Both patients are at the time of writing in clinical remission. Thymectomy corrected myasthenia gravis which had been present in Case 1.

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SOME CLINICAL EPILEPTIC ODDITIES*

BY

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In any gathering of people interested in the many intriguing problems of epilepsy, I fear that the so-called oddities among patients to whom I shall refer may be regarded as somewhat commonplace. But epileptic patterns and associations are so variegated that I am encouraged to mention some cases seen in recent years and to hope that other clinicians may describe odd features of which they have experience.

Epilepsy or Migraine

The peculiar relationship of epilepsy to migraine needs no emphasis. I would, however, like to mention first some examples of how these two conditions may at times almost fuse or overlap. Occasionally a patient subject to both forms of attack may develop warning sensations which are common to each. Thus, a woman of 36 had been subject to major epileptic attacks since childhood and typical migraine in recent years. For about an hour before the epileptic attacks she would experience familiar feelings of the *déjà vu* variety, and these would be accompanied by a series of coughing attacks and often by a feeling of panic until the onset of the convulsion. Major fits were almost always preceded by a prolonged warning of this sort, but on occasion her attacks of migraine were associated with exactly similar phenomena. Blurred vision and teichopsia then occurred in addition, but consciousness was not lost.

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On other occasions, without any warning, a patient may become unconscious during a severe attack of migraine and the loss of consciousness then generally resembles a brief akinetic epileptic attack. For instance, a girl aged 19 has characteristic attacks of migraine, as does her father. She says that, on occasion, when her headache is severe, her hands begin to tingle and feel enlarged, her limbs feel stiff, and she falls down in a brief attack of unconsciousness. She has never had any sort of faint or fall on any other occasion.

Another patient who suffers from migraine and who has a family history of epilepsy, describes similar attacks of unconsciousness at the height of a severe sick headache. She says that she falls down suddenly and may be picked up unconscious in the street, having hurt herself. She recovers consciousness after a few minutes to find that the headache has gone but she feels confused and drowsy.

Sometimes migraine is associated with attacks that seem more cataplectic than epileptic. Thus a man of 68, who has had migraine since childhood, began at the age of about 35 to fall down in some of his bouts of migraine. On such occasions he has a severe right-sided headache and suddenly falls forwards on to his knees. He says that he is not giddy and remains aware of his surroundings, but feels that he has to stay immobile for 15 to 30 seconds. He then stands up without difficulty, feels sick, and vomits shortly afterwards. He has never fallen on to his knees in this way except in association with a sick headache.

Inhibitory epilepsy, taking the form of transient hemiplegia, has its counterpart in hemiplegic migraine. The epileptic variety is usually an isolated event, whereas the migrainous type is usually associated with visual disturbances and followed by sick headache. Sometimes, however, it may be difficult to distinguish the one from the other. Thus, a man of 46, who has for some years been subject to classical migraine, recently had a sudden attack of loss of power of the right arm and leg without any associated sensory symptoms or subsequent headache or nausea. There was no impairment of consciousness, and the power returned suddenly, after about five minutes. He had an exactly similar attack later the same day. When seen next day there were no abnormal neurological signs and his blood pressure was normal. There is little in the attack itself to signify whether in this case it was a migrainous variant or an isolated inhibitory epileptic seizure.

Initial loss of sight (hemianopic or total) may form an inhibitory aura in both epilepsy and migraine, but, like the transient hemiplegia just mentioned, temporary blindness may occur as an isolated phenomenon. I have recently seen a female patient aged 27 who is subject to both epilepsy and migraine. These attacks are not preceded by visual loss, but on four occasions lately she has experienced isolated episodes of sudden and complete loss of vision. These are unassociated with headache or loss of consciousness and they have varied in duration from ten minutes to five hours.

Apart from migraine, there are some other conditions which, although usually independent, may be associated with epilepsy. An odd case of the almost coincident onset of sleep paralysis and epilepsy was as follows. A woman aged 30 woke up in the early morning, lying flat on her back and quite unable to move or speak for several minutes. She was frightened, but was fully aware of her surroundings; there had been no tongue-biting or incontinence, and her husband, who was with her, had not been disturbed. She had never experienced anything like this before, and her account is most suggestive of sleep paralysis. Next day she felt quite well, but late in the morning, while looking at a book, she suddenly felt far away, gave a cry, and had a major epileptic attack in which she bit her tongue and was incontinent. She had never had any sort of fit or faint before, and there were no obvious physical or emotional factors which might have influenced the onset in rapid succession of these two different forms of attack.

Clonic and Tonic Components

The relationship between nocturnal myoclonus and epilepsy has recently been emphasized by Sir Charles Symonds, and many epileptics are familiar with "the jumps." I would mention here a man of 22 who had had three major epileptic attacks and was also subject to myoclonic jerks. The point of interest was that fluid retention seemed to increase his liability to both fits and jerks. One of the fits had occurred after drinking a good deal of beer the previous night, and he had also noticed that myoclonic jerks occurred especially after beer-drinking.

Myoclonic jerks may precede an ordinary grand mal attack, and they may be the only positive motor component. For instance, a man of 30 has attacks in which there is a preliminary warning-feeling of depression and lassitude for about 24 hours. He then develops generalized myoclonic jerking of all the limbs. These continue for about ten minutes, during which time he is fully conscious and able to converse normally. He then suddenly loses consciousness and the jerking ceases. He remains limp and unconscious for a period varying from ten minutes to one hour.

Another patient, a woman of 30, has for some ten years been subject to very brief generalized myoclonic attacks, associated with momentary loss of awareness and sometimes incontinence of urine. These attacks are most likely to occur at menstruation or on first waking in the morning. She never falls down in an attack and sometimes the myoclonic jerks are unaccompanied by any impairment of consciousness. During the war both her shoulders were dislocated in an air raid, and in the next few years she spontaneously redislocated one or other shoulder about 20 times during myoclonic attacks.

In other cases of idiopathic epilepsy the motor component of the fit is confined to tonic contraction, and here again consciousness may be retained throughout the ictus. I have recently seen a man of 30 who has attacks of this sort. When he was 5 or 6 years old he began to have convulsive attacks, but, later, petit mal only. Now he has purely tonic attacks about three times a month. He generally gets a warning of a "fluttering feeling in the stomach, rising up to the throat"; his arms and legs then shoot out stiffly and he falls down. The onset is very sudden, and once he fractured some ribs in falling. There are no convulsive movements and there is no tongue-biting or incontinence. He is unable to talk, but says that he remains fully aware of his surroundings. After 10 to 15 seconds his muscles relax, he stands up, and he feels well.

A schoolboy of 14 gets similar tonic attacks in which he is said to extend his left leg and arm; but these attacks may be succeeded by convulsions and unconsciousness. On one occasion, however, he had a limited attack at school, and as his leg shot out he tripped up the teacher, who promptly caned him. He has also received regular phenobarbitone and phenytoin, and is now almost free from attacks.

Some Reflex Mechanisms

The onset of fits is often associated with odd circumstances. Reflex forms of epilepsy such as the acousticomotor and musicogenic varieties are well known. Certain types of music are specially apt to precipitate attacks in susceptible subjects, and organ music seems to be particularly potent. One of my patients has several times been carried out of churches and cinemas on this account. He found that he was upset by hearing organs played over the radio, especially when a tremolo or vox humana stop was used. A certain organist's signature tune was particularly obnoxious to him, and on hearing it he would develop a horrible sensation in the stomach, with numbness and tingling which proceeded usually to a major epileptic fit.

Photic stimulation of attacks, well known to electroencephalographers, may also occur under natural conditions. Apart, however, from the effect of flicker, exposure to a constant dazzling light may play a part in evoking a seizure, and, for what it is worth, I have on two or three occasions met epileptics who had had a major attack when using whitewash or white paint on the outside of a house or wall in very bright sunlight.

Overbreathing

Another mechanism which is regularly employed in electroencephalography to induce dysrhythmia may be observed sometimes under natural conditions. I refer to overbreathing, which is well known to induce unconsciousness or petit mal in susceptible subjects. The importance of this was recognized in the R.A.F. during the war. Dr. Denis Williams, in an investigation into causes of unconsciousness, confusion, or amnesia amongst aircrew while flying, concluded that an epileptic fit was probably responsible in a third of the cases. Moreover, he found that the most frequent indirect method by which these epileptic attacks arose was by the hyperventilation which accompanied severe emotional tension.

More peaceful examples of spontaneous overbreathing producing attacks, generally petit mal, are not uncommon amongst young people. I recently saw a boy of 16 who had had typical petit mal for three years. He said that about half of his recent attacks had been related to such incidents as walking fast, playing table tennis, or running to field a boundary at cricket. It was confirmed during E.E.G. recordings that, when he overbreathed, he developed clinical petit mal attacks, and these were associated with prolonged 3-per-second wave-and-spike outbursts.

Another patient, subject to petit mal, told me that when he was aged about 17 he won six races at school in the same day. They were all at short distances, and after each of them he had a petit mal attack.

A girl of 17, subject to occasional epileptic attacks, had been galloping on horseback. She pulled up, rather breathless, had a sinking feeling, dismounted, and fell in a limp state of unconsciousness for a few seconds. She said that on a previous occasion she had had a momentary attack of unawareness while galloping. She was advised to stop horse-riding, but later reported that the same thing had occurred when she had climbed Ben Lomond and was near the summit and out of breath.

A final example of the effect of overbreathing is that of a small girl, liable to petit mal, who has been seen to have attacks after blowing up toy balloons.

Micturition or Pain

On several occasions I have noticed that patients have reported having had epileptic attacks during voluntary micturition, usually when they have got up in the night. For instance, in 1950, I saw a man of 33 who in the previous five years had had four times fallen unconscious. On all but the last occasion he had just woken up or was feeling sleepy and had gone to pass water. There was no discomfort or warning of an attack, and he always remembered the beginning of micturition. He would then suddenly fall down limply and remain unconscious for half an hour or more.

Other patients have given similar accounts of falling unconscious when passing water, but, as this has always been after a nap or on getting up in the night, it may be that the physical process of micturition is less significant than the sleepy, newly awakened state in which it has occurred.

On rare occasions pain is encountered as an epileptic aura. I recently saw an epileptic woman who had severe abdominal cramp in the night and, on getting out of bed, fell unconscious. When she regained consciousness some minutes later the pain had gone. Some examples of this sort, however, are perhaps only exaggerations of the more usual types of visceral aura.

Another woman, aged 45, was referred to me on account of brief attacks of rectal pain which had occurred at irregular intervals and with increasing frequency for some 20 years. No local cause had been discovered. On questioning her, it soon became clear that many of the attacks of pain were followed by brief loss of consciousness and

that the rectal pain was in fact an epileptic aura. There were no abnormal neurological signs. She said that she did not feel faint from the pain itself, which was rarely severe, but she would become unaware of her surroundings for a few seconds or minutes. On recovering her senses there was no longer any pain. Her husband said that she looked pale and her eyes were open and staring during the attacks. She had never fallen, though she had been incontinent of urine in one attack. She had previously been subject to migraine but the epilepsy had never been recognized.

Preliminary Motor Phenomena

I will not refer to the strange and sometimes complex sensory auras which sometimes herald the onset of a fit, but I should like to mention some of the preliminary motor phenomena. It is well known that many epileptics are restless and irritable for some hours before an attack, and they can sometimes ward it off by keeping on the move. In some cases involuntary coughing is the first evidence of an attack, and I have already mentioned a woman whose major epileptic attacks were preceded by a series of coughing attacks, associated with sensations of *déjà vu* and sometimes panic. Another patient, a man aged 40, had had six attacks of suddenly falling unconscious. These attacks came without warning except that each was ushered in by a mild fit of coughing. It was impossible to reproduce an attack by making him cough violently or by compression of the vessels of his neck. Although the Valsalva experiment may cause fainting, there is no doubt that mild involuntary coughing attacks may be the first sign of the epileptic fit itself.

In other cases a fit may begin with spontaneous laughter. A boy aged 6 had occasional grand-mal attacks in the evening and petit-mal attacks during the daytime. The petit-mal attacks, which occurred up to three times daily, were associated with uncontrollable laughter. His mother said that he never used to laugh in this way and that he was quite unaware of his surroundings at the time. There is never any obvious cause for his laughter and he has no recollection afterwards of laughing.

Another epileptic patient, aged 20, often gives three or four piercing screams and runs several yards before falling unconscious. He says that he sometimes develops a frightening idea at these times, but is unaware of either screaming or running. Variants of this so-called cursive epilepsy consist of other sorts of automatic movement. Gowers described a patient whose fit began with his hopping round the room on one leg, and Kinnier Wilson referred to another who waved his right arm in circles before falling unconscious and convulsed. I have seen a man who often clasps his hands together three or four times before a major attack, and also a boy, subject to petit mal, who sometimes does a sort of tap-dance or automatically jumps vigorously up and down, quite unaware of his surroundings for a few seconds.

Some patients are liable to a vertiginous aura before a major attack, but on occasion the patient himself revolves. For instance, a man of 38 would often have warning of a major attack by a sudden brief sense of rotation, but on one occasion he was observed actually to rotate in space two or three times before falling to the ground unconscious. Similarly, a girl of 13, subject to major epileptic attacks for the past year, was seen to spin round before her last attack. Her mother wrote: "My daughter spun round like a top spinning, with eyes open, turned upwards—then fell on to her back unconscious."

Sequelae and Recurrence

The only comment that I will make on post-epileptic automatism concerns the odd compulsive repetition shown by some patients. Thus one middle-aged woman nearly always whispers a verse of a particular hymn, while a small boy of 4½ whom I saw some four years ago always hummed the Harry Lime theme from the film *The Third Man*.

A final point which I would mention, familiar to us all, is the liability at times of epilepsy which has long been dormant to recur unexpectedly when anticonvulsant therapy is stopped, even though this be done gradually. For instance, a young woman had had two major epileptic attacks when aged 17. She then began to take ½ gr. (32 mg.) of phenobarbitone twice daily. She continued this regularly for four years and remained completely free from attacks. She then had no phenobarbitone for one day, and on getting up the next morning she had a major attack. There was no obvious precipitating factor apart from stopping the drug. She resumed regular phenobarbitone and had had no more attacks when I last saw her some weeks later.

It may seem somewhat old-fashioned to-day to discuss this collection of purely clinical trivialities, but they are all manifestations of what Hughlings Jackson described as the "occasional, sudden, excessive, rapid, local discharges of grey matter," and the nature of these themselves is still the oddest thing about epilepsy.

MANAGEMENT OF BEHAVIOUR DISORDERS IN EPILEPTIC CHILDREN*

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New methods of investigation and new anticonvulsants have greatly improved the treatment of children suffering from epilepsy. The most intractable problem remaining is that of the management of behaviour disorders complicating the picture. The following report is intended to illustrate some of the difficulties and achievements that the treatment of these cases presents, for which special sessions of the children's department of the Maudsley Hospital are set apart. The material discussed has been selected by taking those cases which at first interview presented social problems necessitating further interview with their parents. It should be stressed that this group is a highly selected one, not generally representative of epileptic children. Henderson (1953) in a survey of epileptic children of school age, found only 12% presenting problems of behaviour.

At first interview a full social, psychiatric, and medical history is taken, as in the usual working of the clinic, and all children have a routine electroencephalogram (E.E.G.) done and intelligence tests. All the findings are discussed in a conference of the two of us with registrars and the psychologist who tested the patient. Of the 50 cases to be discussed, only 8 had not been seen at some other hospital previously and 33 of them had attended other child guidance clinics or children's hospitals. Twenty-nine of the cases were admitted for further investigation and treatment. Some of these admissions were mainly for psychopathological research or for neurosurgical investigations. Most of the cases could have been dealt with on an out-patient basis only.

One must determine as completely as possible not only the character of the epileptic attacks and their

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