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## Epilepsy—Post-Traumatic or Not?

Irwin N. Perr, M.D.\*

**I**N A RECENT ARTICLE in this review,<sup>1</sup> an analysis was made of the various factors, both medical and legal, which must be evaluated in the litigation of a case involving possible post-traumatic epilepsy. Other writers<sup>2</sup> have discussed this fascinating medicolegal problem.

In a very recent case (February 1960), *Muscarello v. Peterson*,<sup>3</sup> there is a clear-cut example of one of these problems. Here there was a definite injury, with no doubt as to negligence. Following the injury, epilepsy developed; therefore the only question of moment was whether the injury was the proximate cause of the epilepsy or, to put it in medical terms, whether this was post-traumatic epilepsy or idiopathic epilepsy.

The lower court ruled that the epilepsy was not post-traumatic and awarded a verdict of \$2,000 to the plaintiff who appealed on the grounds that (1) the damages awarded were inadequate and the verdict was contrary to the weight of evidence; (2) there was error in the restriction of cross examination of the defendant's medical witness; and (3) the omission of a paragraph in a copy of the medical report by the defendant's doctor to the plaintiff constituted fraud.

The defendant had sought to prove that there was in fact no causal connection between the injury and the seizures and that the nature and extent of the plaintiff's illness, including the matter of permanency, were highly questionable.

The facts of the case were these. In a motor vehicle accident on June 5, 1955, the plaintiff, a six-year old girl, was thrown to the floor. She was probably rendered unconscious for a few minutes; the plaintiff acknowledged that there was only 'momentary' unconsciousness. After recovery, she complained of a discomfort in her 'side' and had a swelling of her left forehead; she was observed in a hospital for three hours and sent home. She did 'pretty well' until mid-August of 1955 when she had her first seizure, followed by others in rapid succession. In Sep-

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<sup>1</sup> Perr, Post-Traumatic Epilepsy and The Law, 8 Clev-Mar. L. R. 129 (1959).

<sup>2</sup> Friedman, Epilepsy and The Law, 84 Med. Times 1359 (Dec., 1956); Smith, H. W., Medico-Legal Facets of Epilepsy, 31 Tex. L. R. 765 (1953); Hamby, Medico-legal Aspects of Head Injuries, 56 New York State J. M. 1253; Hyslop, Seizures, Head Injuries, and Litigants, 31 J. Indust. Hyg. and Toxicol. 336 (1949); Barrow & Fabing, Epilepsy and the Law (1956).

<sup>3</sup> \_\_ Ill. App. 2d \_\_, 164 N.E. 2d 282 (1960).

tember, 1955, she was hospitalized by the family physician and diagnosed as having "convulsions of post-traumatic origin." At the suggestion of the family physician, she was referred to Dr. Frederick A. Gibbs, a national authority on epilepsy, for evaluation. An electroencephalogram on September 12, 1955, by Dr. Gibbs was reported as normal in all areas. On February 14, 1956, the patient was examined, at the request of the insurance company, by Dr. H. R. Oberhill, a neurosurgeon, who referred the patient to Dr. Gibbs for a second series of electroencephalograms. This second series, made on February 24, 1956, showed spike seizure activity in the right mid-temporal area indicating abnormality in that region. On April 1, 1957, Dr. Gibbs re-examined the plaintiff and made additional electroencephalograms at the request of the family doctor; these continued to show the same spike seizure discharges plus an additional abnormality elsewhere. Another series in November, 1957, by Dr. Gibbs revealed essentially the same findings.

Following his examination on February 14, 1956, Dr. Oberhill mailed a report of his examination to the insurance carrier. At that time she had had three seizures. These were described as follows: she would suddenly sit up, cry, and then begin to have jerking movements of the left side of the face, neck and shoulder but nowhere else. The first two episodes lasted a matter of minutes. The last one was longer, lasting possibly as long as forty-five minutes. She was placed on dilantin and phenobarbital with no further seizures, but the mother reported that she was not doing as well in school as previously. She occasionally complained of headaches. Dr. Oberhill described the mother as being a "rather sincere woman." He described the plaintiff as an "oriented, cooperative, rather quiet and rather chubby little girl of good intelligence. She spoke with no difficulty and in general was a most pleasant little girl. I was surprised at the extent of examination that we were able to carry out in one so young and am satisfied that our neurological examination was indeed most complete." The neurological and general physical examinations were within normal limits, as was X-ray study of the skull.

The last paragraph of the report was this:

We are confronted here with a rather difficult problem as to cause and effect. We cannot deny that Catherine is suffering from a convulsive state of a Jacksonian pattern, but what the cause might be I cannot say. With the accident having occurred some two months previously and with her having suffered a head injury which caused her to be unconscious for a brief period I cannot see how the two can be separated. In general I would expect a much more serious "head injury" with a long period of unconsciousness before the usual "30%" pertains. It has been our experience that people suffering extensive head injuries with long periods of unconsciousness may in some 30% suffer convulsive seizures at a later date. Though this may be merely coincidental, and the child might possibly have suffered convulsive seizures even without the injury, I cannot honestly say that we can separate the accident and her seizures.

A copy of this report which omitted the last paragraph was sent to the parents of the plaintiff by an agent of the insurance company.

Dr. Oberhill was called as a witness by the defendant and stated that in his opinion, based solely upon the facts in the hypothetical question, the injury and the epilepsy were not connected. He based this opinion on two premises, first, that a trivial trauma with momentary or no unconsciousness would not ultimately result in seizures, and second, that electroencephalograms are a most unreliable test and grossly overrated. He conceded that the plaintiff suffered from convulsions. Dr. Gibbs was called as a witness by the plaintiff and testified that the plaintiff's seizures might or could have been caused by the auto accident, based on the electroencephalographic studies and other information given. On cross-examination, he acknowledged that only a small percentage of all blows to the head results in a post-traumatic epilepsy and that while electroencephalographic abnormalities indicate brain disturbances, the latter often includes other disorders besides epilepsy. The family physician, who treated the plaintiff, testified that in his opinion the seizures or convulsions were the result of trauma sustained in the accident.

The above recital includes all the medical testimony reported by the appeals court, so any further discussion is based solely on this information.

The plaintiff contended that the damages awarded were so inadequate as to demonstrate prejudice against her or sympathy for the defendant or a gross misunderstanding of the evidence; however, she acknowledged that there was a rational basis for the jury verdict that the seizures were not the result of the automobile collision. The appeals court stated that it was solely within the province of the jury to ascertain, from among all the medical testimony presented, the facts on the issues of causal relationship and the nature and extent of injury, and that the record failed to indicate that the verdict was not the result of impartial and honest judgment or that it was clearly and palpably erroneous.

The plaintiff contended that she was prevented by the trial court from showing inconsistencies between Dr. Oberhill's report and his testimony on direct examination. However, this was not the fact. The counsel for plaintiff had an opportunity to examine the copy of the original letter and to cross-examine the doctor upon any statements by him in the letter at variance with his testimony on the witness stand; however, counsel did not attempt to cross-examine the doctor upon the opinion expressed in his letter to the effect that he could not separate the accident and plaintiff's seizures.

The plaintiff also contended that the false report to the plaintiff constituted a fraud. Subsequent to this report, the Illinois law was changed so that in such a case, a duplicate original of

the doctor's report must be furnished to the opposite party. Had this law been in effect, Dr. Oberhill would have been barred as a witness.

The court stated:

It requires considerable judicial restraint in discussing this reprehensible conduct of which someone on behalf of the defendant was guilty. The record reveals that this cruel deception was brought to the attention of the counsel for plaintiff upon the trial of the cause during the examination of Dr. Oberhill . . . The alteration of the doctor's report was made known to the plaintiff and her counsel during the examination of Dr. Oberhill. Unquestionably, plaintiff had the right not only to vigorously cross-examine the doctor on the substantial contradiction between his report and his court room testimony but also to argue this matter to the jury. The fact is, this was not done. Although plaintiff's counsel requested the copy of the original letter placed in the record, they did not request its admission for purposes of having the jury read it nor did they interrogate the doctor either on cross-examination or on direct examination as plaintiff's witness regarding any conflict in the views expressed by the doctor. It was in plaintiff's Amendment to her Motion for New Trial that she first raised this ground for new trial based upon the inconsistency of the omitted paragraph and the doctor's court room testimony. Since counsel had available to them at the trial all these facts, the trial court was justified in denying plaintiff's motion for a new trial.

### Discussion

The case presents clearly the medical aspects in ascertaining whether epilepsy is a result of injury or is a result of independent factors. As the court stated, the decision rests basically on medical evidence and its evaluation by the jury. Before proceeding to those elements favoring the plaintiff and those favoring the defendant, a few comments may be in order.

One may assume in a case, such as this, that the initial sympathy of the jury will favor the plaintiff. The plaintiff is a six-year old girl (at the time of the accident) described in most positive terms even by the defendant's medical expert. The liability of the defendant is clear-cut, the only question being that of the damages. In this case, there is no question of fraud or exaggeration of symptoms; the diagnosis of epilepsy is incontrovertible. It is likely that juries think of this disease with apprehension and revulsion. It is common knowledge that epilepsy is a chronic, unpleasant disease with marked social handicaps affecting the individual so afflicted. The educational potentiality, marital availability, and occupational facility of the epileptic may suffer grave effects—not only from the disease itself but from the fact of having been so designated. Whether this should be so is another matter; actually social attitudes in this regard are slowly changing. Another feature of this case is that it has been well-evaluated and, according to the evidence, well-treated. Each physician is well-qualified to testify as to his opinion; in addition to the polar points of view as manifested by the insurer's medical expert and the plaintiff's personal physician, Dr. Gibbs, an ac-

knowledgeable expert on epilepsy, occupies the unusual position of having been consulted by both parties. Another feature of this case is that, from the evidence presented in the court's ruling, the decision as to post-traumatic epilepsy might have been decided either way. Because of the balancing of the various factors favoring each side, it is probable that the manner of presentation, both by the medical experts and counsel for each side, played the most important role in the determination of the case.

Turning to the medical aspects of the case for further elaboration, those factors favoring the plaintiff will first be discussed:

1. The fact of the epilepsy itself, of course, is essential in such a case. There was no doubt as to this fact.

2. History—In this case, there is no history of previous epilepsy or other head injury which may have been the cause of the seizures. No abnormalities at the time of birth were noted nor was there evidence of any other intervening factors.

3. Time of onset after injury—The time of onset after injury, two and a half months, is most compatible with post-traumatic epilepsy. Different reports indicate that post-traumatic epilepsy develops after the injury: in three months in 55%, in one report; in one month in 42% in another report; in three months in 27% in a third report. Probably then about one third develop in the first three months following injury.

4. The response of the epilepsy to treatment—While this is not a very substantial factor, in general post-traumatic epilepsy seems to be milder in type and more easily treatable than other forms of epilepsy. The prompt response to treatment in this case indicates this factor, though of course, it casts doubt on the permanence of the disease (as indicated by the statistics of Dr. A. E. Walker).

5. The electroencephalographic record—As pointed out by the defendant's medical witness, the use of the EEG is fraught with danger. However, here the EEG is about as helpful as it can be. Several factors are present. The serial EEG's at various intervals indicate (a) No pathology in September, 1955, three months after the injury. (b) The presence of localized spike seizure activity eight months after the injury. (c) Extension was noted ten months and seventeen months after the injury. Thus a progression and leveling off of electrical abnormality is noted—a finding which is fully compatible with post-traumatic epilepsy. The larval epileptic outbursts found are three times as common in post-traumatic as in idiopathic epilepsy.<sup>4</sup> The unilaterality of the EEG is also in favor of the localized lesion of post-traumatic epilepsy. Gibbs himself<sup>5</sup> in a very important article reported that if a person has seizures and shows focal paroxysmal

<sup>4</sup> Williams, *Electroencephalogram in Traumatic Epilepsy*, 7 *J. Neurol. Neurosurg. and Psychiat.* 103 (July, 1944).

<sup>5</sup> Gibbs, F. A., Wagner, and Gibbs, E. L., *Electroencephalogram of Traumatic Epilepsy*, 100 *Am. J. Psychiat.* 738 (May, 1944).

abnormality three or more months after head injury, the chances are twenty-one to seven that he has the seizures as a result of the injury rather than as a result of the other known or unknown factors that produce seizures in an unselected group of epileptics (whether this is the EEG pattern in this case is not clear). Although not highly significant, post-traumatic epilepsy is slightly more common in lesions of the temporal and parietal areas.

6. The type of the seizure—the localized type of seizure (Jacksonian) is also compatible with a diagnosis of post-traumatic epilepsy.

Turning now to the defendant's contention that this is not post-traumatic epilepsy, the factors favoring such a view are these:

1. In general, post-traumatic epilepsy constitutes only four percent of all epilepsy as compared to eighty percent for idiopathic epilepsy. The preponderance of twenty to one in favor of idiopathic epilepsy is not particularly applicable to a specific case.

2. Age of onset—Idiopathic epilepsy characteristically has its onset during childhood or during the teens.

3. The minimal nature of the injury—this is the strongest factor against the diagnosis of post-traumatic epilepsy. In this case, there was only a mild concussion and even that is open to question. Many prominent neurologists believe that there is no correlation between such an injury and the onset of epilepsy. For instance, Penfield and Shaver<sup>6</sup> found that in 126 brain concussions, there were no cases of post-traumatic epilepsy. Even a non-depressed fracture of the skull has a low correlation with post-traumatic epilepsy. Here there is no depressed fracture or fracture of any kind; there was no evidence of brain damage at the time of injury. This lack of sufficient injury to the brain upon which is predicated the theory of post traumatic epilepsy is undoubtedly the strongest feature of the medical evidence in favor of the defendant. It is probably the most damaging fact of all to recovery by a plaintiff.

4. Lack of neurological deficit—No localized neurologic deficit connected with the injury was found. In Walker's series of cases,<sup>7</sup> 94.3% showed neurological damage.

5. Lack of post-traumatic amnesia—though not so significant a factor, it has been reported in one series of 38 cases,<sup>8</sup> that there was a post-traumatic amnesia of more than three hours in 28, under three hours in 8, and under one-half hour in 2.

<sup>6</sup> Penfield and Shaver, Incidence of Traumatic Epilepsy and Headache after Head Injury in Civil Practice, 24 Res. Publ. Ass. Nerv. Ment. Dis. 620 (1945).

<sup>7</sup> Quadfasel and Walker, Problems in Army General Hospital, 26 A. Res. Nerv. and Ment. Dis., Proc. 461 (1947).

<sup>8</sup> Garland and Walter, Traumatic Epilepsy, 35 Proc. Roy. Soc. Med. 773 (Oct., 1942).

6. The EEG—The EEG is not specific in post-traumatic epilepsy and, by itself, is often of dubious value. This point of view was obviously well-presented in the case at hand to negate one of the two strong features in the plaintiff's case (the other being the chronological relationship).

7. The mildness of the epilepsy—while not particularly a factor, this fact would be stressed in mitigating damages if such were awarded. The good response to treatment and apparent lack of further seizures would cast great doubt as to the chronicity of the epilepsy in this case.

Thus this case provides in miniature many aspects of the medico-legal factors in post-traumatic epilepsy. It indicates the difficulty in obtaining a clear-cut medical opinion where, in fact, none can be so given. The case also illustrates the importance of presentation of a case where there is contradictory medical opinion on which the jury must rely in reaching a decision. Problems such as these should be presented fully to both legal and medical groups. It is in the understanding of such difficult situations that the legal and medical professions may become more tolerant of each other's frailties.