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## X-Ray Malpractice

Lucien B. Karlovec\*

**D**OCTORS TODAY are subjected to many malpractice suits involving non-surgical injuries. Common among these non-surgical injuries are x-ray injuries. Most of the injuries produced by x-rays have been excessive skin reactions, i.e., burns, occurring during either diagnostic or therapeutic procedures.<sup>1</sup> The improper use of x-rays can produce damage other than skin burns, i.e., fibrosis (in effect, shrinkage) of internal organs,<sup>2</sup> sterility or prenatal injuries.<sup>3</sup>

### Medical Diagnosis—The Role of X-Ray

An x-ray is not conclusive. A positive result is strong evidence that an abnormality is present, but a negative result does not necessarily mean that there are no abnormalities. Conclusive diagnosis by x-ray can be made in fracture and lung cavity cases, but there are other cases in which the x-ray finding is one of interpretation. The interpretation then depends heavily upon the competence and experience of the radiologist.

The capacity of x-rays to demonstrate abnormalities in the body depends upon variations in the density of the substance through which the rays must pass. The more dense the substance, the less the penetration of x-rays on their way to the film or fluoroscope screen.<sup>4</sup> Under modern x-ray techniques, since body contrast does not naturally exist, various contrast media must be introduced into the body.

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<sup>1</sup> *Routen v. McGehee*, 208 Ark. 501, 186 S. W. 2d 779 (1945)—alleged injury to the foot by diagnostic use of x-ray; *Bowman v. McPheeters*, 77 Cal. App. 2d 795, 176 P. 2d 745 (1947)—diagnostic use for locating sliver in arm; *Merkle v. Kegerreis*, 350 Ill. App. 103, 112 N. E. 2d 175 (1953)—therapy to plantar wart; loss of two toes; *Emrie v. Tice*, 174 Kan. 739, 258 P. 2d 332 (1953)—therapy to ear, burns on other parts of head; *Mullen v. McLaughlin*, 4 A. D. 2d 753, 164 N. Y. S. 2d 612 (1957)—therapy for skin disorder, x-ray dermatitis resulted; *Ferrara v. Galluchio*, 5 N. Y. 2d 16, 152 N. E. 2d 249 (1958)—therapy for bursitis, burns.

<sup>2</sup> *Wilder v. Haworth*, 187 Ore. 688, 213 P. 2d 797 (1950)—injury of internal organs after treatment.

<sup>3</sup> *Stemmer v. Kline*, 19 N. J. Misc. 15, 17 A. 2d 58, rev'd 128 N. J. L. 455, 26 A. 2d 489 (1941)—therapy to the abdomen on the basis of a mistaken diagnosis; she gave birth to a deformed child.

<sup>4</sup> X-ray films, x-ray pictures, x-ray photographs, roentgenogram, are various terms used, but x-ray is acceptable.

Many malpractice cases have resulted from improper use of x-rays during diagnostic procedures, *e.g.*, x-ray burns,<sup>5</sup> or failure to use x-rays for initial diagnosis<sup>6</sup> or for adequate follow up of orthopedic problems.<sup>7</sup> Diagnostic use of x-rays, no less than their use in therapy, should be a precise operation, with standard precautions always taken. This is an area of modern medical practice where precision is mandatory, and failure to provide sufficient safeguards is negligence.

### Medical Treatment—Radiation Therapy

The human body has a cumulative lifetime maximum dosage which should not be exceeded. Thus before a physician begins treatment he must ascertain the dosage the patient has received to date. Such calculation must be precise. The strength of the x-ray beam, the entry of the beam into the body tissues, the distance from the x-ray tube to the skin, the depth of the anticipated penetration into the body, and the time of each application to the area treated are factors that must be measured and recorded. Calculations of total units of x-ray energy (roentgens) which have been applied to each area must be made from these basic data. This is usually done by means of standard charts made for each x-ray machine. X-ray treatment of the human body is justified only when there is a specific, well established indication of its use. No longer does a prudent physician prescribe or administer such treatment as a mere therapeutic trial in hope that it will cure a condition thought to exist.<sup>8</sup>

The individual patient must be observed closely during a course of x-ray treatments for the development of signs of undue

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<sup>5</sup> *Routen v. McGehee*, supra n. 1; *Bowman v. McPheeters*, supra n. 1; *Lamme v. Ortega*, 129 Colo. 149, 267 P. 2d 1115 (1954)—injury to leg from negligent use of fluoroscope in locating bullet; *Ballance v. Dunnington*, 241 Mich. 383, 217 N. W. 329, 57 A. L. R. 262 (1928)—burn from use of x-ray in locating needle in foot; *Cross v. Robinson*, 203 Mo. App. 118, 218 S. W. 924 (1920)—burns resulted from repeated attempts to get satisfactory roentgenogram of ribs.

<sup>6</sup> *Friedman v. Dresel*, 139 Cal. App. 2d 333, 293 P. 2d 488 (1956); *Gresham v. Ford*, 192 Tenn. 310, 241 S.W. 2d 408 (1951); *Madis v. Stellwager*, 38 Wash. 2d 1, 227 P. 2d 445 (1951).

<sup>7</sup> *Smith v. Feerer*, 117 Ind. App. 304, 70 N. E. 2d 770 (1947); *Derr v. Bonney*, 38 Wash. 2d 678, 231 P. 2d 637, 54 A. L. R. 2d 193 (1951).

<sup>8</sup> *Stemmer v. Kline*, supra n. 3; *Shockley v. Tucker*, 127 Iowa 456, 103 N. W. 360 (1905)—x-ray treatment for appendicitis; *Becker v. Floersch*, 153 Kan. 374, 110 P. 2d 752 (1941)—x-ray treatment allegedly given for tumor in the abdomen.

sensitivity or excessive tissue reaction, whose appearance under most circumstances are a signal to stop or to reduce the intensity of treatment. The so-called x-ray burns are not true burns in the usual sense. The changes which occur in living tissue from x-ray burns are physiologically much different from heat burns, and a better usage of the term is *radiation reaction*.

### Analysis

It seems clear that cases presenting the question of liability for injury by x-ray are distinctive from a factual, not a legal point of view. The general principles of the law of physicians and surgeons require them to use reasonable skill and care in the patient's behalf. This is fully applicable in an action against a physician for x-ray injuries. Thus, a physician in giving x-ray treatments to a patient owes to the patient the duty to exercise the ordinary care and skill of his profession, giving due concern to modern scientific advancement and learning. He impliedly agrees that no injurious consequence will result from want of such proper skill, care and diligence.<sup>9</sup>

In order to recover for injuries sustained as a result of exposure to x-rays, the plaintiff must prove that the negligence of the person charged with responsibility for the injury was the proximate cause of the injury. There must be positive evidence to support a finding of causal connection between the injury and any treatment administered by the defendant-physician.<sup>10</sup> In *Christie v. Callahan*,<sup>11</sup> the court said that it was for the jury to determine which of two possible causes produced the injury. There the x-ray burn evidence was supported by substantial testimony that the plaintiff's condition could have been caused either by over-exposure to x-ray or by subsequent injection given to relieve pain.

In this connection, a main proximate cause defense, by the physician from whom recovery for injuries by x-ray is sought, is that the cause of the injury was not the negligence of the physician, but instead was the unusual and unpredictable susceptibility of the patient. As to proof of unusual susceptibility,

<sup>9</sup> *Hazen v. Mullen*, 59 App. D. C. 3, 32 F. 2d 394 (1929); *Cooper v. McMurry*, 194 Okla. 241, 149 P. 2d 330 (1944).

<sup>10</sup> *Lamme v. Ortega*, 129 Colo. 149, 267 P. 2d 1115 (1954). Cases where there was no positive proof of causal connection. See *Butler v. Rule*, 33 Ariz. 460, 265 P. 757 (1928); *Doumitt v. Diemer*, 144 Ore. 36, 23 P. 2d 918 (1933).

<sup>11</sup> 75 App. D. C. 133, 124 F. 2d 825 (1941).

the burden of proof is upon the defendant-physician to prove that he did not know, and in the exercise of ordinary care could not have known, that the plaintiff had an idiosyncrasy which rendered him liable to harm by exposure to x-ray.<sup>12</sup>

The broad rules of contributory negligence and assumption of the risk are applicable in x-ray injury cases. In *Kuttner v. Swanson*,<sup>13</sup> it was held that there is no ground for a charge to the jury that the plaintiff was under a duty to exercise ordinary care to prevent the consequences of defendant's negligence. There is no contributory negligence where one who has been injured did not quit the care of the treating physician or fail to follow his instructions.<sup>14</sup>

It is clear that one who agrees to undergo x-ray examination or treatment does not assume the risk of negligence. However it is to be expected that x-ray burns and other damage to healthy tissue often will occur during the treatment in spite of the highest diligence in skill to prevent them. The courts have held that a patient assumes the risk of a burn from a proper exposure to the x-ray.<sup>15</sup>

In order to recover for injury following exposure to x-ray, the plaintiff must prove that the party sought to be charged with negligence was the proximate cause of the injury complained of. In *Christie v. Callahan*,<sup>16</sup> it was not necessary that plaintiff prove negligence by direct and positive testimony of x-ray specialists to specific acts of negligence; circumstantial evidence was sufficient. To meet the burden of proof the plaintiff must merely produce sufficient evidence for the jury to find negligence without indulging in unnecessary speculation.<sup>17</sup>

There is a presumption of due care in favor of the practitioner, which prevails until overcome by evidence to the contrary. This was implied in a case of x-ray used for examination.<sup>18</sup>

<sup>12</sup> *Kuttner v. Swanson*, 59 Ga. App. 818, 2 S. E. 2d 230 (1939)—treatment was not excessive in itself to produce the injury in absence of an idiosyncrasy. Note: case was reversed on other grounds. *Ballance v. Dunnington*, 241 Mich. 383, 217 N. W. 329, 57 A. L. R. 262 (1928). Those rejecting the claim mainly on the theory that defendant did not show plaintiff to have such: *Dorr v. Headstream*, 173 Ark. 1104, 295 S. W. 16 (1927); *Frederrick v. Strouse*, 299 Pa. 268, 149 A. 318 (1930).

<sup>13</sup> 59 Ga. App. 818, 2 S. E. 2d 230 (1939).

<sup>14</sup> *George v. Shannon*, 92 Kan. 801, 142 P. 967 (1914).

<sup>15</sup> *Costa v. Regents of U. of Cal.*, 116 Cal. App. 2d 445, 254 P. 2d 85 (1953); *Ballance v. Dunnington*, 241 Mich. 383, 217 N. W. 329, 57 A. L. R. 262 (1928).

<sup>16</sup> 75 App. D. C. 133, 124 F. 2d 825 (1941).

<sup>17</sup> *Berg v. Willett*, 212 Iowa 1109, 232 N. W. 821 (1930).

<sup>18</sup> *Cooper v. McMurry*, 194 Okl. 241, 149 P. 2d 330 (1944).

However, such a presumption does not exist in malpractice actions, in terms of error of judgment in diagnosis, or in the treatment prescribed, or in the failure to successfully effect a remedy or to accomplish as good results as someone else might have done.<sup>19</sup>

Expert testimony is essential in order to recover for x-ray injury. Only those are qualified to testify, as to whether there was negligence in the method of treatment, who themselves possess the skill to administer such treatment.<sup>20</sup> Generally, in the absence of expert testimony a nonsuit is proper.<sup>21</sup> However, in *McElroy v. Frost*,<sup>22</sup> although plaintiff's expert witnesses were unable to testify specially as to causal connection, there was ample evidence from which the jury could find that plaintiff's injuries resulted solely from over-exposure.

The courts are in disagreement as to the proper rule in cases involving the *res ipsa loquitur* doctrine. Although all the courts do agree that the doctrine is applicable if the requisite factors are present, the difference results from procedural methods.

In *Sieling v. Mahrer*,<sup>23</sup> the court held that the doctrine is inapplicable in an x-ray injury case where the plaintiff has alleged specific negligence on the part of the defendant.

The doctrine of *res ipsa loquitur* was held to be inapplicable in a case in which recovery was sought for injuries alleged to have resulted from exposure to x-rays. Even though the x-ray machine used by the defendant was under his control and operation, and the plaintiff received burns, nonetheless the evidence was insufficient to show that the burn was one which, in the ordinary course of things would not happen if the defendant had used due care.<sup>24</sup> In spite of diligent care in the use of x-ray for treatment, burns do occur. The reason the doctrine does not always apply is because expert testimony shows that, on account of the idiosyncrasies of the x-ray machine, one person of a certain type and temperament may be susceptible to a burn while another may not be.<sup>25</sup>

<sup>19</sup> *Davis v. Pittman*, 212 N. C. 680, 194 S. E. 97 (1938).

<sup>20</sup> *McCoy v. Buck*, 87 Ind. App. 433, 157 N. E. 456, 160 N. E. 46 (1927).

<sup>21</sup> *Bennett v. Los Angeles Tumor Institute*, 102 Cal. App. 2d 293, 227 P. 2d 473 (1951).

<sup>22</sup> 268 P. 2d 273 (Okla. 1954).

<sup>23</sup> 113 N. E. 2d 373 (Ohio App. 1953). See *Hess v. Millsap*, 72 S. W. 2d 923 (Tex. Civ. App. 1934).

<sup>24</sup> *Nance v. Hitch*, 238 N. C. 1, 76 S. E. 2d 461, 41 A. L. R. 2d 318 (1953).

<sup>25</sup> *Routen v. McGehee*, 208 Ark. 501, 186 S. W. 2d 779 (1945).

Several courts have applied the doctrine. A Kansas court<sup>26</sup> said that it was not committed to the rule that the doctrine of *res ipsa loquitur* can never be applied to x-ray treatment, but would consider each case on the basis of facts alleged and evidence adduced. Where everything which produced the injury is shown to have been under the control and management of the defendant, and the occurrence is such as in the ordinary course of events does not happen if due care has been exercised, the fact of the injury itself will be deemed to afford sufficient evidence to support a recovery in the absence of any explanation by the defendant.<sup>27</sup>

Courts on many occasions have applied to x-ray injury cases rules basically very similar to the *res ipsa loquitur* doctrine without referring to this doctrine by name.<sup>28</sup>

### Conclusion

Many of the old cases of malpractice arising out of the use of x-rays appear to have been a result both of ignorance of the patient and general carelessness of the treating physician. Today, however, with the word *radiation* much in everyone's mind, the public is alerted, and the physician need only inform the patient of the reasonable expectations from this therapy.

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<sup>26</sup> *Emrie v. Tice*, 174 Kan. 739, 258 P. 2d 332 (1953).

<sup>27</sup> *Johnson v. Marshall*, 241 Ill. App. 80 (1926); *Gray v. McLaughlin*, 207 Ark. 191, 179 S. W. 2d 686 (1944).

<sup>28</sup> *Berg v. Willett*, 212 Iowa 1109, 232 N.W. 821 (1930); *King v. Ditto*, 142 Ore. 207, 19 P. 2d 1100 (1933); *Kelly v. Yount*, 135 Pa. 528, 7 A. 2d 582 (1939).