

such as ordinarily would have followed if due care had been exercised. . . . But the present case shows an entirely different situation. Here what was done lies outside the realm of the layman's experience. Medical evidence is required to show not only what occurred, but how and why it occurred. That evidence establishes beyond question not only that the peroneal nerve may be injured even where due care is used, but that this unfortunate result invariably occurs in a limited number of cases. The doctrine of *res ipsa loquitur* is, therefore, entirely inapplicable and no malpractice has been proved.

Accordingly, it is now the law in California that malpractice must be proved by expert testimony and that there is no inference of negligence against a physician, except in those few and unusual situations in which it can reasonably be said that, as a matter of common knowledge and observation, an injury would not have occurred unless someone had been negligent. For the first time in a number of years it can be stated that it is a rule of law that mere occurrence of an injury during a surgical operation does not give rise to an inference of negligence.

SPECIAL ARTICLES

INDEX

1. *Anterior Poliomyelitis.*
2. *Essentials of a Registered Hospital.*
3. *Prenatal Examination Law.*
4. *Premarital Examination Law.*

ANTERIOR POLIOMYELITIS*†

Round-Table Discussion Over the Radio: Conducted by Dr. J. C. Geiger, Director of Public Health, City and County of San Francisco

Dr. Geiger:

Before we begin to discuss the disease itself in humans, I feel we should have a clearer understanding of the laboratory side. Doctor Meyer, will you summarize the present status of poliomyelitis in the field of experimental research?

EXPERIMENTAL RESEARCH CONCERNING POLIOMYELITIS

Dr. Meyer:

That is a difficult question to answer directly, since we are still baffled by the simple question, "What is the disease agent in infantile paralysis?" We find this disease agent in the brain and the spinal cord, but we do not know whether it is a living germ or something else growing in the cells of the brain. We cannot isolate it like a germ in a test tube, and it is too small to be seen with a microscope. There is only one species of animal—the Old World monkey—in which we can induce the same disease as seen in children. Yet these monkeys are not as susceptible as man, since there is no record of one monkey catching the infection from another monkey by exposure. Many tests have been made to develop a vaccine, but the outlook is not very promising. We now use the serum of recovered cases discovered early, to stop the progress of the disease and paralysis, but we

* This radio broadcast was given on January 18, 1938. Those who took part in the broadcast included Doctors J. C. Geiger, Karl F. Meyer, Emmett E. Sappington, Paul S. Barrett, R. W. Burlingame, all of San Francisco; Dr. E. W. Schultz of Stanford University; Miss B. S. Howitt of San Francisco.

† This issue contains several articles on Poliomyelitis, given in a symposium at Del Monte. See pages 12, 16, 19, and 23.

are not sure that this treatment is effective. There is some hope that a better treatment may be found. Recently, some experiments have been made to see if disturbances in the endocrine glands affect the susceptibility. Some very suggestive observations have been made and, personally, I feel that these studies are very important.

Dr. Geiger:

Well, if we do not know a great deal about the disease itself, do we know anything about the mode of its spread?

Dr. Meyer:

In answering this question, let me say frankly that theories are numerous but facts are few. It is assumed that the disease agent is discharged from the mouth and nose, and enters the body through the same channels. Thus, direct exposure of the healthy with the diseased should convey the infection; but the lack of spread in families, schools and crowded places, throws doubt on this explanation. The fact that several cases may occur in the family indicates some hereditary disposition may play a rôle. But this does not explain why infantile paralysis appears toward the end of the summer in the temperate zone, and is rarely ever seen in the tropics. Then there is some suspicion that raw milk may spread it. In a summary from our meager knowledge, it seems that infantile paralysis may be disseminated in more than one way. We must know more about it before we can expect the introduction of an effective system of prevention.

Dr. Geiger:

Will you discuss the communicability of the disease during the time of an outbreak and also at other times?

Dr. Meyer:

It is a favorite theory that infantile paralysis is very contagious and much more widespread than indicated by the number of cases actually diagnosed. Most children pass through a mild non-paralytic infection, which is not recognized but does leave protection or immunity. These missed patients, though not suffering from the disease itself, may act as carriers. Thus, infantile paralysis is a very common infection, which is always with us even during non-epidemic periods, and for reasons unknown it may develop to epidemic proportions at intervals of from two to four years.

Dr. Geiger:

Thank you very much, Doctor Meyer. Now, Miss Howitt, will you tell us something about the nature of the virus which causes poliomyelitis and its relationship to viruses in general?

CONCERNING VIRUSES

Miss Howitt:

The virus causing poliomyelitis, as has been said, is so small that it cannot be seen under the microscope, but is identified by its specific paralyzing effect upon the muscles of the body. It is called a filter-passing virus because the disease-producing agent will pass through very fine filters that hold back visible bacteria. By certain refined methods

it has been shown to have a size of about five ten-millionths of an inch, being smaller than the infectious agents causing either cold sores or smallpox, but nearer in size to the one causing the St. Louis encephalitis, which is about one-millionth of an inch.

Dr. Geiger:

And I suppose it may be said that, just as there are many varieties of roses, so it has been found that occasionally a virus may be similarly subdivided within its own group.

Miss Howitt:

Yes, as is the case with encephalitis, one variety being found in this country and another in Japan. Each kind may cause the same type of disease, but may differ only by inducing certain responses. The serum made from one variety may not prevent or cure this disease caused by another. It is now thought that perhaps the virus of poliomyelitis may also be divided into different varieties. For instance, one obtained from a case in a distant locality seems to have certain slight variations from one isolated here in San Francisco. Further research is necessary to prove if these differences may not occur more often than has been shown in the past for this disease, because if serum should be used in its treatment the particular variety ought to be known.

Dr. Geiger:

Thank you very much, Miss Howitt. With that information, let us proceed to the consideration of the disease as we see it in human beings. Doctor Sappington, will you briefly outline the epidemiology of infantile paralysis as used in the field?

EPIDEMIOLOGY

Dr. Sappington:

As Doctor Meyer said, the main, if not the only avenue of spread of this disease is by dissemination of nose and throat secretions from latent or missed cases, or from healthy carriers. The transfer of the virus by way of food, particularly milk, is a possibility, but rarely occurs. Modern epidemiology attempts to trace each case to its source of infection. This means a careful follow-up study in every family known to have a case or a contact. Epidemiology also includes analysis of the more general circumstances under which the disease occurs, including the effect of age, sex, rural preponderance, and seasonal prevalence. The information gained from epidemiological studies is used in formulating measures to control the disease.

Dr. Geiger:

Thank you, Doctor Sappington. Now, our attention should be directed toward making a diagnosis, so Doctor Barrett, will you enumerate briefly some of the symptoms which would lead to a diagnosis of anterior poliomyelitis?

DIAGNOSIS

Dr. Barrett:

In the beginning it resembles many other contagious diseases. A child that has been well becomes restless or drowsy. He is feverish, irritable,

and doesn't want to be moved. He is apt to vomit once or twice, and may complain of headache or pain in the back, or in the back of the neck. He is likely to be constipated, but may have diarrhea. More significant are a sore, stiff neck and spine and pains in the back, arms and legs.

Dr. Geiger:

Many of these symptoms are not unlike those in the common upsets to which children are subject, but would you not say that the most serious sign is the stiffness of the spine and neck, the child being unable to bend them forward?

Dr. Barrett:

Yes, indeed; sometimes these early symptoms may be very mild and yet, within from twenty-four to seventy-two hours, the child may be unable to move an arm or a leg. Again he may be unmistakably sick with the first stages of this disease, but develop little or no paralysis. Sometimes a child may have so mild a case that the attack is scarcely noticed, and yet he may spread the contagion to other children.

Dr. Geiger:

With a diagnosis having been made or suspected, Doctor Burlingame, will you tell us the procedure which is followed out in the Health Department?

HEALTH DEPARTMENT PROCEDURES

Dr. Burlingame:

The isolation ambulance is immediately sent for the patient, and a nurse, properly masked, goes along to take the patient's history, list of contacts, etc. This list is sent to the Bureau of Communicable Diseases.

Dr. Geiger:

After entrance, what disposal is made of the patient?

Dr. Burlingame:

The patient is placed in a disinfected room already prepared, and an examination to determine the patient's condition is made at once. This examination consists of the general condition of the patient, blood, spinal fluid examination, and extent of paralysis, if any.

Dr. Geiger:

Of what does the treatment consist?

TREATMENT

Dr. Burlingame:

The general treatment consists of bed rest and cleanliness. Special treatments are given as indicated by the symptoms. If the patient gives evidence that the paralytic stage has not been reached, or that paralysis is present and still progressing, the serum from patients already recovered from infantile paralysis is administered. If there is the least sign of paralysis of the respiratory muscles, the patient is placed in the "iron lung."

Dr. Geiger:

What other treatment is given?

Dr. Burlingame:

This depends upon symptoms as they arise during the illness. Splints and casts are applied where necessary to prevent deformities due to contraction of muscles and groups of muscles.

AFTER-TREATMENT

Dr. Geiger:

We hear much about the value of swimming pools and baths for the after-treatment. Will you explain something about the application of hydrotherapy?

Dr. Burlingame:

Swimming does not take the place of localized muscle training, and may even cause harmful contractions in the muscles which oppose the weaker, paralyzed muscles. Treatment in water has no more specific value than table treatment, but it is a pleasant way of doing exercises. The buoyancy of the water allows weak muscles to perform their function more easily than is possible otherwise.

PREVENTIVE MEASURES

Dr. Geiger:

We have discussed the disease, its mode of spread, and the diagnosis and treatment, but I know that we are all interested in certain aspects of its prevention. Doctor Schultz, what is the present status of the experimental use of chemical agents in monkeys to prevent poliomyelitis?

Dr. Schultz:

It is now well established that certain chemicals applied to the olfactory area, high in the nose, will protect monkeys for one month or more against heavy exposure to the virus of this disease. Some chemicals are much more protective than others.

Dr. Geiger:

What, in your opinion, is the practicability of the adaption of this method to human beings at the time of an outbreak of the disease?

Dr. Schultz:

This question is difficult to answer, since it must be considered from several standpoints. In the first place, the olfactory area, through which the virus apparently passes to the nervous system, is rather hard to reach and, until recently, the technical difficulties of applying the solution seemed too great to make this measure promising from a practical standpoint. However, the results of recent studies in several clinics seem to show that when the head is held in a certain position, measured amounts of solution properly instilled into the nose will flow quite selectively into the superior nasal space and cover the olfactory area. This new method is simpler to apply than the spray method employed last summer, and can probably be carried out by any physician or public health worker after a little instruction. It should be remembered that the solution must cover completely all of the olfactory area. Evidence that this has been accomplished is a loss of the sense of smell. Since in children this function almost always returns within two weeks, the treatments would probably have to be repeated at short intervals. In older children, and especially

in adults, loss of this function is regained more slowly, and while we cannot yet say that anyone has suffered a permanent loss of the sense of smell, a few have regained it only after several months. Therefore, the practicability of such a measure revolves in part around the possible risk of inducing a permanent loss of the sense of smell. Finally, it should be clearly understood that we still do not know whether this measure, which is so highly effective in monkeys, also affords protection in man.

Dr. Geiger:

I agree with you, Doctor Schultz, and that is the reason the Department of Public Health will continue to observe the rules of isolation and quarantine of all cases and contacts as heretofore, with the use of convalescent serum early in the disease as the best recognized method of treatment. And now I wish to thank you all for your participation in this program. I am sure the discussion has been extremely profitable to our radio audience.

ESSENTIALS OF A REGISTERED HOSPITAL*

General Statement.—The American Medical Association gives recognition to hospitals by admitting to the Hospital Register those that are found to qualify according to the essentials contained in the following paragraphs.

Registration is a basic distinction between all recognized hospitals and those that are refused recognition. It is a prerequisite to the consideration of a hospital for approval for interns or for residencies in specialties.

The registration of hospitals, the approval of hospitals for interns, approval for residencies in specialties, and all other service of the Association regarding hospitals is carried on by the Council on Medical Education and Hospitals.

It is the desire of the Council to cooperate in every way for the improvement of hospital service, whereby the sick and injured may be provided with scientific and ethical medical care.

The Council does not have nor does it assume legal authority over any hospital. It recognizes clearly that the officers in charge of such institutions have the unquestioned right to conduct the hospitals in any way they may deem wise. If a hospital desires to have its name appear on the American Medical Association Hospital Register and thus have the endorsement of that Association, it should be willing to comply with the principles which the Council on Medical Education and Hospitals considers necessary.

Essentials of a Registered Hospital.—Hospitals seeking admission to the register should have the following qualifications:

1. *Organization.*—The organization should consist of a board of trustees or other supreme governing body having final authority and responsibility and an executive officer or superintendent to carry out the policies adopted by the governing body. The executive officer should be assisted by adequate competent personnel.

Regardless of the form of organization, the hospital should function primarily in the interests of the sick and injured of the community.

2. *Staff.*—This constitutes the most important essential. The staff should be organized and composed of regular physicians who are properly qualified as to training, licensure, and ethical standing.

Staff membership and the use of the hospital's facilities must be limited to doctors in medicine. Where cult prac-

* Prepared by the Council on Medical Education and Hospitals of the American Medical Association.