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Traumatic Cancer in Workmen's Compensation

James T. March*

THE LONG STANDING ASSUMPTION that there is no relation between trauma and cancer is being gradually overcome by medical and legal re-evaluation of this question.

For purposes of this paper, it will be assumed that an injury occurred in the course of employment and that a resultant claim has been allowed by the Bureau of Workmen's Compensation. Trauma may be chemical, thermal or mechanical, and if mechanical, may be single or repeated. Chemical, thermal and *repeated* trauma will be excluded however, as all three "are widely accepted as causally related to cancer."¹ By "trauma," is meant a "single . . . more or less contusing, crushing or lacerating injury."² Cancer has been defined as "a malignant tumor, made up chiefly of epithelial cells; carcinoma." Epithelium is "the covering of the skin and mucous membranes, consisting wholly of cells of varying form and arrangement."³

The real problem, however, is that of establishing a relation between the trauma and cancer. Cancer may occur immediately or at almost any subsequent time. The time difference is due to the fact that malignancy may not appear until some months or years later, if it is not discovered at the time of the accident.

Intensive studies on this subject started after 1863.⁴ In 1877 Cohnheim published his theory that tumors may lie dormant and quiescent until stimulated to reproduction or growth.⁵ Ribbert, a well known pathologist, agreed with this view.⁶ Knox

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¹ 5 Frankel, Holloway, Jr., McMaster & Redden, *Lawyers' Med. Cyclopedia* 506 (1960).

² Ewing, *Neoplastic Diseases* 103 (4th ed. 1940); 5 Frankel, *op. cit. supra* note 1.

³ Dorland's *Illustrated Med. Dictionary* (23d ed. 1959).

⁴ Brahdly & Kahn, *Trauma and Disease* (1941)—ch. XV, *Trauma and Neoplasms*, Leila Charlton Knox, M.D., at 487; 5 Frankel, *op. cit. supra* note 1.

⁵ *Ibid.*

⁶ *Id.*

stated⁷ that "Cohnheim's theory is still acceptable." In 1898 Coley reported that out of 46 cases of sarcoma with a history of trauma, a relation was found to be "fairly convincing."⁸

In 1913, Von Buenger combined reports from large German clinics for five-year periods on cases in which the tumor could be attributed with certainty, or with a probability bordering on certainty, to a single trauma. Traumatic etiology was accepted in from two to fourteen per cent of the cases reviewed.⁹

Even greater activity started in the 1900's, and the whole subject was discussed at the Second International Conference on Cancer in Paris, in 1910. Postulates (conditions which must be met) resulted, which were widely accepted in Europe and the United States. They justified, when satisfied, the conclusion of a causal connection between a single trauma and cancer.¹⁰

These postulates, published by Moch and Ellis in 1926 for medicolegal application,¹¹ are as follows:¹²

- (1) Reasonable proof of authenticity and adequacy of the trauma.
- (2) Previous integrity of the wounded part.
- (3) Origin of tumor at exact point of injury.
- (4) Reasonable time limit between injury and tumor appearance (three weeks to three years).
- (5) Positive diagnosis of presence and nature of the tumor.
- (6) History of definite bridging signs.

James Ewing, one of America's giants in pathology,¹³ did not normally accept a relation between trauma and cancer. Yet, in isolated cases, he did accept the postulates as having validity,¹⁴ by stating,¹⁵ "There is no doubt that under certain circumstances

⁷ Id.

⁸ Moch & Ellis, *Trauma and Malignancy*, 86 J. A. M. A. 257 (1926); Brahdry & Kahn, *op. cit. supra* note 4, at 506; 5 Frankel, *op. cit. supra* note 1, at 507.

⁹ Ibid.

¹⁰ Ewing, *op. cit. supra* note 2, at 108; 5 Frankel, *op. cit. supra* note 1.

¹¹ Moch & Ellis, *op. cit. supra* note 8, at 258, 259; 5 Frankel, *op. cit. supra* note 1, at 508.

¹² Ewing, *Modern Attitude Toward Traumatic Cancer*, 19 Arch. Path. 694 (1935); 5 Frankel, *op. cit. supra*, note 1.

¹³ 5 Frankel, *op. cit. supra*, note 1.

¹⁴ Ewing, *op. cit. supra* note 12, at 695.

¹⁵ Ewing, *The Relation of Trauma to Malignant Tumors*, 40 Am. J. Surg. 36 (1926).

a single trauma may produce a malignant tumor." Later, Ewing re-stated the postulates or "Essential Criteria" as having continued validity.¹⁶ Though he reported that single trauma would not cause malignancy in "normal tissue," he did agree that it could produce malignant growth in an individual predisposed or susceptible, by heredity or otherwise, to neoplasia.¹⁷ He also agreed that where a lacerated wound, with implantation of foreign material, becomes infected and results in delayed healing, with cancer appearing at the edges, ". . . it is clear that the cancer would not have occurred without the trauma."¹⁸

Although efforts to produce cancer by single trauma on experimental animals had failed, Ewing nevertheless stated,¹⁹

However, the new facts do not warrant the exclusion of trauma as a possible cause of many tumors. The clinical evidence is too substantial in many cases to be dismissed on theoretical grounds.

Dr. Shields Warren, in 1955, indicated that trauma was a "very minor factor" in the etiology of malignant disease. But, he stated,²⁰ "the very few neoplasms that do develop after trauma are sarcomas or certain of the bone tumors." So Dr. Warren admits the existence of a relation in a limited field of cancer study.

Additional authorities supporting single trauma cancer were collected by Dr. Ellenbogen in 1954,²¹ and by Dr. Rigdon as recently as 1958.²²

An article printed in 1962, by Bird, et al.,²³ recognizes that acute or chronic trauma will often lead to the development of skin carcinomas.

There is, therefore, a large body of respectable medical

¹⁶ Ewing, *op. cit. supra* note 14.

¹⁷ Ewing, *op. cit. supra* note 12, at 696, 703, 709, 714; Moritz, *Pathology of Trauma* 128; 5 Frankel, *op. cit. supra* note 1, at 509.

¹⁸ Ewing, *op. cit. supra* note 12, at 691, Moritz, *Ibid*; 5 Frankel, *op. cit. supra* note 1.

¹⁹ Ewing, *Ibid*; 5 Frankel, *op. cit. supra* note 1.

²⁰ Warren, *Diagnosis and Classification of Tumors*, 14 *Cyclopedia of Medicine, Surgery, Specialties* 472 (Revised 1962).

²¹ *Traumatic Cancer*, 51 *J. Med. Soc. N. J.* 276 (Suppl. 1954); 5 Frankel, *op. cit. supra* note 1, at 510.

²² *Trauma and Cancer; A Review of the Problem*, 51 *So. Med. J.* 1105 (1958); 5 Frankel, *Ibid*.

²³ Bird, et al., *Trauma Causes Skin Cancer*, 54 *So. Med. J.* 1262 (1962); 7 Oleck, *Negl. & Comp. Serv. No.* 16 (1962).

authority holding that single trauma can cause cancer. Seemingly, those who deny any relation between cancer and trauma, commit two errors:

- (1) Because injuries happen very frequently and sarcoma follows very infrequently, it does not logically follow that there may *never* be a causal relation.
- (2) Many, if not all, of those who deny causal relation to trauma, rely principally upon the results of experimental work on animals;²⁴ but “. . . we cannot transpose as applicable to man, the phenomena which we constantly see presented in experimental cancer in lower animals.”²⁵

More heat has been generated, and less light shed, in discussions and arguments on this one subject than on any other in the medicolegal field.²⁶

Now let us see if workmen's compensation cases which have gone to the courts will shed any light on the subject.

A Michigan case indicates the difficulty in trying to prove a relation in certain states. A grocery packer had repeatedly struck his leg against a counter, and subsequently lost his leg by amputation because of bone cancer. Compensation was denied because the evidence was insufficient to establish a causal connection between the trauma and cancerous condition.²⁷

A New York court held that the death of an employee from a lung cancer, under the evidence, was not the result of a strain approximately seven weeks prior to the discovery of the malignancy.²⁸

Two federal cases also show the same difficulty in establishing a relation. In the first case, the plaintiff's physician was unwilling to say that the cancerous growth *did* result or *could have* resulted from injuries sustained in an elevator accident. Defendant's physician stated that they were quite positive that a single trauma would not result in cancer. Plaintiff's evidence was considered to be “conjectural and speculative” and could not sustain a judgment.²⁹ In *Giamalva v. Maryland Gas*

²⁴ Behan, *Litigation Cancer*, 151 *Med. Record* 227 (1940); 5 Frankel, *op. cit. supra* note 1, at 511.

²⁵ *Ibid.*

²⁶ Flaxman, *Trauma and Cancer*, 1958 *Med. Trial Tech. Q.*, 223.

²⁷ *Nightlinger v. Giant Super Market*, 334 *Mich.* 90, 53 *N. W. 2d* 602 (1952).

²⁸ *Bye v. State Ins. Fund*, 279 *App. Div.* 1105, 112 *N. Y. S. 2d* 114 (1952).

²⁹ *Elgin v. United States*, 89 *F. Supp.* 195 (*W. D. Mo.* 1950).

Co.,³⁰ plaintiff had fallen from a chair and cancer of the breast subsequently had developed. She failed to prove that either a dormant or malignant tumor existed in her breast before the fall. She also failed to show that her fall had any effect in causing the cancer or accelerating its development if it previously existed. Consequently, plaintiff failed to prove a cause and effect relation by a preponderance of the evidence, and the court ruled against her.

Ohio takes a dim view of claimants' attempts to prove a causal connection between a single trauma and cancer. A claimant died after a surgical operation, and the cause of death was established as "carcinoma of the stomach. . . ." The dependents claimed that the decedent had suffered an accidental injury which caused or aggravated and accelerated the carcinoma of the stomach. The attending physician's testimony that there was a *possibility* of a causal connection between the injury suffered and the carcinoma was held to be of insufficient probative effect to support a verdict and judgment in claimant's favor.³¹ In another case, a medical witness, a specialist on cancer, stated,³²

A single trauma *might* produce malignancy by destroying cells already diseased in some manner, but for one trauma to produce malignancy, there must have been a condition existing of cancer present or ready to develop.

This does not seem to be particularly harsh, until one realizes that very few doctors can or will admit that a prior condition of cancer did in fact exist. Not enough is known about the subject to definitely diagnose it as pre-existent, and doctors themselves are the first to admit this. Yet, most "experts" will not admit the probability of a relation, and prefer to follow the theory of no relation, except in clear cut cases.

Drakulich v. Industrial Comm'n.,³³ a leading Ohio Supreme Court case, presents the rule that medical testimony must furnish a *probability*, not a mere *possibility*, of a causal relation. If plaintiff's medical testimony states that deceased's carcinoma of the liver "*could have*" been caused by his injury, the causal connection is still not established.

³⁰ 115 F. Supp. 926 (E. D. La. 1953).

³¹ *McIntire v. Industrial Comm'n.*, 44 Ohio App. 274, 63 N. E. 2d 167 (1945).

³² *Posan v. Industrial Comm'n.*, 61 Ohio App. 530, 533, 22 N. E. 2d 1014, 1015 (1939).

³³ 137 Ohio St., 82, 27 N. E. 2d 932 (1940).

Pennsylvania's courts indicate that plaintiff's expert must testify that the cancerous condition *came from* the cause alleged. The fact that the sarcoma *might have*, or even *probably* did, come from the accident falls below the required standard of proof.³⁴ This appears to be the most difficult state in the union in which to prove a causal relation of cancer to a single trauma.

We now go to the other side of this dividing line to seek out opposing court decisions. To prove a causal relation between trauma and cancer, two important facts must be established:³⁵

- (1) The cancer must develop exactly at the site of the injury, and
- (2) The cancer must not develop until there has been a sufficient time interval after the injury for it to develop and reach a detectable size.

The Supreme Court of South Carolina said that if the facts show a causal connection between the injury and the development or aggravation of cancer, then the two cannot be separated. The victim of the cancer, or his dependents, are then entitled to compensation.³⁶ Medical evidence? None!—other than the determination of cancer itself.

In Illinois, evidence showed that prior to the accident, claimant was a strong, vigorous and active man. Medical evidence showed that a sarcoma was the result of a strain of the back muscles. The court did not reverse the finding of the Industrial Commission as to the injury and cause of death, as it was not contrary to the manifest weight of the evidence. Claimant's death resulted from his pulling on a rope which either caused a sarcoma or aggravated or accelerated an existing sarcoma and his widow was entitled to compensation.³⁷

Indiana showed leniency where the claimant's physician testified that an injury sustained by the claimant "might have" or "could have" aggravated a cancer of the testicle. Actual evidence did not show a pre-existent cancer, but did show that the claimant had never had any pain or trouble in the affected region until the accident. The disability resulting from removal

³⁴ Menarde v. Philadelphia Transp. Co., 376 Pa. 497, 103 A. 2d 681 (1954).

³⁵ Dennison v. Wing, 279 App. Div. 494, 110 N. Y. S. 2d 811 (1952).

³⁶ Hughes v. Easley Cotton Mill, 210 S. C. 193, 42 S. E. 2d 64 (1947).

³⁷ Simpson Co. v. Industrial Comm'n., 337 Ill. 454, 169 N. E. 225 (1929).

of the testicle was held to be compensable as an aggravation of a pre-existing cancerous condition.³⁸

Colorado has a very practical outlook in this situation. In *Beatrice Creamery Co. v. Standley*,³⁹ none of the experts rendered an opinion that sarcoma *cannot* be occasioned or aggravated by trauma. The only clear evidence, therefore, was the testimony of the claimant and decedent. They said that the swelling arose shortly after the accident and at the site of injury, and did not antedate the accident. The commission therefore found as a fact that decedent died as the result of an injury arising out of and in the course of the decedent's employment. The court, on appeal, found the decision was supported by "substantial credible evidence" and could not be set aside.

Even Ohio will allow recovery for cancer if the proper relation is shown and meets the test of probative testimony set out in *Drakulich v. Industrial Comm'n.*⁴⁰ A jury's conclusion that there was a causal connection between an injury to a decedent's thigh and his death from a bone sarcoma eight months later was held to be justified under the evidence. A physician had testified that in his opinion there was *probably* some relation between the injury and the bone tumor.⁴¹

Rhode Island is one of the more lenient states, as evidenced by the following case.⁴² Medical and lay witnesses testified as follows:

- (1) Plaintiff had been in good health before her accident.
- (2) She never experienced any pain in her right shoulder until after the accident.
- (3) She fell down the stairs and a large can of juice she was carrying "banged" her breast.
- (4) About seven weeks after the accident, a lump was discovered in the area.
- (5) After its removal by surgery, the bump was found to be malignant.

³⁸ *Blackfoot Coal & Land Corp. v. Cooper*, 95 N. E. 2d 639 (Ind. App., in Banc, 1950).

³⁹ 86 Colo. 290, Cited in 4 *Schneider, Workmen's Comp.* 529 (3d ed. 1945).

⁴⁰ *Supra* note 33.

⁴¹ *McCullough v. Industrial Comm'n.*, 60 N. E. 2d 628 (Ohio App. 1944).

⁴² *Emma v. A. D. Julliard & Co.*, 75 R. I. 94, 63 A. 2d 786 (1949).

The court said that the above five items constituted sufficient evidence to find that the trauma caused the cancer, and so ruled.

From a 1956 federal case,⁴³ it is clear that in some jurisdictions even medical evidence regarding the relation is not too important. In this instance, a benign nevus in the foot was torn in an accident. A cancer of the foot finally developed, leading to the amputation of the leg. The rule was held to be that if the facts show a causal connection between the injury and the development of the cancer, the two cannot be separated. The victim, or his dependent, is entitled to compensation, *notwithstanding* such causal connection could not be established *medically*.

In 1958 New Mexico held for the claimant and the Supreme Court affirmed the decision. They reasoned that medical knowledge of cancer being what it is today, an aggravation of cancer may be inferable, despite the lack of medical evidence establishing indisputable causal connection between trauma and the spread of a pre-existing cancer, whenever the sequence of events is so strong as to establish a causal connection. Only a possibility was sufficient here in the light of the circumstances—primarily, claimant's excellent health *before* the accident.⁴⁴

In *Lighter v. I. Freeman & Sons, Inc.*,⁴⁵ a 1961 New York case, death from cancer was related to an accident which occurred three years prior. It caused a traumatic pneumothorax of the left lung and aggravation of prior emphysema, which made an operation to remove the lung not advisable; the lung later metastasized and caused death.

On February 1, 1962, a New Jersey court⁴⁶ ruled that a petitioner was entitled to workmen's compensation benefits for the injury and subsequent death of her husband. Decedent had hurt his back, and died about seven months later, of cancer. It was concluded that the decedent was suffering from metastasis of an undetermined primary source at the time of the accident. The court said that it was of no consequence that the resultant symptoms did not manifest themselves until some time after

⁴³ *Charleston Shipyards v. Lawson*, 141 F. Supp. 764 (E. D. S. C. 1955).

⁴⁴ *White v. Valley Land Co.*, 64 N. M. 9, 322 P. 2d 707 (1958).

⁴⁵ 14 App. Div. 2d, 217 N. Y. S. 2d 799 (1961); 7 *Oleck, Negl. & Comp. Serv. No. 4* (1961).

⁴⁶ *Celeste v. Progressive Silk Finishing Co.*, CCH 1962 Workmen's Comp. Law Rep. ¶ 2698 (N. J. Super. App. No. A-370-60).

the *strain*. Decedent had been in apparent good health prior to the injury, had worked regularly, suffering only an occasional cold, and was unaware that he had cancer. The court agreed that the decedent might, and probably would have died of the disease anyway. His serious physical impairment soon after the accident, however, and the rapid progress of the disease, made a finding of cause and effect between trauma and acceleration of death a reasonable probability.

As recently as March, 1962, a Texas jury held that a single trauma was the cause of cancer. Claimant had been struck on the right shoulder by a heavy sewer pipe, and was treated for a contusion. Three or four months later, cancer was discovered at the site. Dr. R. H. Rigdon, Pathologist of the Medical School of the University of Texas, was a witness for the claimant. He testified that the cancer was caused by the traumatic injury to the shoulder, and the jury rendered a verdict for the widow.⁴⁷

The Chief Justice made a statement in *Taylor v. Mansfield Hardwood Lbr. Co.*,⁴⁸ which the writer feels should be given strong consideration. The statement follows:

Since the cause of cancer is still unknown, professional opinions on this subject must be appraised with consideration given to the limitations of professional knowledge as to cancer cases.

Too often, however, this is overlooked by the courts in their desire to follow precedent. As a result, a deserving claimant or dependent may be deprived of compensation or death benefits.

Though cases have been cited wherein payments have been made for a cancerous condition, the majority of opinion is still against a relation between single trauma and cancer.

In spite of this majority opinion, however, it is manifest, from the digest of decisions above, that some forms of cancer may be caused by a single trauma. Also, a single event may hasten disability or death by aggravation and activation of an existing cancerous condition.

Actually, there are two contradictory opinions held by surgeons.⁴⁹ Most of them say that a single trauma cannot aggravate a malignant condition. Yet when they operate, they very

⁴⁷ Trauma Held to be Cause of Cancer, 13 TAPA Bull. (3) 4 (Mar., 1962); 7 Oleck, Negl. & Comp. Serv. No. 17 (1962).

⁴⁸ 65 So. 2d 360 (La. App. 2d Cir. 1953).

⁴⁹ 3 Proof of Facts 143 (1959).

carefully avoid causing a single trauma in a cancerous area. Surgical techniques are planned around the danger of spreading cancer. Wide surgical excision is the rule, along with dissection of the affected parts, in order to avoid the danger of the single trauma—the very factor that most surgeons say can have no effect.⁵⁰ Of course, another reason would be their desire to cut out the cancer in its entirety.

The most important breakthrough in the solid front against the relation between cancer and trauma was reached in 1961. A team of investigators from the Waldemar Medical Research Institute of Port Washington, New York, reported on their studies at the 1961 meeting of the American Academy of Forensic Sciences in Chicago.⁵¹ The findings were based on extensive studies on mice. In one of the tests conducted by the research team, carcinoma cells were implanted in normal adult mice. Seventy-two were then wounded and the results were compared with results in the control group not wounded. After nine days, they found that 68 per cent of the tumors in the traumatized mice had grown to more than 3 square cm. Tumors in only 12 per cent of the control mice had grown to this size. Other tests were also reported on, with the same precedent shattering results.

Doctors Bernard Gottfried and Norman Molomut concluded that:⁵²

Injury can accelerate the induction and progression of cancer . . . Our data not only gives experimental confirmation of the deleterious effect of trauma on tumor growth, it also demonstrates that the physiological sequelae of repeated surgical trauma—at sites distant from tumor implantation and carcinogen tumor induction—significantly affect the process of tumorigenesis and progression by shortening the latent period of induction and stimulating growth progression. In short, trauma may act as a co-carcinogen.

Commenting on this report, pathologist Fisher, the chief medical examiner of Maryland, confessed that he would now be forced to revise much of the material he has written on the subject for legal textbooks. Doctor Fisher stated:⁵³

⁵⁰ *Ibid.*

⁵¹ Study Links Trauma and Cancer, *Med. World News*, March 31, 1961, p. 26; 3 Proof of Facts 6 (Suppl. 1962).

⁵² *Ibid.*

⁵³ Study Links Trauma and Cancer, *op. cit. supra* note 51.

No longer can expert witnesses present the *carte blanche* notions that trauma doesn't aggravate cancer . . . As the experiment with laparotomy indicates, injury doesn't even have to be at the site.

Other doctors and "experts" now undoubtedly will revise their thinking along these lines. This significant report, therefore, may be the major turning point of the century in the argument as to whether a single trauma is related to cancer. More doctors and medical experts may now have to admit that the accident "*probably*" or even "*did*" cause the disability. This certainly will not occur over night, but should gradually progress in the next few years, unless some new discovery outmodes these findings.

It is difficult today to prove a relation between single trauma and cancer in workmen's compensation, except in isolated cases. The possibility now seems to exist, however, in view of numerous recent decisions, that more and more of these claims will be allowed in the near future, and that more awards of compensation will be sustained.