Temporal lobe epilepsy (TLE), now more commonly called complex partial seizure disorder so as to include seizures that originate in the frontal foci, straddles the borderland between psychiatry and neurology. Since the condition may involve gross disorders of thought and emotion, patients with temporal lobe epilepsy frequently come to the attention of psychiatrists. But since symptoms may occur in the absence of generalized grand mal seizures, physicians may often fail to recognize the epileptic origin of the disorder. Indeed, misdiagnosis and failures of diagnosis are common in TLE. Fortunately, the illness is marked by certain "signature" symptoms that can aid in its identification.

John Hughlings Jackson observed in the late 1800s that seizures originating in the medial temporal lobe often result in a "dreamy state" involving vivid memory-like hallucinations sometimes accompanied by dj vu or jamais vu (interpreting frequently encountered people, places or events as unfamiliar). Jackson wrote of "highly elaborated mental states, sometimes called intellectual aura," involving "dreams mixing up with present thoughts," a "double consciousness" and a "feeling of being somewhere else." While the "dreamy state" can occur in isolation, it is often accompanied by fear and a peculiar form of abdominal discomfort associated with loss of contact with surroundings, and automatisms involving the mouth and GI tract (licking, lip-smacking, grunting and other sounds).

**Experiential Illusions**

In the 1940s and '50s, Wilder Penfield, a neurosurgeon at the Montreal Neurological Institute, artificially elicited "dreamy states" by cortically stimulating the lateral temporal neocortex, the anterior hippocampus or the amygdala in awake epileptic patients prior to their surgical resections. During these operating room experiments, the patients experienced what Penfield referred to as "experiential illusions."

These illusions involved an alteration, sometimes subtle, of the person's relationship to his or her environment, as well as emotional response to it. In contrast to psychotic persons, Penfield's patients remained fully aware that their altered interpretation was an illusion. A friend's voice may sound remote, or a well-known living room may appear unfamiliar, but the meaning is preserved, the voice does not become depersonalized, nor does the living room lose its identity. Even those patients describing feelings of unreality state that they know at the same time what reality is, observed Penfield. This is an important distinction from schizophrenia and other psychotic states.

For example, a patient of mine with temporal lobe epilepsy often feels compelled to stare for brief moments at a coffee table in her living room since, as she put it, "It just doesn't look exactly like my coffee table." After a few seconds, the feeling disappears. At no time does she think that the table has actually changed; the only thing that varies is her perception and "interpretation" of it. Altogether Penfield (Mullan and Penfield 1959) divided the illusions of interpretation into four groups: Auditory illusions accompanied by the perception that sounds were louder or clearer, fainter or more distinct, nearer or farther away; Visual illusions where things seemed clearer or blurred, nearer or farther away, larger or smaller; fatter or thinner; Illusions of recognition where present experience seemed familiar, strange, altered or unreal; and Illusions of emotion consisting of feelings of fear, loneliness, sorrow or disgust.

None of these groups of symptoms are unique to epilepsy. Migraine sufferers regularly experience illusions of sound, sight, taste and smell. True hallucinations—those without external stimulus—may occur in complex partial seizures, especially the classic olfactory or gustatory hallucination seen with uncinate fits.

In a psychiatric or neuropsychiatric practice, the most commonly encountered illusions of interpretation are those of emotion. Typically, these are sudden in onset and unrelated to conscious
experiences or anything in the environment:
A 40-year-old patient with a 20-year history of mental illness had been diagnosed at various times as having either schizophrenia or borderline personality disorder. She regularly experienced sudden episodes of dread that occurred without warning and without relationship to any inner experiences or anything happening around her.
On one occasion while waiting for a cab to come to her home to take her and her husband to an event they had both been looking forward to attending, she experienced such an overwhelming sense of dread she sank to the floor with a compulsion to hurt herself. Because of the strong visceral component to her symptoms and the inexplicable sudden change in mood, a neurological workup was ordered. An electroencephalogram (EEG) "showed the presence of an intermittent epileptiform disturbance confined to the right anterior and mid-temporal regions. EEG findings would be compatible with partial complex seizure disorder." On carbamazepine (Tegretol), she has been free of the seizures for 10 years.

In most instances, the emotion experienced as part of the seizure is a disturbing one variously described as dread or a feeling of impending doom; in others, the emotion may be experienced as pleasant or euphoric, as Dostoyevsky described. Since the feelings can arise de novo without any identifiable precipitant, an incorrect diagnosis of an acute panic attack may be entertained. Almost always, however, the patient will describe additional experiences that will help in the differential diagnosis. Included here is a strong visceral component to the symptoms: a feeling or sensation, almost always unpleasant, traveling upward from stomach to head. In an attempt to explain the experience, the patient will sweep his or her hands upward starting at the abdomen. Descriptions such as "a wave," "something flowing upward" are often employed.

Often such details must be elicited by careful, tactful questioning, because the patient will be reluctant to describe the experience; its intensity and bizarre nature arouses fears of insanity. The physician frequently can sidestep this reaction by asking: "Have your episodes ever involved anything strange?" with a lack of emphasis on the word strange, thereby suggesting that strange experiences are not at all unusual with these kinds of seizures. Another approach is to say: "On occasion persons who have experienced some of the things you have told me about have described other experiences they have been reluctant to discuss because they were afraid other people, even their doctors, might think them crazy." Questions about specific epileptic experiences should be delayed until the end of the interview to avoid suggestibility.

**TLE Personality?**
Controversy continues as to the validity of a so-called temporal lobe personality. Certainly, many of the patients tend to be obsessive and over-inclusive in their thinking, often satisfying some or all of the requirements for obsessive-compulsive personality; hyperphagia may be seen in some patients. Their speech and thinking is "viscous" and ponderous with a tendency toward loquacity and the insistence on the elaboration of fine and often tedious distinctions. Outbursts of irritability, rather than frank violence, are hallmarks of TLE.

When interviewing suspected TLE patients, it's important to inquire about their birth and any complications of the pregnancy. Forceps deliveries, now almost unheard of, were quite common years ago and led to compressive injuries of the brain, anoxic damage to Ammon's horn in the hippocampus and the subsequent temporal lobe epilepsy. Also ask about generalized seizures, head injuries, concussions, temper tantrums and, with males, a history of aggression, fire setting, truancy and impulsive behaviors. Has the patient experienced frequent dj vu, jamais vu, depersonalization, autoscopy or sudden mood swings accompanied by visceral or oral sensations? Do others complain that the patient often doesn't seem to be listening, appears to be daydreaming or otherwise preoccupied? Often the patients are aware of their lapses, and almost all of them experience some form of memory disturbance, even if nothing more than a vague inability to grasp things with sufficient precision.

Other rare presentations include anorexia nervosa (Signer and Benson 1990), multiple personality (Schenk and Bear 1981) or compulsive water drinking (Remillard, et al. 1981). Spitting and embarrassment have been described as the aura of a complex partial seizure (Devinsky and colleagues 1982; Hecker and colleagues 1972).

Finally, the clinician should inquire as to a family history of migraine, since migraine is overrepresented in families with TLE and can mimic the majority of TLE symptoms.

Tactful inquiry may result in anecdotal reports of sexual disturbances in some patients with TLE. Most common is a global hyposexuality affecting both libidinal and genital arousal. In individual instances, such patients may be mistakenly diagnosed as exhibiting hypoactive sexual desire disorder. These two can be distinguished by eliciting on history other hallmarks of temporal lobe epilepsy.
Complex Partial Seizures Present Diagnostic Challenge
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epilepsy. Although rarer than hyposexuality, a great variety of other sexual disorders may be encountered in TLE. These include fetishes, transvestic fetishes, sadomasochism, pedophilia, frotteurism and voyeurism. During the seizures, the patients may also experience genital sensations, even feelings of sexual excitement evoked by the epileptic discharges.

Episodes of frank psychosis can be the initial presentation of TLE: a 38-year-old businessman with a history of childhood staring spells and petit mal epilepsy confirmed by EEG, came under considerable work pressure and began an around-the-clock work marathon lasting two days. Suddenly, early in the morning of his second "all-nighter," he experienced a "realization" that his difficulties must be conveyed to the president of the United States. After his arrest at the White House and transfer to the psychiatric ward of a local teaching hospital, an EEG was ordered for him because clinicians uncovered a history of childhood epilepsy. It showed bursts of generalized spike/wave discharges consistent with a generalized seizure disorder.

A magnetic resonance imaging (MRI) scan showed "two foci of increased signal noted in the medial aspect of the right temporal horn associated with a widening of the right temporal horn." A neurology consult suggested the use of anticonvulsants only if the patient became "symptomatic." The psychiatrist concluded: "Since the patient had no observable physical symptoms of seizures, we would withhold the anticonvulsant at this time." On low doses of antipsychotics the patient improved, another tip-off that his psychosis was atypical in etiology. (Clinicians should note, however, that antipsychotics tend to lower the seizure threshold, thereby increasing patient's incidence of seizure.) At discharge he left the hospital uncertain and worried about what had happened to him. When I saw him in initial consultation several months later, the psychosis had cleared and he was no longer on any medications. Nonetheless, he continued to experience difficulties with memory and "getting my thinking exactly right." Neuropsychological testing showed "deficits consistent with the local or remote effects of a right temporal lesion." When placed on carbamazepine, the patient reported improvement in thinking and memory.

In retrospect, the most likely explanation was this: The lack of sleep and food coupled with stress led to the onset of a schizophreniform episode in a person with a latent seizure disorder. Because the episode was not associated with any signs of generalized epilepsy, it was not recognized as an example of complex partial seizure disorder by either psychiatrist or neurologist. After the psychosis had cleared, the patient was still left with a problem involving memory and focus originating from the hippocampus, a secondary effect of the abnormality in the right temporal region. The memory disturbance improved with anticonvulsant administration.

TLE also may be responsible for chronic rather than just acute psychoses. While any of the symptoms of schizophrenia may be encountered, paranoid traits are the most common. TLE patients can be distinguished from schizophrenic patients by the maintenance, when not acutely ill, of warm affect and good rapport. In addition to the history, the diagnosis of complex partial seizure disorder can be aided by EEG. However, since such diagnosis remains a clinical one, it should be noted that several negative EEGs do not rule out the diagnosis of TLE in a given patient. Other diagnostic aids include MRI, single photon emission computed tomography (SPECT) and positron emission tomography (PET). Interictal SPECT of cerebral blood flow is not nearly as helpful as ictal SPECT.

Even more sensitive, although not generally available, is PET imaging of interictal cerebral metabolism. PET permits greater spatial resolution and versatility. Only MRI can image the structural changes associated with the underlying epileptic process. Quantitative evidence of hippocampal volume loss is correlated with seizure onset in medial temporal structures.

The treatment of TLE is complicated by the fact that many times improved seizure control via anticonvulsants leads to deterioration of the neuropsychiatric status. Schizophrenia-like epileptic psychoses often emerge when anticonvulsants are normalizing or improving the seizure activity. If this antithesis isn't recognized, the psychosis will soon become more of a problem than the seizures. One expert, Dietrich Blumer, M.D., has gone so far as to claim: "It is probable that the modern schizophrenia-like epileptic psychoses are largely iatrogenic in nature, caused by modern ability to control seizures."

TLE management presents a conundrum. While the illness is an epileptic one and treated by neurologists, many neurologists remain unfamiliar with and even uninterested in its neuropsychiatric components. But by ignoring the experiential symptoms, the neurologist deprives the patient of the opportunity to coherently integrate all aspects of the epilepsy. It may also cement the patient's misconception that in addition to the epilepsy, he or she suffers from a "mental illness."

Total management of TLE by a psychiatrist is also not without problems. Although temporal lobe epileptic patients are particularly intriguing to psychiatrists because of the nature of the symptoms,
these "psychic" seizures can generalize at any time into psychomotor status or grand mal attacks. What's more, neither the timing nor the seriousness of grand mal episodes can be predicted; the initial generalized seizure sometimes occurs many years after the first manifestations of the illness and may culminate in status epilepticus and death.

For these reasons, a physician should undertake the treatment of TLE patients only if he or she has sufficient training and experience in the overall management of epilepsy. When this isn't the case, close collaboration between psychiatrist and neurologist offers the best venue for successful management of this fascinating "bridge" between neurology and psychiatry.

References: References

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