Original Articles.

GENERAL PERITONITIS COMPLICATING SCARLET FEVER.*

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GENERAL peritonitis due to streptococcus infection as a complication of scarlet fever is extremely rare. That this condition may exist and not be recognized is possible, for the patient in a given case may be so delirious as to prevent a diagnosis being made, or the prostration due to the attack of scarlet fever may mask the characteristic symptoms to such an extent as to render a diagnosis impossible. When we take into account the comparative frequency of endocarditis, pericarditis and pleuritis, it would seem to prove that this complication is possibly more frequent than is generally supposed. In a clinical experience of over 8,000 cases of scarlet fever there has been a limited number of patients whose symptoms would cause one to think of the possible occurrence of this complication, but the speedy subsidence of all symptoms and the ultimate recovery of the patients would seem to prove that peritonitis could not have existed. In two instances, however, out of the 8,000 cases peritonitis did actually occur, as is shown by the following clinical reports. In these cases the attacks of scarlet fever were not specially severe, and there was no cause for anxiety until the occurrence of the abdominal symptoms. It was not reasonable to suppose that scarlet fever *per se* was the cause of the condition, but that it was due to streptococcus infection. The great difference in the severity of attacks of scarlet fever is due not to the poison of scarlet fever itself, but to streptococcus infection. This has been proved many times by means of cultures. If streptococci are found in cultures from the nose and throat the prognosis is graver than when this organism is not found. A careful study of the literature of scarlet fever proves that general peritonitis as a complication in this disease is extremely rare.

Frankel, in *American Medicine*, Vol. 2, No. 29, reports three cases of necrotic ulceration of esophagus and stomach following scarlet fever. General peritonitis is not mentioned.

In Gould's "Year Book" no cases are reported in the last four volumes.

In the "Reference Handbook of Medical Science," Vol. 7, page 313, this statement is made: "Peritonitis occurs most rarely, and is usually purulent."

Osler, in his "Practice of Medicine," does not allude to peritonitis as a complication of scarlet fever.

Wood and Fitz, in "Practice of Medicine," make a slight allusion to this condition.

In the "American Text Book of Diseases of Children" it is stated that general peritonitis may occur as a complication of the various exanthemata. Page 580.

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In Holt's work, "Diseases of Infancy and Childhood," the following passage occurs: "Of acute infectious diseases peritonitis is most frequently seen with pneumonia and scarlet fever." Page 416.

In the "Cyclopædia of Diseases of Children," Keating, general peritonitis is not mentioned.

In Oppenheim's "Medical Diseases of Children" he says that general peritonitis may be traced to the acute infectious diseases. Page 203.

In Allbutt's "System of Medicine," Vol. 2, page 150, tables of complications are given not mentioning general peritonitis, but says that other complications occur in less than 1% of cases.

Bauer, in "Ziemssen's Cyclopædia of Practice of Medicine," Vol. 2, page 282, and Wardell, in Reynolds' "System of Medicine," say that scarlet fever is sometimes a cause of general peritonitis.

In Pepper's "System of Medicine," Vol. 2, it is mentioned that general peritonitis may follow scarlet fever.

Somerset, in the *New York Medical Journal*, Vol. 72, page 981, in a study of 2,500 cases of scarlet fever and complications, does not allude to general peritonitis.

It will be seen that although some of the authors above quoted allude to the possible existence of general peritonitis in the course of scarlet fever, they do not report any specific cases, and perhaps do not lay sufficient stress upon the possibility of its occurrence. For this reason the two following cases are reported in detail. Both present several symptoms in common, but they differ in course of the disease, the treatment and the result. It is possible that mild peritoneal involvement may be found on careful examination to be more common than is at present believed; but if the following cases are typical of their class, another serious element is added to the already too long list of scarlatinal complications and sequelæ:

CASE 1. J. E., five years of age, entered the South Department of the Boston City Hospital on April 10, 1900, suffering from diphtheria. Both parents were consumptive; the child had had measles in the previous summer, and had been sick with a "sore throat" for five days before entrance. Two days after entrance the skin flushed, and on the following day the diagnosis of scarlet fever was obvious. There was some nasal discharge. Twenty-three days after entrance he vomited and complained of pain in the abdomen, but nothing could be found on physical examination. The urine became slightly albuminous and the tenderness and rigidity of the abdomen continued, as did the vomiting. Ten days later the umbilicus began to protrude, the area around it being reddened, swollen and painful; the abdomen was distended and dull in the flanks. Forty-three days after entrance, the child was tapped in the middle line of the abdomen, and twenty-one ounces of pus withdrawn, a culture from which showed streptococcus pyogenes; on the following day the umbilicus ruptured and fluid leaked from it for several days. On May 31 the child was aspirated in the seventh space, left posterior axillary line, and a few drachms of pus withdrawn from the thorax; on this day the right ear was noted to be discharging slightly. Two weeks later, while steadily improving, his friends insisted upon taking him home, and as he had finished desquamating he was discharged against advice, signs of fluid being still present in the chest and abdomen. Four months later

he was shown at a meeting of the Boston City Hospital Clinical Club, apparently well.

CASE II. W. S., thirty-one years of age, was admitted to the South Department April 22, 1903. His family history was good; he had had measles, pertussis and varicella during childhood, and rheumatism later. He had been sick for six days before entrance, the onset being accompanied by sore throat and vomiting. He had a brilliant scarlet fever eruption, and also a systolic murmur at the apex, which was in the fifth space outside the nipple line. The abdomen was negative. He progressed without complications, his general condition being good, until thirteen days after entrance, when a slight trace of albumen was found in the urine, and he was slightly nauseated. On the following day there was pain in the abdomen, but no spasm or tenderness. Early on May 9, four days after the appearance of the albumen, he complained of great abdominal tenderness and passed no urine at all. Distension, rigidity and muscular spasm rapidly developed. The legs were drawn up and the face became pinched. He was seen by Dr. Abner Post at 6 P.M., who recommended laparotomy, which was performed by Dr. J. B. Blake about two hours later. Under ether the abdomen was opened in the median line below the umbilicus. There was free discharge of thin pus, followed by a curd-like substance. The intestines were red and congested. The appendix, gall bladder and other abdominal organs were negative. The peritoneal cavity was flushed with several quarts of hot saline solution and drained with seven gauze wicks. No obstruction of the intestines was found, though they were everywhere distended with gas. The patient rallied, and for a few hours seemed a trifle better. The suppression of urine continued, however, in spite of salt infusion and enemata; the vomiting increased the pulse became weaker, and he died twenty-five hours after the operation. Culture from the pus showed streptococcus. The urine, two days before operation, was smoky, contained a trace of albumen, and a sediment of normal and abnormal blood, blood casts, epithelial and refracting casts, a small amount of pus and some round cells. At the time of operation the urine contained 1% albumen.

The autopsy was performed on the following day. The undertaker had already partially embalmed the body, punctured the intestines and stomach in numerous places, and filled the abdominal cavity with an acrid fluid containing formalin. This changed the peritoneal appearances decidedly. No retroperitoneal focus of pus was found. There was an easily separated fibrin layer on the diaphragm, spleen and liver, and a similar layer found lining both pleuræ.

There were small cauliflower masses of fresh red deposit on a chronic thickening of the edge of the mitral valve curtain, with small amounts of fibrin clinging to it.

The capsules of the kidneys were under some tension and yielded a slight hernia of the substance on section. The left kidney was only one-third the size of the right. There were two complete ureters from each kidney to the bladder and four distinct openings into the bladder. This is a very unusual condition, and is, according to Gould, the eleventh case on record. (A. H. Gould, *Am. Journal Med. Sciences*, March, 1903.)

The anatomical diagnosis was:

- Acute fibrino-purulent peritonitis (cause unknown).
- Acute bilateral fibrinous pleuritis.
- Acute vegetative mitral endocarditis.
- Acute nephritis.
- Acute splenic tumor.
- Acute bronchitis.
- Celiotomy.
- General arterio-sclerosis.
- Chronic mitral endocarditis.
- Bilateral double ureter.
- Chronic adhesive pleuritis.

These two cases present in common a series of complications, a late development of the peritoneal symptoms and an absence of local purulent foci. The family history of the child suggests a tubercular peritonitis, but the culture

from the pus showed streptococcus. The child's temperature began to rise and fluctuate several days before abdominal symptoms were noted; part of this rise may have been due to an involvement of the middle ear, but at least a part of it was probably due to the beginning peritoneal infection, which was gradual and comparatively painless in its onset. In the other case, the onset was very acute, suggesting sudden intestinal obstruction and rendering an operation imperative, in spite of the almost complete suppression of urine.

We had, therefore, in both cases, a peritonitis occurring late in the course of scarlatina, due to streptococcus, and independent of any local inciting cause; it was apparently only a part of a very widely distributed general infection involving other serous cavities, as well as excretory organs, special sense organs, and a part of the circulatory system. It seems fair to assume, therefore, that the peritoneum was infected through the blood, as was also the pleura. This is of course a difficult thing to prove. Cultures taken from the blood in the fatal case might have thrown some light upon it. There is no good reason, however, for doubting that infections of the peritoneum through the blood may occur. There is no more obvious explanation in this case and much that would be consistent with it.

TREATMENT.

If the signs of peritoneal infection are slight in degree and extent, palliative measures alone, such as enemata, turpentine stupes, rectal feeding, will suffice. If, however, the pulse steadily rises, and pain, tenderness and spasm increase, the indication for drainage is imperative. The condition of the kidneys is the most definite contra-indication to operation, and whenever possible cocaine should be substituted for ether. The operation should consist of a rapid celiotomy, thorough irrigation with hot salt solution and drainage. Unless there are definite local symptoms, the incision should be in the middle line. To favor drainage, hot, moist dressings, frequently changed, are desirable. Salt solution under the breasts and by rectum, and water by mouth if the patient is not vomiting, are all definitely indicated. Stimulation should be free, but alcohol may be contra-indicated by the nephritis. Caffein, strychnia and digitalis may be used energetically.

The prognosis is always grave, and a successful outcome like that in the first case may not often be anticipated.

WAS HE INSANE? A STUDY IN MENTAL DIAGNOSIS.¹

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