MUTUAL RELATIONS OF THE RAILWAY SURGEON AND THE NEUROLOGIST.

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That the general surgeon and the neurologist should work together in the advancement of cerebral and spinal surgery is accepted by the best men of the profession. That the professional relations of the railway surgeon and of the neurologist should be more comprehensive and extend to nearly all cases of railway injury has not, to my knowledge, been generally recognized by the chief surgeons of the great railway systems.

A brief abstract from the reports of two cases of alleged railway injury will aid in bringing this subject before the Association for discussion:

Case 1.—J. R., in 1889, while climbing down from his upper berth in a Pullman sleeping car, was thrown to the opposite side of the car by some accident which caused the engine and one or two cars to jump the track. He was not rendered unconscious nor did he appear to be greatly injured. He told some fellow passengers and acquaintances who were on the car that his body felt sore and that he seemed dizzy. He got off the car and walked around the train for some time. On reaching Denver a day or two later he consulted one of the surgeons of the railroad company. The patient complained then of nervousness, sleeplessness, a headache and general discomfort in various portions of the body. On the surgeon finding no positive evidences of injury he soon dismissed the case as one of minor importance. The man became a semi-invalid, refused to work, as he said he was unable to do so on account of pain in his back. Six months after the accident he suffered from an attack of typhoid fever. After recovering from the fever he seemed to be in about the same condition of health as that which had preceded the typhoid attack. He consulted numerous physicians, and finally, on finding the right leg below the knee much smaller than the left, he began to limp and complain of pain in the leg. Two years after the accident a damage suit was brought against the railroad company.

At this time I was asked by the attorney for the plaintiff to examine the man. He walked with the assistance of a cane and exhibited a decided halt in his gait. Most of his former symptoms of nervousness had disappeared and he complained mainly of pain in the right leg and weakness of the muscles below the knee. The circumference of the right leg over the largest portion of the calf was nearly two inches less than that of the left. The tibialis anticus and peroneus group of muscles were the seat of the greatest amount of atrophy, but the calf muscles presented considerable wasting. All the affected muscles showed a decided lessening of irritability to the faradic current, and the tibialis anticus and peroneus longus presented the reactions of degeneration.

In short, all evidences pointed to poliomyelitis affecting the muscles of the right leg below the knee. All other symptoms that he then complained of were either feigned or greatly exaggerated. He positively stated that the right leg was perfectly normal before his fall in the Pullman car. He further insisted that the wasting had begun about a year before I saw him and that it had been steadily increasing. The electric changes were too pronounced for an ordinary case of progressive muscular atrophy, even of the peroneal type. It is well known, however, that we may have a focal poliomyelitis of traumatic origin, and from this gradual wasting of the muscles may ensue and result in a form of muscular atrophy of spinal origin. The

only way to determine this in the case under consideration was by watching the case for a year or more. A gradual increase of the trouble meant a progressive muscular atrophy which would ultimately prove fatal. I reported the results of my examination, together with my conclusions to the plaintiff's attorney. To my surprise, the lawyer did not hesitate to advocate the the gravest possible view of the man's condition. I argued with him that I could not say the trouble did not antedate the railroad accident many years, and that we had to depend upon the veracity of the patient, which was not good, in excluding a poliomyelitis dating from childhood.

The case was tried. I simply stated what I had found. The attorney for the plaintiff very shrewdly asked me no questions, further than to lead up to the fact that if the trouble had been progressive during the past year, as the patient stated, it would result in total disability and finally in death.

The attorney for the defense was an able lawyer, but ignorant of medicine. His efforts were principally directed toward showing that there was no spinal cord lesion. The physicians called by the defense had to admit there was some organic lesion. Again, to my chagrin, no questions were framed so that I could give my opinion in regard to the probable nature of the case. The man was awarded several thousand dollars damages. Before the case came to trial, as well as during the time of its progress, I learned that the man did not hesitate to pervert the truth when it suited his convenience, hence I suspected that the spinal trouble dated from childhood. Coloring was given to this view by the man never having complained of the right leg more than the left until muscular wasting was detected by a physician some time after the railroad accident. It evidently occurred to the man at the time the wasting was found by the unsuspecting physician that he had something definite on which to base a suit for damages, and he ceased to lay stress on his other troubles, mainly complaining of his leg.

I had an opportunity to study this case some two years after damages had been awarded the plaintiff. There had been no further wasting and the electric reactions remained the same as at the time of my first examination. I subsequently learned from one of the man's friends that he had been paralyzed during childhood and confined to his bed for some time.

The point on which I wish to lay stress is this: If a careful neurologic examination had been made at the time the man first consulted the surgeon for the railway, the poliomyelitis would have been detected and the company, in all probability, would not have been sued. Certain it is, that no damages would have been awarded had it been possible to prove that the accident on the railroad had had nothing to do with the condition of the man's leg.

Case 2.—R. E., age 52, traveling salesman, was well until 40 years of age (1880), when in a runaway, he was thrown from his carriage and injured his right shoulder. Six years later the right hand and arm began to be affected by a rhythmic tremor which was fine, most pronounced after exhaustion, but momentarily disappeared on moving the arm. In June, 1892, he had a severe attack of gonorrhea followed by cystitis. July 30, 1892, he was severely shaken up in a railroad accident on one of the Western roads.

He stated that up to the time of the accident the tremor had been limited to the right arm and hand and did not greatly interfere with his writing. Immediately following the accident his physician states that he had prostatitis, orchitis and cystitis with

severe pain in the back. Whether the shaking-up that he received on the road had anything to do with these inflammatory troubles is doubtful, as the man was addicted to the use of alcohol and was inclined to neglect himself.

Three days after the accident on the road, a tremor similar to that of the right arm and hand began to be manifest in the left hand. The right arm became worse and he wrote with difficulty. He remained in bed for thirteen weeks and was treated for bladder and other associated troubles. After he had been in bed some weeks he noticed that his right leg began to be affected by a tremor, and soon after this the left leg was involved.

A careful examination by me on Nov. 11, 1892, showed that the man was suffering from paralysis agitans. The right hand and arm had assumed the characteristic positions seen in this disease, the left hand remained constantly bent at the meta-carpo-phalangeal joints and the muscles that move the right leg at the knee were a little rigid. There was no rigidity of the muscles of the left leg. Tremor was well marked in the right arm and slight in the right leg and left arm. When he was excited there was a perceptible tremor in the left leg. Muscular weakness was pronounced in the right hand and arm, but in the other extremities muscular power was fairly well maintained. The patient was under my care for several months subsequent to Nov. 11, 1892. During this time the disease did not seem to make any progress.

A suit for damages against the railroad company was brought and the attorney for the plaintiff summoned me to testify in the case. I told him that the accident which had resulted in a few bruises on different portions of the body, had had nothing to do with starting the disease, but that it evidently had some influence in causing its extension. He seemed satisfied with this, but when I was on the witness stand he refrained from asking any questions, by answering which I could inform the jury that the man had been suffering from paralysis agitans for a number of years before the occurrence of the railroad accident in which he had been hurt. I was asked if I had examined and treated the plaintiff; from what he was suffering; the cause of paralysis agitans, and if an injury such as he had sustained in the railroad accident, was capable of giving rise to paralysis agitans or causing its rapid extension. I was not asked either by the attorney for the plaintiff or defense whether I knew or thought the accident in question had been the cause of the disease from which the plaintiff was suffering. The medical witnesses for the defense honestly admitted that the man was suffering from paralysis agitans, and as they knew nothing of his history they were free to admit that the injury received in the collision was the probable cause of the disease. The man was awarded \$7000 damages by the jury and the whole amount with interest was paid about eighteen months later.

How easy it would have been to prevent such an exorbitant award for damages had it been known by the attorney for the defense that paralysis agitans had existed for years before the railroad accident. The urethritis from which the man suffered a month or so before he was shaken up on the railroad was the probable cause of the cystitis, orchitis and prostatitis, but the attorney for the plaintiff made it appear to the jury that these resulted from the injuries received on the railroad.

It may be thought by some that I was in the wrong in not telling the jury that the nervous trouble from which the man was suffering antedated the railroad accident about six years. Witnesses are sworn "to tell the truth, the whole truth and nothing but the truth."

The understanding that I had with the plaintiff's attorney was that he only claimed damages for the rapid progress of the disease caused by the accident, and in consequence a probable shortening of the man's life by a number of years. The questions asked me by the plaintiff were absolutely fair. The principal one was: "May an injury, such as the plaintiff is alleged to have received, be the cause of paralysis agitans or result in its extension?" There could be but one answer to this. Up to the time of my cross-examination I believed that the attorney for the plaintiff intended only to put in the plea of exaggeration of the disease and shortening of life. As soon, however, as it was found that the attorney and witnesses for the defense knew nothing of the man's history previous to the accident of 1892, the way was open to claim that the railroad company was responsible for causing the disease. I had left the witness stand before I saw the turn the attorney for the plaintiff had made. I could not then interfere. Although a witness is sworn to tell the whole truth, yet the expert witness is usually limited to opinions at which he has arrived through special training in a particular line. Once, while on the witness stand testifying as an expert, I saw that the attorney who had summoned me in the case, by shrewd questioning was perverting the truth so as to make my testimony very unfair to the opposite side, and I requested an opportunity to explain, but the judge reminded me that it was the business of the attorney for the defense to look out for his client.

In the second case reported in this paper injustice to the defendant could have been prevented by the railroad company having had a careful neurologic examination made of the man's condition soon after the occurrence of the accident. A complete history of the man's health up to that time would have thrown light on the case.

I have not found that people who have been injured on a railroad object to a careful examination by a physician employed by the road, if the examination is proffered soon after the occurrence of an accident, before an attorney is consulted. It is at such a time that a fairly accurate history of the injured person's health can be obtained by the physician of the road.

The injured are at first anxious to ascertain the extent of their disabilities and the probable results of their injuries, and the more attention that is paid them by officials of corporations the more communicative and confidential they become.

I have been acting as consulting neurologist to one Western railroad for a period of about nine years, and during this time I can recall numerous cases of injury for which claims for damages without suits have been settled for nominal sums, because careful examinations of the injured had been made soon after the occurrence of the accidents. In numerous other instances suits for damages have not been brought, or if brought the parties have received no damages on account of the company being able to show that certain states of ill health antedated the accident in which the persons claimed to have been injured.

In conclusion, I wish to say that I believe every

railroad or large corporation should have a consulting neurologist, and that the chief surgeon of the road should insist that a careful neurologic examination be made of most of the injured as soon after accident as possible, especially in those cases in which there is likely to follow a suit for damages.

DIAGNOSIS OF TYPHOID FEVER.

Read at the Anniversary Meeting of the Calhoun County Medical Association at Battle Creek, Mich., Dec. 12, 1897.

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The diagnosis of typhoid fever is a very modern achievement. A long list of diseases has been recognized by physicians from the time of Hippocrates, but the disease-entity which we call typhoid fever was not recognized as a separate disease until the early part of the nineteenth century. The name typhoid was bestowed upon it in 1829, but even then it was confused with typhus fever, and it remained for a distinguished American physician, Gerhard of Philadelphia, finally to differentiate it from all other fevers. This was in 1837. It was less than ten years before the discovery of anesthesia by ether. Pause and consider with what rapidity the science of clinical diagnosis has developed. Within the memory of physicians yet living, typhoid fever, now one of the corner stones of a medical education, was for the first time differentiated as a truly distinct disease. This remarkable fact allows one to doubt the reputed powers of close and keen observation in our medical forefathers.

However, we must recognize today the great difficulty of diagnosing the continued fevers from clinical symptoms alone. The cautious practitioner is wary of giving an early diagnosis. Long differential tables of symptoms still fail to give much certainty to his conclusions when he is called upon to decide in the beginning between such diseases as scarlatina and measles; tonsillitis and diphtheria; or simple continued fever, bilious fever, septicemia, miliary tuberculosis, malaria and typhoid fever. In the first days of almost any fever not accompanied by an eruption as in measles, or a local sign as in tonsillitis, the possibility of typhoid fever arises in the mind of the attending physician. He watches for an ascending pyrexia with morning remissions, a diarrhea, an abdominal tenderness, an enlargement of the spleen, and a rose-colored eruption over the abdomen; but he has to remember that the eruption is absent in 30 per cent. of cases and indistinct in half the remaining, that the enlargement of the spleen may be present in malaria and other diseases, that diarrhea may be absent or replaced by constipation, and that the fever curve has no constant characteristics whatever. So uncertain is the early diagnosis, that if the temperature drops on the tenth or fourteenth day the physician is often undecided in his own mind whether the patient really did have typhoid. If he has been shrewd enough not to have committed himself he is likely to call such a case bilious fever.

To illustrate the truly serious difficulty of making a differential diagnosis in some cases, at any stage, I will quote a few passages from Osler's "Practice of Medicine," second edition. He says (p. 33) "The early and intense localization of symptoms in certain organs is a frequent source of error in diagnosis. The following are the most frequent deviations from the normal course: *a*, onset with pronounced ner-

vous symptoms; *b*, with pronounced pulmonary symptoms; *c*, with intense gastro-intestinal symptoms; *d*, with symptoms of acute nephritis (p. 13). Cases coming on with severe headache, photophobia, delirium, twitching of the muscles and retraction of the head are almost invariably regarded as cerebro-spinal meningitis. I have thrice performed autopsies on cases of this kind in which no suspicion of typhoid fever had been present, the intense cerebro-spinal manifestations having dominated the scene. Fully one-half of the cases of the so-called brain fever belong to this category. Misleading pulmonary symptoms occasionally develop at the very outset of the disease. The bronchitis rarely causes error though it may be intense and attract the chief attention. More difficult are the cases setting in with a chill and followed rapidly by pneumonia. I have brought such a case before my class one week as typical pneumonia and a fortnight later shown the same case as undoubtedly one of typhoid fever. In another case in which the onset was with definite pneumonia, no spots developed; and though there were diarrhea, meteorism and the most pronounced nervous symptoms, the doubt still remained whether it was a case of typhoid fever or one of pneumonia in which severe secondary symptoms developed. There is less danger of mistaking the pneumonia which develops at the height of the disease, and yet this is possible as in a case admitted a few years ago to my wards; a man aged 70, insensible, with a dry tongue, tremor, ecchymosis upon the wrists and ankles, no rose-spots, enlargement of the spleen, and consolidation of his right lower lobe. It was very natural, particularly since there was no history, to regard such a case as senile pneumonia with profound constitutional disturbances; but the autopsy showed the characteristic lesions of typhoid fever" (p. 33-34).

"The differential diagnosis between general miliary tuberculosis without local manifestations and typhoid fever is extremely difficult. The cough may be slight or absent. Diarrhea is rare in tuberculosis; the bowels are usually constipated, but diarrhea may occur and persist for days. In certain cases the diagnosis has been complicated still farther by the occurrence of blood in the stools. Enlargement of the spleen occurs in tuberculosis, but is neither so early nor so marked as in typhoid fever. In children, however, the enlargement may be considerable. The urine may show traces of albumin and unfortunately the diazo-reaction which is so constant in typhoid fever, is also met with in general tuberculosis" (p. 219). "Typhoid fever has been mistaken for appendicitis. I was told of a case recently, in one of the large hospitals of this country, in which the fever and the presence of a tender induration in the right iliac fossa seemed to indicate appendix disease so clearly that an operation was performed, but the induration was found to be the swollen ileum and adjacent glands. In a person who has had a previous appendicitis the diagnosis might be extremely difficult, as in a case mentioned by Da Costa. Late in the convalescence of typhoid fever the symptoms of appendicitis may develop, due to the perforation of an unhealed ulcer" (p. 440).

These extracts from Osler show us that even a master may in some cases be unable to make the diagnosis of typhoid fever, except by autopsy. In this connection it might be said that a custom of holding more frequent postmortem examinations would ele-