THE RELATION BETWEEN TRAUMA AND TUBERCULOSIS:

FROM THE POINT OF VIEW OF ACCIDENT,
INSURANCE.*

BY

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I ASSUME that the opener of this discussion will have dealt with what I may call the theoretical aspects of the subject, so I propose to limit my remarks to its practical points in connexion with the Workmen's Compensation Acts. It is, I think, obvious that in the large majority of the cases in which tuberculosis has been said to supervene upon an injury the relation, if any, must be an indirect one, not one of direct infection by tuberculous material, such as is said to occur in the case of butchers' warts and allied conditions. By indirect I mean that there is no suggestion that the accident forming the basis of the claim resulted in the introduction of tubercle bacilli into the body of the workman; the assumption is that in some way the trauma activated some focus of tuberculous infection, the existence of which it is now customary to postulate in the majority of the population.

The possible cases of "traumatic tuberculosis" that may arise in this indirect manner may be classified into the following groups:

A. *Those in which there is a history of previous clinical tuberculosis in the worker.* These may be subdivided into:

- (1) Cases of alleged recrudescence of the disease at its original site, as a result of injury at that site.
- (2) Cases in which the injury is said to have generalized the original disease (quiescent or otherwise), resulting in miliary tuberculosis.

B. *Those without a previous history of clinical tuberculosis.* These may be subdivided into:

- (3) Cases in which tuberculous disease ensues at the site of an injury.
- (4) Cases in which pulmonary (or miliary) tuberculosis arises after an injury in some part other than the chest.

Before dealing further with these four groups I think it well to emphasize the legal aspect as to the points on which it is necessary for an applicant under the Workmen's Compensation Acts to satisfy the court in order to obtain an award. He has to show that there is some incapacity—partial or complete—for work, and that this incapacity has followed an accident (or disease) arising out of and in the course of his employment. But it is not necessary for him to show that his incapacity is *entirely* due to the accident; it is sufficient for him to establish that the injury is a link in the chain leading up to his incapacity, even though it is only the last link in a long chain of causal factors. From this point of view liability under the Workmen's Compensation Act is entirely different from that under the ordinary accident insurance policy, in which the company accepts liability only when the incapacity is due "solely and directly to violence occasioned accidentally by external and visible means." From this aspect it is doubtful whether any cases of "indirect" tuberculosis would constitute a tenable claim under an accident policy, since it is difficult to imagine such a condition as having arisen "solely and directly" from an accident as defined.

1. *Recrudescence of a Pre-existing Focal Tuberculous Lesion.*

In my experience claims of this type are not so common as might be expected. Unfortunately I have no records of the cases that have come under my notice, and the following is the only one of this group that I can recall.

A female domestic had suffered from a tuberculous hip in early childhood, which had healed after operative treatment, leaving an ankylosed hip, with some shortening. In the course of her work she slipped and fell on the injured hip. It was not a particularly severe fall, and did not incapacitate her at the time. A week or two later the hip, which had given no trouble for several years, began to be painful, and the trouble gradually increased

until she had to give up work, and was found to be suffering from active tuberculosis, with a breakdown of the old sinus, necessitating further operative treatment.

Needless to say, this case caused no difficulty from the medico-legal standpoint; it was a clear case for liability under the Act. One can, of course, imagine a case on these lines in which a longer interval occurs between the accident and the recurrence of the disease; in such an event it might well be argued that the recurrence was not the result of the trauma. I will return to the importance of the "time factor" in my comments on Group 3.

2. *Miliary Tuberculosis Following Trauma at the Site of a Tuberculous Focus of Disease.*

In 1910 Dr. F. Parkes Weber read to the Life Assurance Medical Officers' Association an excellent paper dealing with traumatic tuberculosis. In it he quoted a striking example of this group of cases.

A man, aged 33, received a blow on the left testicle, "followed by local and general symptoms." Eight days later he had a rigor, and seventeen days after this he died of miliary tuberculosis. Necropsy showed that the left epididymis contained "a softened, caseous nodule smaller than a small cherry." Both lungs were full of miliary tubercles, but no other tubercles were found except a few in the renal cortex.

There seems little room for doubt that the blow on the testicle led to the dissemination of the infection from the old caseous focus at that site. A good many similar cases have been recorded in surgical literature—of miliary tuberculosis as a sequel to operations on tuberculous bone or glands, or the forcible manipulation of a tuberculous joint. In a case of this type the relation of the trauma to the fatal issue is so clear that it will present no difficulty should the question of the liability of an employer under the Workmen's Compensation Act arise.

3. *Cases of Tuberculosis Arising at the Site of an Injury, without History of Previous Tuberculous Disease.*

Cases of this nature are common, and frequently constitute a difficult problem for the conscientious practitioner who is called upon to offer an opinion as to the relation between the injury and the ensuing disease. A typical example of this sort of case would be as follows: A worker, in the course of his work, slips and twists the knee, with the result that it swells; a synovial effusion is diagnosed, and the worker lies up for a time, while the effusion is gradually absorbed. In due course he returns to his job, apparently well. But either at once, or weeks or months later, the joint gradually becomes painful, and ultimately is diagnosed as tuberculous. In such a case a claim is frequently entered against the employer for the resulting disability, and the medical man is called upon for an opinion as to how far, if at all, the accident is a causal factor. It is, I think, obvious that there is little scope in a case of this sort for a dogmatic "Yes" or "No"; the opinion must be reached by a consideration of the probabilities for and against a causal relation. On the one hand there is the undoubted fact that many, if not most, cases of tuberculous arthritis develop without any history of trauma. On the other hand, there is a considerable *a priori* plausibility in the argument that trauma, by injuring the tissues, renders them more liable to become the seat of infection; and it is, in fact, the current teaching in most textbooks of surgery that slight injuries do predispose to tuberculous arthritis. It is, indeed, hardly a matter for surprise that the medical evidence in these cases is apt to prove puzzling to the county court judge, especially if he should be sitting without the help of a medical referee.

Is there any working rule that the harassed practitioner may take for his guidance in such a case of "traumatic tuberculous arthritis"? I can only define my own line of procedure when called upon to decide whether a particular patient should be encouraged to enter a claim. I refrain from dogmatizing, but state in my report that it must remain a question of probabilities; if there is a history of the injured part never having quite recovered, but of having gradually drifted into a state of disease, then I am willing to testify as strongly as possible in favour of the workman. If, on the other hand, there is a history of a clear interval of apparently full recovery between the

* Read in a discussion in the Section of Tuberculosis at the Annual Meeting of the British Medical Association, Cardiff, 1928.

injury and the onset of disease, I always take the line that the doubt is too great to permit me to uphold a causal connexion between the two conditions. One may, of course, be doing an injustice to the workman in taking this attitude, but if, as I read the law, the onus is on him to establish his case—that is, to convince the court that the balance of probability is definitely in favour of his plea—I cannot see on what grounds one can support his claim except to agree as to the *possibility* of its being correct. I willingly admit that there is little logic, and less science, in this arbitrary rule, but, provided it does not assume the pose of pontifical infallibility, a touch of dogma is of more practical help in the dispensation of justice than the cleverest exposition of scientific agnosticism.

4. Cases in which Pulmonary Tuberculosis Arises after an Injury to Some Other Part of the Body.

These are perhaps the most difficult cases of all in which to try and hold evenly the scales of justice between the workman and the employer. In none is there greater need to bear in mind the fallacy of *post hoc, ergo propter hoc*. The Pensions Boards have had, as is well known, a difficult task in dealing with the large numbers of cases of pulmonary tuberculosis alleged to be caused, or aggravated, by military service. The problem is similar in workmen's compensation claims: How far, if at all, is the development of pulmonary tuberculosis in an injured workman attributable to the effects of the precedent accident? The comments made above under Group 3 apply, in principle, here. If the injury is one which produces "constitutional disturbances" to a severe degree, leading to severe debility, and the pulmonary tuberculosis gradually supervenes without any return to normal health, then I think that the balance of probabilities is strongly in favour of the injury having been a causal factor in the development of the disease. The following case may be cited as an example.

The workman was a lad of 18, of good personal history, employed as an electrician's mate.

Family History.—Father, mother, and sister were strong and healthy. One brother developed pleurisy in June, 1924; he was sent to a sanatorium for six months and made a good recovery. No relative had ever had "consumption."

On March 17th, 1923, while working at an electric light fitting in a meat-shop, he fell, being impaled on a meat hook, which penetrated deeply into his left buttock. This caused profuse bleeding, and he was taken to St. Bartholomew's Hospital, where he was an in-patient till June 21st, 1923. The wound became septic, necessitating irrigation by the Carrel-Dakin method. An x-ray photograph, on May 10th, showed "considerable bony destruction of tuber ischii." Up to this time the boy was seriously ill, with high fever.

On May 15th sequestrectomy was performed. After this the cavity gradually healed, the temperature settled to normal, and he was sent to a convalescent home on June 21st.

He returned to work on August 13th, but had to give up after fourteen days, as the wound broke down superficially.

On October 8th he started work again, and remained at work till May, 1924, when he had to give up, as he felt too ill to continue. During all this period he felt weak and seemed to get thin, and in the latter part he fainted twice when at work.

In June, 1924, he was certified by his panel doctor to be suffering from "early pulmonary tuberculosis," and in July he was admitted to the King George V Sanatorium. His condition became worse, and he was discharged—taken home by ambulance—on November 7th, 1924.

He died of pulmonary tuberculosis and tuberculous enteritis on August 11th, 1925. There was no *post-mortem* examination.

In this case I felt justified in giving the opinion that the prolonged septic illness resulting from the accident was at least a contributory factor in the evolution of the phthisis. Proceedings were accordingly taken against the employer, and, after the usual "conflict of medical evidence," judgement was given in favour of the applicant (who died two or three weeks after the hearing).

In contrast to the above, I should like to summarize another case, in which I was not directly concerned. It was that of a man who, in the course of his work, received a small piece of metal in his eye. It set up a traumatic cataract in the eye, which kept the man from work for over a year. As a result he had a good deal of mental worry, and perhaps some actual privation from reduction of income. Two years later he was diagnosed as suffering from phthisis. In this case also it was adjudged that the injury to the eye played an effective part in the develop-

ment of the phthisis, and he was awarded compensation under the Act. Personally I disagree with this decision. I do not think that one could go further than to admit the *possibility* of it having played such a part; to assume, as the judgement implied, that there was a strong probability that, without the accident, the man would not have developed phthisis, seems to me unjustifiable and to be a loading of the scales against the employer to an unwarrantable extent.

In conclusion, I would again emphasize that the whole problem for the medical practitioner confronted with the duty of giving an opinion on the relation of trauma to ensuing tuberculosis is in his estimating the probabilities of a causal relation. If he is satisfied, from a review of the whole case, that the balance is definitely in favour of the view that, without the trauma, the ensuing tuberculous disease would not have developed when it did, then, and only then, is he justified in supporting a claim under the Workmen's Compensation Act; if, on the other hand, he comes to the conclusion that the causal relation, while possible, is not definitely probable, then he should say so, and refuse to support the claim.

Memoranda :

MEDICAL, SURGICAL, OBSTETRICAL.

AN UNUSUAL CASE OF OBSTRUCTION OF THE SMALL INTESTINE.

THE following case, in view of the rarity of the condition, appears to be worth recording.

A carter, aged 36, was admitted to a medical ward of the Royal Alexandra Infirmary, Paisley, under Dr. William Clow, with the complaint of periodical attacks of abdominal pain of two years' duration. The pain began to the left of the umbilicus and appeared to pass to the right side somewhat lower down. This pain was not associated with the taking of food, but on two occasions, about the time of his admission to hospital, it was relieved by vomiting. Latterly on two or three occasions visible peristalsis was seen to begin in the left hypochondriac region and to travel in a ladder-like pattern to the right iliac region. The bowels were regular; there was no distension or rigidity, but some deep tenderness was present to the left of the umbilicus. The patient had a small epigastric hernia, and pressure on this with reduction seemed to give ease, and on one occasion completely abolished peristalsis. For this reason the hernia was cured by a minor operation, but this gave no relief to his symptoms. A barium meal followed by an x-ray examination did not reveal anything abnormal. An exploratory operation was now performed, and a tight annular stricture was found on the small intestine towards the lower end of the jejunum. Higher up there was a band, probably the result of old tuberculosis of the mesenteric glands, and this was divided. The area bearing the stricture and two nodules in the mesentery were excised, and an end-to-end anastomosis was done. The patient's recovery was uneventful.

Dr. Mary Baird Hannay, pathologist to the hospital, reported on the specimen as follows:

"The specimen, after fixation, measures about 3½ inches in length. There is a constriction 1½ inches from the wider end. The lumen at the cut surface of the narrower end of the bowel is 1½ inches in diameter, and at the wider end 2 inches. The constricted area shows some puckering, and measures about 1 inch in transverse diameter and about 1/8 inch in longitudinal section. There is an acute angle at the constriction on the anti-mesenteric border. Opened along the mesenteric border the specimen shows a slightly irregular ulcer completely surrounding the bowel opposite the constriction and measuring 1/2 to 3/4 inch in width. The lumen towards the narrow end of the bowel would admit a large probe; that towards the wider end would admit the little finger. At the constriction the bowel wall is 1/4 to 3/8 inch thick. The muscular coat of the wider piece of bowel is 1/8 inch thick, and that of the narrower 1/16 inch.

"Microscopically a section through the constriction shows an irregular glandular growth on the mucous surface infiltrating the muscle and almost reaching the peritoneum. It has the characters of a glandular carcinoma. One of the nodules from the mesentery is a lymphatic gland, and shows secondary tumour growth both inside the gland and outside the capsule. The other nodule is new growth, but is apparently not in a lymphatic gland."

The pathological condition in the small bowel appeared to be the primary focus, and no other areas were found to be diseased.

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