DePaul Law Review

Volume 18
Issue 2 *Issue 2 & 3 Summer 1969*

Article 16

X-Ray Controversy in the Courtroom

Nathaniel S. Zeitlin

X-RAY CONTROVERSY IN THE COURTROOM

NATHANIEL S. ZEITLIN*

LEGAL PROBLEMS: VIS-À-VIS THE RADIOLOGIST

THE QUESTION of whether to allow a radiologist, who supposedly deals only with X-ray shadows, to answer a courtroom question dealing to some degree with symptoms of the patient has created a legal conundrum in the radiology field. In presenting a hypothetical question to a radiologist in order to establish causal relation, the symptoms of the hypothetical patient are given, sometimes in considerable detail. Many times, the opposing attorney, the defense, objects to the radiologist answering the question. To support his objection, he states that a radiologist deals with X-ray shadows and not symptoms of the patient. Fortunately, most judges will overrule this objection. Still, it is all too frequent that a judge will find that a radiologist should not be allowed to testify as to the symptoms of the patient, real or hypothetical.

What is the whole truth about this question of symptoms and the radiologist? When a patient in a hospital is sent down to the X-ray department, he comes with a slip which reads something like this: "This patient complains of pain in the low back region and has sciatic radiation. Please take films to demonstrate the cause." In this instance the radiologist may not need any significant knowledge of symptoms. However, often enough, the patient will not have a slip, particularly if he is an out-patient. In such cases, the X-ray technician or the radiologist will question the patient and record the symptoms on the X-ray card. The radiologist does deal with symptoms regularly; the radiologist does not perform a physical examination himself, but he does take into consideration the given symptoms of the patient, for it is the particular symptoms which determine the type of X-ray to be used. A

* DR. ZEITLIN *is the Director of the Zeitlin X-Ray and Clinical Laboratory located in Chicago, Illinois. He is affiliated with the Edgewater Hospital in Chicago, Illinois as a consultant radiologist. Dr. Zeitlin received his B.A. and M.D. from the University of Illinois. He is a Diplomate of the American Board of Radiology and a member of the Radiological Society of North America, Law-Science Institute and International College of Surgeons.*

radiologist must know the causative pathology of a symptom in order to determine which organ to X-ray and what views to take. Distinct symptoms point to a certain pathology, which in turn points to a specific organ. Further, to say that a radiologist does not possess the competence to evaluate symptoms is completely untrue since the radiologist, as any medical doctor, has been, throughout his whole medical school curriculum, a student of symptomatology.

There is another reason why a competent evaluation of symptoms is essential for the successful radiologist. The findings in an X-ray are not always specific enough, or as stated in medical lexicon, the findings are not pathognomonic. In such cases, the radiologist seeks support from an analysis of the clinical symptoms which he obtained from his own questioning of the patient, or from the written history of the patient, thereby clarifying the ambiguous X-ray findings by interpreting them in light of the patient's subjective symptoms, objective signs, and past medical history. Without a knowledge and evaluation of the patient's complaints, the radiologist would be incapable of performing his function in at least fifty per cent of the cases. This is why an X-ray specialist is called a clinical radiologist.[1]

There is still another reason why a competent radiologist must be adept in the evaluation of the symptoms of a patient. An X-ray specialist, particularly in a hospital, is in constant consultation with the attending doctor. Actually, a certain period is set aside for these consultations over difficult cases where the X-ray findings are equivocal. In these consultations, the radiologist listens to the story of the patient's complaints as well as the objective findings from the attending doctor's examination. He evaluates these findings independently and correlates them to the X-ray findings, and thus makes a more accurate diagnosis. It is the radiologist's knowledge of the meaning of symptoms which makes this consultation desirable and successful in many cases. It is this consultation that is often instrumental in the determination of the type of treatment to be used. The properly trained radiologist will have something specific to offer in determining the treatment to be used in a given case. Of course, these consultations are not necessary

[1] The official monthly magazine of the Radiological Society of North America, entitled *Radiology*, is subtitled *A Monthly Journal Devoted to Clinical Radiology and Allied Sciences*. The definition of clinical radiology incorporates both the interpretation of X-ray shadows and the clinical symptoms of the patient. Examination of the articles in the magazine reveals that a significant portion of any article dealing with X-rays is necessarily devoted to a discussion of the symptomatic and pathological aspects of the case.

in every case. Often, the findings are pathognomonic. For example, a particular kind of a line running through a bone is a fracture and does not require confirmation from the patient's history.

In spite of all the arguments justifying the entry of the radiologist into a controversy involving essential clinical findings, the judge may still deny him the opportunity to evaluate clinical symptoms in answer to a hypothetical question. Thus it may be necessary to present to the jury the essential opinions in a different way, by means of what I term, "the medical significance" question. When asked this question in regard to a specific X-ray finding, the radiologist then explains at length the clinical effect upon the patient, which the specific X-ray findings have revealed. In this way, long before the hypothetical question is given, the jury can be told just what effect the X-ray findings can have on the patient, now and in the future. Asking the question, "What is the medical significance of this X-ray finding?" thus can be a very effective technique for informing the jury as to the importance of X-ray findings. For example, in the case of a whiplash injury of the cervical spine, the X-ray findings may show old disc pathology, spur formations and contractions of the neurocanals. When there is a definite whiplash injury added to such pathology, it is important for the jury to know that such X-ray findings are frequently found in patients over forty years old and that often these findings are found in patients who do not have any cervical spine complaints. In other words, these findings are dormant and do not produce symptoms in many patients. The jury should know that this pathology is peculiarly sensitive to the injury of a whiplash, whereas whiplash injury to a cervical spine which does not have this old pathology is frequently passed off and results only in minimal and temporary symptoms. It is important to impress upon the jury that when such an injury occurs in the presence of old disc pathology, the cervical spine may well develop severe and long lasting symptoms.

COMMON AREAS OF CONTROVERSY

Beyond the question of the propriety of allowing a radiologist to testify as to symptoms, controversy concerning the interpretation of X-rays may often arise. In the course of the last two decades, increased training in the specialty and improved X-ray equipment have reduced the areas of controversy to the point where, today, radiologists usually

will readily agree to a given diagnosis. Nevertheless, the practitioner of forensic medicine will ultimately face one of those twilight zone problems where the only thing to which radiologists will agree—is to disagree. The remainder of this article shall present a summary of these areas, including a list of the important items a lawyer must know for the intelligent handling of his client's case.

The Skull. The mid line frontal metopic suture can be confused with a linear fracture. The following points must be kept in mind, both by the defense and the plaintiff's attorney. (1) This is a congenital anomaly and is present at birth, to some degree. (2) It is relatively infrequent. (3) It is characteristically in the mid line, in the frontal bone. (4) It can run all the way back to the coronal suture, or only part way. (5) On very close examination in good films, minimal sclerotic changes at the margins of the suture can always be seen. Such sclerotic changes cannot possibly be present in a fresh fracture. (6) Subsequent films, taken months or years later will show no callus formation and no appreciable change in the structure of the line. This is most significant in ruling out fracture. (7) The defense must make sure that the original films are not lost. They should either be impounded or copies made of them immediately. (8) The defense should demand that films be taken at a much later period so that the absence of any healing changes can be used to prove that this was never a fracture.

The Whiplash Injury. The degree of actual injury is still a controversial matter. The tendency is to rule out fracture and dislocation, which rarely occurs. The whiplash injury is essentially a soft tissue injury which can cause pain in the neck due to the straining of the ligaments and muscles of the neck, and the concussion of the cerebral tissues. In order to distinguish this cerebral concussion from the ordinary concussion due to a blow, this type of concussion may be termed cerebral whiplash. The distinguishing symptoms are dizziness, nausea, disturbance in vision and sometimes disturbance in hearing. Even disturbances in swallowing may occur from a neck whiplash injury. The controversy in these cases is caused by the fact that although the X-rays remain essentially negative and there is no evidence of a fracture or dislocation, the complaints of the patient persist for months, and, at times, even years. The defense in such a case certainly has the right to consider malingering, or at least psychosomatic involvement. The plaintiff's lawyer can only go by the complaints of the patient and the findings of the attending doctor who in these cases practically always

points out muscle spasm and makes a diagnosis of myositis (inflammation of the muscle). The neurological examination as a rule remains negative with no pathological reflexes. The attending doctor makes a diagnosis of loss of the normal lordotic curvature, presumably due to muscle spasm.

The defense, under the above conditions, must presume that there is malingering, or, at least, psychosomatic overlay. To help in establishing the possibility of malingering, the defense may try to emphasize the following findings: (1) The absence of all bone pathology. (2) Earlier and later films of the flexion and extension positions showing good movement, and of the skull, both in the open mouth and lateral positions, which show that movements in the cervical spine are within the normal limits. (3) The above mentioned films illustrate that the alleged loss of normal lordotic curvature is not present, and that the normal lordotic curvature will vary with the position of the jaw.

At times, an ear, nose and throat specialist can take special tests to show that there is a loss of hearing which could be the result of prolonged and continued cerebral whiplash symptoms.

It is to be remembered that the above controversial points are relevant only for those cases which do not show any visible pathology in the X-rays. In cases where there is old disc pathology, arthritis and spur formations, and contractions of neurocanals, the development of the litigant's arguments is entirely different.

The Wedged Dorsal Vertebra. Doctors can disagree here, because wedging occurs so frequently due to developmental rather than traumatic conditions. It should be noted that traumatic wedging (compression fracture) is also a frequent finding, even with rather minimal injury.

It is essential to the defense in preparing a case with a controversial wedged dorsal vertebral body to establish the presence of a developmental and not a traumatic condition. The defense doctor should look for: (1) Multiplicity of vertebral bodies involved, which definitely points to a non-traumatic cause. (2) The presence of Scheuerman's disease in a number of vertebral bodies, a teenage disease which has multiple characteristic nontraumatic findings. (3) The absence of any change in subsequent films to rule out any healing processes of a fracture. This is extremely important, but requires very good films for comparison. (4) The absence of any symptoms in the exact area of the alleged fracture, which requires that the original examination rec-

ords be safeguarded. (5) The cortex of the vertebral body involved, wedged not only on the upper surface, which is the result of a fracture, but also on the lower surface, which is always developmental. When both are involved nontraumatic causes are indicated.

The plaintiff, on the other hand, must try to emphasize the following points in attempting to prove a compression fracture: (1) Localized pain and tenderness in the exact area. (2) The fact that there is controversy in this type of a case, and that there can be a sincere disagreement between doctors. The changes in a mild compression fracture can be very minimal indeed, and can be missed even by specialists, particularly if the films are not exactly similar. (3) Subsequent films, because of the very minimal callus formation, can actually show little or no visible change in some cases. This is particularly so when the X-rays are not taken in the exact same angle.

The Relatively Narrow Fifth Lumbar Disc. Differentiation between a traumatic flattening and the normal variation in the size of this disc is an extremely difficult problem. Counsel for both parties must keep in mind that the normal variation here can be considerable. When the fifth lumbar disc appears relatively narrow, it is significant only if supported by equally significant symptoms. In the presence of such symptoms, one must seriously consider a pathological disc, and therefore trauma would be important from a point of view of causation or aggravation.

The defense attorney should look for these special points: (1) If the relative narrowing is seen immediately after the accident, it certainly cannot be the result of the accident, because when a disc appears narrow in an X-ray, it has already been there for many many months or years. (2) The defense must emphasize, if possible, that the supporting symptoms for the alleged disc pathology are only nonobjective symptoms offered by the patient. (3) There are no positive objective neurological signs, and subsequent films show no change in the disc space. (4) Where it can be shown that the normal lordotic curvature is maintained in the lower lumbar spine, this is of some importance in ruling out muscle spasm.

The Medical Hiatus. How soon should symptoms appear after a low back injury? Should they start immediately? If symptoms are delayed for months, is the injury still the cause? There are no clear answers. In my own opinion, two weeks is the maximum period of no symptoms if an accident is to be considered a culpable cause.

The plaintiff should emphasize that: (1) Only a minimal injury is needed to start the symptoms of low back pain and sciatic radiation. (2) Sometimes the symptoms in the low back region are hidden and masked by the presence of a fracture or serious injury elsewhere, and for this reason the low back pain is ignored. (3) The rest in bed at home or in a hospital hides the low back symptoms, and often the symptoms first begin to occur when the patient attempts to return to work.

On the other hand, the defense should assert: (1) The absence of immediate symptoms is extremely significant. The patient had visited the doctor many times in the first week or two and gave no indication of any low back pain, and no X-ray films were taken of the low back region. (2) There is no change in the subsequent films taken years later. This is important as it tends to rule out traumatic aggravation. (3) Two weeks of bed rest for an injury sustained elsewere in the body may cause distress in the low back region due to lack of exercise of the low back muscles. Such pain may be due to the rest in bed rather than to the actual injury. (4) The absence of pathological reflexes tends to rule out disc pathology and nerve irritation.

Traumatic Arthritis. In previous years, doctors frequently claimed that trauma could cause arthritis. Gradually the medical profession has rejected this idea. In most cases, only if the fracture enters the joint can it seriously be considered traumatic arthritis.

The doctors and lawyers in such a case must answer the following questions in the diagnosis: (1) Does the fracture line enter the joint? If it does not, traumatic arthritis cannot be seriously contended. (2) Is there a history of aspiration of the joint for fluid or blood? This would indicate that the joint was involved in some way. (3) Do the X-rays show evidence of fluid in the joint? (4) Have X-rays been taken of the other joint on the opposite side so as to afford a comparison to see if there are any changes in the subsequent films? Subsequent films should be taken years later to show whether the joint is clear or not. X-ray films of a particular joint must show multiple views in order to answer this question and to make a proper comparison.

The Age of a Fracture. Here there is still considerable controversy, particularly when the fracture is of the dorsal spine, when the films are only partially diagnostic, and when there are no adequate films for comparison. When the films are truly adequate, there is no great difficulty in determining the age of the fracture. The following points must

be considered where controversy does exist: (1) Multiple "takes" are necessary for comparison. The original technique must be accurately duplicated in order to make a proper comparison. The exact same angle must be used. (2) Look for evidence of healing in the form of spur formations. (3) Look for sclerotic changes in the margins of the cortex, which would indicate long standing healing. (4) The defense must safeguard the original films, for if there is a question as to the age of a fracture, these films are essential.

Psychogenic Overlay. Psychogenic overlay is another area of legitimate medical controversy. Medicine recognizes the validity of traumatic hysteria, and the many bizarre symptoms arising therefrom. This controversy can be compounded when there is, in addition, some malingering. Does a patient suffering from traumatic psychosomatic symptoms merit less attention than one with a fracture? This question is not easily answered. The defense must emphasize negative X-rays which frequently show unimpeded movement in the involved joint. In questionable cases, the defense should try to take their own films to demonstrate this movement. The absence of calcification in subsequent films also may be of some importance in judging the degree of injury.

The plaintiff on the other hand should emphasize, if possible, that the patient was well before and suffered only after the injury. It must be made clear to the jury that the suffering of a psychosomatic patient can be equally as acute as that caused by a fracture or dislocation. Recognition should be given to the fact that medical authorities have acknowledged trauma as a possible cause of psychogenic overlay.

Traumatic Aggravation of Old Disc Pathology. The competent radiologist will readily admit that objective X-ray evidence of traumatic aggravation of old disc pathology is extremely rare and, for all practical purposes, nonexistent. However, when an expert claims traumatic aggravation of old disc pathology, he has in mind these facts: (1) Admittedly very old disc pathology, antedating the accident by many months and years. (2) An appreciable period before the accident where there are few, if any, symptoms. (3) Immediate precipitation of symptoms after the accident. (4) Necessity for specific treatment accepted as the usual treatment for disc symptoms, which can range from conservative heat, rest and brace treatment, to traction and surgery.

It should be noted that much of the diagnosis of traumatic aggravation of disc pathology depends upon the subjective word of the patient. When, however, such symptoms are accompanied by work disability

and pathological reflexes, the whole picture becomes much more credible. Sometimes a patient will give a history of past attacks of sciatica due to old disc pathology. Admittedly, the present injury is minimal, and yet the patient is disabled, needing considerable treatment. Is this reasonable and consistent? It can be. Severe disabling sciatica may be precipitated by minimal injury, such as reaching over to pick something off of the floor. This is traumatic aggravation. We are dealing here with the strain (minimal injury) "that broke the camel's back."

There remains one more question in these cases of traumatic aggravation of disc pathology. In a case of old disc pathology and past attacks of sciatica, but with a period of six months without any symptoms before the accident, the injury may precipitate another severe attack of sciatica. The surgeon tries conservative treatment for months and finally operates, with good result. Did the injury make the operation necessary? Or would an operation have been inevitable? The controversy here is endless. There is no ready answer, and the whole controversy is compounded when the need for the surgical procedure is seriously questioned by the opposing attorney. If the injury was minimal and the operation found necessary, it is reasonable to say that an operation would have been inevitable, because of the advanced pathology present before the accident, and because minimal low back sprain must recur frequently with the human being in the upright position.

CONCLUSION

If the legal system will recognize and acknowledge the training and expertise of the radiologist, and allow him to testify as to all matters pertinent to the X-rays; if the lawyers involved will attain the proper cognitive level so as to appreciate the value of the X-rays and the skills of the radiologist; if the lawyers will keep in mind the pertinent points heretofore discussed—then possibly the recurring conflicts in the area of forensic medicine mentioned in this paper will subside, as have so many previous difficulties caused by the lack of communication between the medical and legal professions.