OSTEONECROSIS AS IT CONCERNS THE INSURANCE UNDERWRITER

WARD JOHNSON

On November 6, 1968, a 39-year-old man worked under 22-psi pressure for 3½ hours, decompressed for 15 to 20 minutes, and went to lunch. He then went back to work for another 3½ hours, this time decompressing for 26 minutes. He went home and began feeling extremely ill and confused. When he was brought to Milwaukee County General Hospital, Edward End, M.D., indicated that the man was suffering from the most severe attack of decompression sickness that he had seen since beginning practice in 1936.

The patient survived, but is permanently and totally disabled because of osteonecrosis of both shoulders and hips, together with frontal brain damage. Under the workmen's compensation statutes of Wisconsin, he will be paid $73 a week for the rest of his life by the insurance carrier, Employers Insurance of Wausau. Based on disabled-lives tables, he will receive $93,000 in direct compensation benefits alone during the remainder of his life. His medical expenses growing out of this occurrence, coverage for which is unlimited under Wisconsin law, will also be paid. Wausau's attempts to rehabilitate this patient vocationally were unsuccessful owing to his brain damage.

Osteonecrosis from compressed-air caisson work was almost unheard of in the Milwaukee area until 18 months ago. There were a few cases, such as the one just described, but they were scattered among various insurance underwriters. They were assigned the wrong class code, so that the problem was not immediately recognized. *Class code* refers to a type of work exposure. Insurance rates for workmen's compensation are much higher for a tunnel worker than a clerical worker because, obviously, the risk of injury is much greater.

The problem of osteonecrosis came to light in Milwaukee when the number of decompression-sickness cases increased and Eric P. Kindwall, M.D., of St. Luke's Hospital started to check into the cause. The fault lay with the inadequate decompression tables then in use and a most inadequate safety code in general. At some pressures, the old Wisconsin decompression schedule was only one-fourth the length of current codes, such as the Washington schedule. The safety code was changed to meet currently recognized standards, but even with the new safety code, attacks of bends still occur.

As Dr. Kindwall has mentioned, one of Wausau's insured companies has reported 28 claims related to pressure exposures in the last four months. This company, incidentally, is in the assigned-risk pool. Employees are relegated to assigned-risk pools when no insurance company will underwrite them directly. Of the 28, 26 were cases of bends. In those 26 cases, Wausau has paid approximately $10,000 in medical expenses involved in treating the men in the hyperbaric chamber of St. Luke's Hospital. Fortunately, no time was lost from work.

These employees received fast and adequate treatment at St. Luke's Hospital, and it is to be hoped that they will not develop osteonecrosis. In Dr. Kindwall's opinion, these cases were caused by a combination of a high concentration of CO_2 in the tunnel where they were working, a lack of rest before reporting to work, and intake of large amounts of alcohol.

One has to remember that sewer contractors are generally small businessmen. They do not always have the funds to buy all-electric equipment or extra compressors; neither do they have the facilities and engineers to develop special safeguards. To accept the insurance risk in air-pressure exposures, therefore, Employers Insurance of Wausau requires that the following conditions of employment, developed by its safety department, be met:

All employees exposed to increased atmospheric pressures or compressed air — such as exists in pneumatic tunneling operations — must have preemployment examinations. The physicals must include a chest X-ray, anterior X-rays of both shoulders and hips, anterior and lateral X-rays of both knees, and sickle-cell trait determination. Employees are required to have an-

nual physical examinations, including six joint X-rays, and a chest X-ray every two years. Wausau requires that a qualified air master be employed under the direct supervision of the physician in charge. The air master must be present any time that employees are working under compressed air, during compression, and during decompression. It is the responsibility of the physician in charge to see that these requirements are met.

The decompression tables as printed in the U.S. Department of Labor's Safety and Health Regulations for Construction (Sec. 1926.803) must be followed, unless the tables of the state in which the work is being performed are more stringent, in which case the latter must be used. Reports of all examinations and X-rays are sent to Wausau's medical consultant. The company can thereby be assured of the supervising physician's expertise and can establish nationwide medical uniformity as well. After Wausau's medical consultant has reviewed the material, a report is sent to the employer with the Wausau physician's recommendation.

An example of the sort of cases reported to Wausau is that of a man who had not worked in the construction industry for 18 months prior to undergoing the required preemployment X-ray. He was found to have osteonecrosis of both shoulders. He has been idled for over a year and is currently undergoing vocational rehabilitation as a gunsmith. Under Wisconsin compensation laws, payments to him are retroactive to his last day of work under compressed air. He is paid $73 a week for temporary disability; he is additionally allowed $73 a week for a maximum of 40 weeks while undergoing vocational rehabilitation.

These sums paid by the insurance carrier are over and above what this man receives from Social Security or any federal or state agency. Further to these benefits, he is currently rated by an orthopedist as having a 15% impairment of each shoulder for a total of an additional 165 weeks, making a minimum of $12,000 that will be due him in temporary- and permanent-disability compensation payments, plus medical expenses.

When the new compressed-air code was put into effect in Wisconsin, 43 workmen out of 188 examined were determined to have some degree of disability because of osteonecrosis. The reserves established by the insurance industry amount to $1,821,000 in Milwaukee at this time, of which $146,000 has already been paid out. Of these 43 cases, 30 have reserves in excess of $10,000, 6 in excess of $50,000, 5 in excess of $100,000, and 2 in excess of $200,000.

These losses have raised insurance rates from a top premium of $4.25 per $100 payroll to $14 for tunneling without compressed air; $28 in 1- to 15-psi exposures; and $42 in exposures of 16 psi and over.

The cost in these cases will probably exceed the $1.8 million reserve. A review of other insurance carriers' files suggests that losses in cases of osteonecrosis uncovered thus far will probably approach $2.5 million. The 43 men cited above, who have been disqualified from performing further air-pressure work, must be retrained for some occupation within their physical capabilities, once their degree of impairment has been determined. To this end, the State of Wisconsin has assigned a vocational-rehabilitation counselor to work with the disabled employee, his physician, and the insurance carrier to make the man a productive member of society once again.

As to lesions of the long bones, under Wisconsin law there is no insurance liability because there is no disability. The fact that the man may have to change his occupation because of such lesions does not imply insurance liability. As new contracts are let and preemployment physicals are performed, as required under the new OSHA code, the insurance industry can expect many more claims. In Milwaukee, only the top of the iceberg is presently visible. And, unfortunately, the problem will soon be a nationwide one.

The only effective way of preventing osteonecrosis is insistence upon strict enforcement of the new federal codes by the assigned physician and the safety department of the insurance carrier underwriting the risk. An exchange of knowledge in this area, which conferences such as this provide, are likewise important. So also are follow-up studies — *e.g.*, the one that Dr. Kindwall will be able to present a few years hence in the 43 cases cited — on the disabilities caused by osteonecrosis as well as those instances in which no disability results.

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Dr. JONES: I would like to know if Mr. Johnson's company or other insurance companies might be willing to underwrite the funding of a decompression osteonecrosis data bank and possibly of a consultative group, such as we have suggested as a means of providing a collaborative, united front in settling disputes.

Mr. JOHNSON: I am not in a position to answer that question, but I can give you the name of someone much higher up who is.

Mr. FARAH: I agree that the idea behind this data bank is a good one, but I get the impression that it is a pet project. It should be set up by an independent organization, because to solicit funds from an insurance company would just about take all the credibility out of it. That is no way to instill confidence in people, especially labor. Such a data bank should be established by the federal government.

Dr. WALDER: There is always a natural tendency to sweep difficult matters such as disabilities arising from a man's employment under the carpet. No one would disagree that, when a man loses his livelihood because of osteonecrosis or other unfortunate sequelae to decompression sickness, he should be compensated in some way. On the other hand, it is important that malingerers be detected and prevented from getting something for nothing.

To accomplish these ends, we must know exactly what has happened in each case. Not only are the medical findings important but it is also essential to know the exact details of the man's compression and decompression. The only way that this can be done is to have some system for continuously monitoring and recording pressure changes and the times when they occurred. One can then examine the record and not have to rely on memory.

On compressed-air sites, it should be relatively easy to keep such records. In Newcastle we are developing a gadget for this very purpose. Similarly, the Royal Naval Physiological Laboratory in England is considering the manufacture of a monitor which the diver can carry on his person to record the pressure changes of each dive.

I was very interested in the honest admission of Mr. Handelman, the diving contractor, who said that until this conference came along, it had never struck him that bone necrosis was a problem in divers. But I must admit that I am surprised by this statement. In Great Britain it is assumed in the law courts that a contractor is fully aware of the implications, relative to his employees, of what he is doing, and this includes knowledge of the medical risks to which he exposes them.

The threat that insurance rates will necessarily increase until contractors can no longer afford to buy coverage stems from our ignorance concerning the risk of osteonecrosis. It is desperately urgent that we obtain sound data on which to base our analysis of the current risk to divers.

A final word. Earlier it was mentioned that unions in the United States are opposed to preemployment medical examinations. The attitude that their members might be victimized is really very stupid. Recording the results of a thorough medical examination is advantageous to both men and their employers. If a man is examined before he joins a firm and is found to be free of disease, he can then blame the company if he subsequently develops a disability. But if, on the other hand, it is discovered that he already has a bone lesion when he is examined, then at least his new employer cannot be held responsible for it and he can look to earlier em-

ployers for compensation. To regard examinations as though they were some sort of trick to ensnare either the man or the company is naive, and we should do all we can to reeducate people holding such false ideas.

Dr. SEALEY: If I understand correctly, under the new federal Occupational Safety and Health Act, jurisdiction extends to the continental shelf. Mr. Teed, how will that affect the responsibility under the Jones Act and Longshoremen's Act?

Mr. TEED: Generally speaking, I expect that the courts will treat the new OSHA regulations much as they have treated similarly promulgated health and safety regulations in other industries. Dispute exists among appellate courts about whether a regulatory violation is *ipso facto* a negligent act or omission. But, in line with the majority viewpoints, I would expect that plaintiff or defendant will be permitted to place in evidence the standards claimed to be proper and appropriate as having been complied with or violated.

In these matters there still reposes in the tryer of fact, be it judge or jury, the ultimate determination: Did the employer or the diving contractor (or whoever the defendant is) act as a reasonably prudent person would act in the same or similar circumstances? At this time the primary use of these regulations in a litigated claim is to establish some evidence, although not conclusive, of appropriate standards for the tryer of fact.

On the other side of the coin are certain sanctions and penalties that may be imposed by governmental enforcers upon an employer who violates the regulations. This does not necessarily redound to the benefit of the individual claimant, but amounts to something of a two-pronged use. First, the federal enforcer penalizes the violator in some fashion, or at least requires compliance with the regulation. Second, the claimant or company may then use the regulations as an appropriate standard of reasonable conduct in a litigative claim.

Dr. FAIRCHILD: I would like to interject the point here that workers already covered by legislation such as the Coal Mine Health and Safety Act or the Atomic Energy Act would not be covered by the new Occupational Safety and Health Act.

Dr. MILES: As Mr. Teed has pointed out, there are two parts to this matter; one is liability and the other, disability. The physician's role, as I said earlier, is to try to assess impairment of function objectively in terms of degree of limitation of motion or shortening, weakness, loss of sensation, and the like. Such matters as employability, the current status of the labor market, and all the other nonmedical factors associated with disability are quite out of the physician's field, and I do not think that he should be called on to make decisions about them. Unfortunately, however, several states require that he do so. The Colorado compensation commission has heard my protests in this matter and has accepted my desire simply to rate impairment of function rather than degree of disability.