor does it confirm psychogenic seizures.
2. An abnormal EEG does not prove that a patient is suffering from true epilepsy as a patient suffering from psychogenic seizure may show EEG abnormalities that are unrelated to the primary problem.

Hence an inter-ictal EEG has got severe limitations. The diagnosis of psychogenic seizures are best documented by demonstrating that the EEG done during the clinical episode does not show any abnormalities.

This is now possible by the new technique of Telemetric EEG and video monitoring.¹⁸ With the advent of this technique it has been possible to study the EEG correlates of various type of seizures.

Various authors^{19, 20, 21}, have stressed the Importance of Telemetric EEG and Video monitoring in differentiating between true and psychogenic seizures. An important observation that is of clinical relevance, is that an epileptic patient can also suffer from psychogenic seizures and this type of seizure can often be facilitated by anticonvulsant therapy.²²

* "The New England Journal of Medicine" Vol. 308, No : 25, June 1983 Page 1509.

I shall illustrate the problem of psychogenic seizures with two (2) cases we have evaluated recently.

Case I: This concerns a girl aged 18 years who was referred to our Neurology Clinic as a case of grandmal epilepsy. The routine EEG showed minor abnormalities which could easily have been interpreted as compatible with epilepsy. However when the questionnaire on epilepsy was used in our seizure clinic, we were not convinced about the genuine nature of the seizures and hence she was admitted for observations. She was observed closely by a Medical Officer who clearly witnessed what was a typical and unmistakable psychogenic seizure episode. Subsequent evaluation revealed that there were a lot of intra-familial conflicts and her father was found to be a paranoid schizophrenic.

Case II: This relates to a 45 year old man who had suffered from classical temporal lobe epilepsy. Recently his seizures had increased in frequency and duration and increase of drug dosage to toxic levels did not benefit him. He was thought to be a therapeutic challenge until the possibility of psychogenic seizures superadded to the original temporal lobe epilepsy was entertained. Finally one day an attack could be precipitated by autosuggestion and during an electroencephalographic recording he had a seizure, but the EEG recorded was absolutely normal. This case represents the class of patients who have true epilepsy but who owing to socio-economic stresses have also superadded psychogenic seizures; and in our experience these are the most difficult clinical problems to resolve. The patient is now doing well with reduction of the anticonvulsant dosage and psychotherapy.

The technique of Telemetric EEG and video monitoring in epilepsy has opened up a new field of exciting research. This technique will hopefully be a fitting answer to many of the criticisms levelled against the EEG being a rational diagnostic tool in the investigation of epilepsy. In this technique the patient is allowed to move about in a room which has facilities for ordinary day-to-day activities. The patient can be monitored by electrodes attached to his scalp and a camera can be switched on as and when necessary and the patient can be watched from the control room. Special techniques make it possible to synchronize the video recording so

that the clinical attack and the EEG correlates can be compared simultaneously. By this technique it has been found possible to not only differentiate the psychogenic seizures from true epilepsy, but also to study the electroencephalographic correlates of rare types of epilepsy.

In any patient presenting with episodic disturbance of consciousness the possibility of transient ischaemic attacks must be considered. By definition the term 'transient ischaemic attack' means, a transient neurological deficit that clears up within 24 hours. Hence by the time the patient is seen, he may have completely recovered. A detailed neurological examination must be carried out in every patient presenting with episodic disturbance of consciousness to identify neurological signs which will point out the anatomical area affected and the vascular territory involved.

Transient disturbances in consciousness may result due to reduced cerebral blood flow. The reduction in cerebral blood flow can be caused by a variety of haemodynamic factors of which orthostatic hypotension is one of the commonest and easiest conditions to diagnose. Every patient who presents with the history of episodic unconsciousness must have his blood pressure checked in the supine and the erect postures. A history of intake of drugs liable to cause hypotension e.g. antihypertensives, must be obtained. Rarer causes of orthostatic hypotension include idiopathic orthostatic hypotension, familial dysautonomia and the Shy-Drager syndrome.

We will not elaborate upon conditions like cataplexy, infantile masturbation and day-dreaming which are by and large rare. However we must add that every human brain has the inherent capacity to convulse and all convulsions are not "epilepsies". Metabolic conditions like hypoglycemia, hypocalcemia and electrolyte imbalance can all cause a convulsion. It is to be repeatedly stressed that the resolution of the problem of episodic unconsciousness requires a thorough history, a good clinical examination and a finished clinical expertise. Special investigations have a useful but limited role to play.

Special problems in the Services—Is the crew fit to fly?

Special problems arise in the Services and the Army Medical Corps has to generally deal with them quite differently from similar problems in the civilian population. If a member of the Air crew has even a single episode of disturbance of consciousness, what should any Doctor do? This is not a mere academic question. Both in the Services, in Civil Aviation, and in civilian practice the principle goals are the same. We make reference to the papers by Harding et al in the British Medical Journal^{23, 24}. In our opinion a Pilot who has had even a single episode of disturbance of consciousness must be grounded immediately. He should be evaluated thoroughly and except in a case of proven unmistakable vasodepressor syncope the grounding must be reconsidered only under exceptional circumstances.

The impressions that are recorded here are my own clinical observations based on experience given to me as the Hony. Consultant in Neurology to the Armed Forces of India and they are personal views. It is our belief that these are sound guide-posts to be followed in any kind of medical practice, be it civilian, Service, or otherwise.

Conclusions

An overview of the Borderland of Episodic Unconsciousness is presented and the literature reviewed briefly.

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