EPIDIDYMITIS AND ORCHITIS COMPLICATING TYPHOID.*

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Among the unusual complications and sequellæ of typhoid fever, epididymitis and orchitis are always of interest, and their comparative rarity is sufficient excuse for recording additional cases. That these conditions are infrequently seen can not be doubted, but that they are as rare as the statements in the text-books and in the reviews of current literature would lead us to believe is open to question.

As in other infectious diseases, notably parotitis and variola and to a less extent in pneumonia, inflammatory affections of the testicle and epididymis occur in typhoid fever, or more often, during convalescence from this disease.

Three of the cases reported in this paper were under my care, while the fourth case occurred in the practice of another physician.

CASE 1.—The first case was seen in the practice of Dr. Philip Marvel, of Atlantic City, and occurred in a young man, 19 years of age, who was convalescing from a mild attack of typhoid fever. The complication occurred three weeks after the patient's temperature had become normal and after he had been sent from a distant city to Atlantic City to convalesce. While on the Boardwalk, in a wheel chair, the patient was suddenly seized by a severe chill and severe pain in the groin. When first seen, he was complaining bitterly of pain in the region of the scrotum, and his temperature was 102 degrees.

An examination revealed a slightly swollen left testicle and a sensitive spermatic cord and epididymis. A few hours later the patient had another chill, less marked than the first, but during which he vomited freely. At this time there was a marked increase in the size of the left testicle, and the epididymis was also swollen. The condition subsided after three days, and the testicle resumed its ordinary size. Slight induration was felt in the epididymis when the patient was examined three weeks later. The patient denied any history of gonorrhea. There was no history of trauma, but the patient had had a well-marked parotitis as a child, with a left-sided orchitis.

CASE 2.—This case was also seen in Dr. Marvel's practice. The patient was a colored man, aged 24 years, who consulted me because of a swollen testicle. The patient stated that when the testicle first enlarged, four weeks before, he had a marked chill, and the pain in the testicle kept him in bed some days, but no physician was consulted. On examination, I found the right testicle was twice the size of the left and tender to the touch. The epididymis and spermatic cord were not involved at this time, but the patient stated that at the beginning of the trouble the scrotum was red, puffy and extremely painful. On questioning the man, I found that he had been discharged from a hospital in Baltimore six weeks before, having had a moderately severe attack of typhoid fever.

The patient admitted that he had had gonorrhea many years previously. He had no urethral discharge at this time, and there was no history of the possibility of an infection in some weeks.

Under treatment, the size of the testicle was reduced slightly, but when last seen, about two months after the original trouble, the testicle was still enlarged.

CASE 3.—This patient, seen at the out-patient department of the Jefferson Hospital, was a man, 36 years of age, who came to the dispensary for treatment for a swollen leg. We found that the patient had been discharged from a New York hospital three weeks before after suffering a severe attack of

typhoid fever, during which he had many cold baths and was kept in bed seven weeks. A few days after his discharge he noticed a pain in his left groin, and he had a chill and was nauseated. He went to bed and remained there a week, during which time his left testicle became enlarged and painful.

On examination we found that the left testicle was twice the size of the right and tender. The left leg was somewhat edematous, and there was pain on pressure along the course of the internal saphenous vein. The man was to enter the hospital for treatment, but disappeared and was not seen again.

CASE 4.—This case occurred in the practice of Dr. C. K. Kistler, of Reading, Pa., through whose courtesy I am allowed to report it. The complication occurred in a young man, 27 years of age, during convalescence from a moderately severe attack of typhoid fever. Two weeks after the patient's temperature had become normal there occurred a chill, following which the left saphenous vein showed a marked phlebitis, and two days later there was a marked orchitis, the left testicle becoming three times as large as the right. The epididymis and spermatic cord were also slightly involved, and there was effusion into the tunica vaginalis testis. The patient recovered in two weeks, but when seen, two months later, there was still some enlargement of the testicle and the epididymis was slightly indurated. No history of venereal infection was obtainable, and there had been no trauma.

In the literature on this complication, orchitis and epididymitis are considered together for, although either may occur alone or preceding the other, as a complication of typhoid fever the association of the two conditions is so frequent as to render their separation unnecessary. The earliest record is in the writings of Velpeau, in 1844. He alluded to the fact that at the close of certain grave fevers, such as typhoid, variola, etc., acute orchitis, without demonstrable cause, was sometimes seen. Beginning with the report of Chedevergne, in his Paris thesis, in 1864, we find scattered through the literature isolated instances of this complication, and occasional reviews of a series of cases. Sadrain, in 1883, collected sixteen cases, and later in the same year Ollivier reported twenty-four cases, with three from his own observation. Wescott, in 1898, collected thirty-two cases for Keen's monograph on the surgical complications of typhoid fever, while Eshner, who gave the subject the most careful review, was able, in the same year, to find forty-four cases in the literature and to add one case of his own. Since this time Kinnicutt has reported two cases and has given references to several other cases, while Blumenfeld, in his Paris thesis, for 1905, reviews the entire literature up to that date, and, adding the case under his care, increased the number of reported cases to sixty-nine. Adding a few cases, which were overlooked, to those which have been reported since Blumenfeld's report, in 1905, I have been able to collect 102 cases.

It is difficult to understand why there have been so few cases reported, for inquiry among physicians of experience reveals the fact that the condition is considered by no means rare, while a continued inquiry also reveals the fact that although cases have been seen by many men they were not reported, or if so, were simply mentioned in a discussion where other complications were receiving attention. Failure to report the cases seen, then, is the first reason for this complication being considered a rare one. The second reason, and to my mind quite as important as the first, is the popular misconception as to the cause of these complications.

For many years, in fact, until recently, when orchitis or epididymitis occurred during or following typhoid fever the true cause was not, as a rule, known, and various reasons were ascribed for the appearance of the

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condition. The most popular theory was that the complication was due to a pre-existing gonorrheal infection, and this view was strengthened by the knowledge that not infrequently there was at the time of the complication a urethral discharge, and at times the patient complained of burning pain on urination.

Next in favor was the traumatic theory, and, in many instances slight traumatism, such as injury by contact with a urinal or bed pan, or injury of the genital tract during catheterization, was held accountable for the production of the condition. Other theories advanced were that the condition was caused by masturbation during convalescence from typhoid fever, or, as was sometimes stated, that the condition was brought about by a "rheumatic" condition of the blood. Schottmueller, in 1902, was the first to point out and to prove conclusively that typhoid fever was primarily a septicemia, and since this date the abundance of proof as to the truth of his statements has brought about a general adoption of the view that typhoid fever is a general infection, and this has been repeatedly proved by research work with blood cultures, which reveal the presence of typhoid bacilli, even as early as the third day of the fever and apparently without regard to the severity of the attack. Not only have the investigations revealed that typhoid bacilli enter the circulation in the great majority of typhoid fever cases, but it has been proved that in 30 per cent. of the cases the bacilli are eliminated by the urine, while the bacilli are isolated from the stools in at least 20 per cent. of the cases.

With the knowledge derived from these important investigations it is much more easy to explain why orchitis and epididymitis occur. Bacilli reach these organs both by the blood stream and through the urethra by way of the vas deferens. It is probable that the blood stream is the mode of infection in the majority of cases, but now that we know how often bacilluria exists, we must consider the possibility of the infection by way of the vas deferens, and in one patient, reported by Kinnicutt, the course of the disease could be watched in the cord, the disease eventually involving the epididymis and testicle.

Thrombosis of the spermatic veins has been held accountable for the complication in certain cases and in several cases the condition has been complicated by phlebitis of the saphenous veins. This last theory was advanced by Widal, and supported by Hutchinson, while Gwyn more recently reports a case which appears to support this theory, and he thinks that many of the cases of orchitis in which there is little pain are due to phlebitis of the veins of the testicles.

A brief analysis of this series of 102 cases shows that the complication occurred during convalescence following typhoid fever in 71 instances, and during the fever in but 17, while no note of the time of occurrence was made in the remaining 14 cases. In 37 cases the right side was affected, in 27 the left. In three cases the complication was bilateral, while in 35 instances no note was made as to side affected. There were 43 instances in which both the testicle and epididymis were involved; the testicle alone being involved 31 times and the epididymis alone 10 times; while in 18 the conditions were not differentiated. In a number of cases the cord was also involved. Suppuration occurred in 22 of the 102 cases and in many of these there was loss of testicular tissue and subsequent atrophy. It was noted that there was an effusion into the tunica vaginalis testis in 13 cases, and in six cases a urethral discharge was seen,

while in several other cases an examination of the urine revealed the presence of mucus and pus.

The onset of the complication was, as a rule, abrupt, coming on while the patient was still in bed or shortly after leaving his bed, and was marked in the majority of cases by an acute pain in the region of the testicle or in the groin, when the pain was radiating in character and involved the testicle. The onset was not infrequently marked by chilliness or by a severe chill, and sometimes the pain was so severe as to cause vomiting. Following the initial chill and pain there was usually a rise in temperature, acceleration of the pulse and a feeling of general wretchedness. In many cases the patients complained of a sense of weight in the testicle and the scrotum was often red, swollen and edematous, while not infrequently an acute hydrocele developed. Pain on urination was complained of quite frequently and catheterization was necessary in one or two instances. There was no apparent relation between the severity of the initial illness and the occurrence of the complication, which attended the mild and moderately severe cases as frequently as it did the grave cases of fever. The complication occurred most frequently in youth and young adults, but the complications were seen in a child of 4 years and in a patient 78 years of age.

Kinnicutt and Gwyn have called attention to the fact that a sudden acute pain in the abdomen may be due to thrombosis of the mesenteric veins, and in one of Kinnicutt's cases the infection of the epididymis evidently originated in the cord above Poupart's ligament for the process could be traced downward to the testicle, the epididymis being affected 48 hours after the cord was palpable. In Gwyn's case there was sudden pain in the region of the appendix, and only later was the discovery of the enlarged testicle made. The implication of the cord suggests, as pointed out by Kinnicutt, an original infection either of the vas or of the spermatic veins, producing phlebitis with a thrombosis and secondary implication of the vas deferens by contiguity. The nearly simultaneous development of a phlebitis of the internal saphenous vein, which is a condition not infrequently accompanying these complications, suggests the possibility of certain cases being due rather to a phlebitis of the testicular veins, as suggested by Gwyn, than due entirely to bacterial invasion.

The prognosis for life is good and the disease being usually unilateral there is little complaint of loss of function. The complication lasts from a few days to a week, but when suppuration takes place convalescence is much delayed. Incision and free drainage, as a rule, soon give relief, although induration of the testicle and epididymis following convalescence is frequent.

The treatment consists in, first, support of the organs by well-fitting suspensory and the local application of cold. Opium or its derivatives may be given if necessary to control pain. If the inflammation does not subside and suppuration threatens, then the ice bag should be replaced by hot applications. If pus forms, incision and drainage is indicated. Very rarely the complete or nearly complete disintegration of the organ will necessitate its removal.

CONCLUSIONS.

1. Epididymitis or orchitis, occurring during typhoid fever or during the convalescence from this disease, is a comparatively rare complication, and in the majority of cases is due to infection by Eberth's bacillus.

2. These complications may be caused by other pus producing bacteria, but this is unusual.

3. The conditions may also be caused by phlebitis and thrombosis of the testicular veins, the etiologic factor being the same (*Bacillus typhosus*). These complications may occur during the course of the disease, but they are far more likely to occur during convalescence.

4. Although the lesion, as a rule, is unilateral it may be bilateral, and it may involve either the epididymis or testicle, or both, and not infrequently the cord as well.

5. Effusion into the tunica vaginalis testis is seen occasionally and there may be a urethritis with urethral discharge. Localized necrosis and suppuration, with extrusion of the testicular substance is an uncommon termination, the usual termination being resolution, in a week to ten days.

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FOREIGN BODIES IN THE LARYNX.

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A review of the literature on foreign bodies in the larynx reveals the fact that the subject has been much slighted by the authors of leading text-books, nor do medical journals furnish satisfactory summaries of cases seen in hospital or private practice, the technic of the removal of such foreign bodies, the complications or the final results obtained. Just why so important a condition should be so inadequately dealt with is not easy to explain, unless it is on the hypothesis that everything has been said on the subject.

The history of cases of laryngeal obstruction shows that this condition is usually the result of the accidental entrance into the laryngeal cavity, by way of the mouth, of foreign bodies, such as buttons, screws, false teeth, pins, etc., held in the mouth in play by children, or for convenience by adults; pieces of bone, meat or other food, which have found lodgment while the patient has been eating; clots of blood that have found entrance during the performance of surgical operations on the nose or throat; small tumors or abscised tonsils, the removal of which has indicated such operative procedures; or intubation tubes which, by reason of improper introduction, have themselves acted as foreign bodies instead of affording the relief for which they were put to use. In one case death followed the impaction of the epiglottis from direct violence.

It is surprising to contemplate the varying intensity of the symptoms in these cases. A man under my observation, while eating dinner, had the misfortune to get a bolus of meat lodged in his larynx and died before I could reach him, though I was in the building at the time.

Fischer reports the case of a child who, while holding in his mouth a pepper-corn transfixed by a pin, by some means let it drop into the larynx. There it remained for three and a half years embedded in the right ventricular band, causing no pus formation and but little reflex disturbance. Larkin reports the case of a man who had a piece of bone lodged in his larynx for three days. He died of ulceration and edema of the glottis.

During the last few years a number of persons have come to this city from considerable distances with sand-burs between their vocal cords, some of which had been there several days without producing very immediate danger.

As shown above, the symptoms of a foreign body in the larynx may vary considerably. Nor does the nature

of the offending substance or its exact situation seem greatly to be responsible for this variation in the amount of inflammation and reflex phenomena which it may excite. Aphonia may be the only sign, as in the case of a child who had a safety-pin lodged in the larynx for six months without other signs of its presence, which, in fact, was not suspected. Commonly, however, there is a sense of irritation, or even pain in the throat, and more or less difficulty in respiration, which may be due either to the size and nature of the foreign body, to laryngeal spasm or to edema of the glottis.

The mode of dealing with the case naturally varies according to the nature of the foreign body, the age of the patient, the amount of swelling of the laryngeal structures, which may be present, and the urgency, which may demand the most rapid measures to prevent immediate death.

The first indication is, of course, to remove the foreign body from the larynx as expeditiously as possible, at the same time keeping in mind the necessity of preventing reflex spasm of the glottis, and of avoiding the production of more traumatism than may already have been produced.

In most cases either a local or a general anesthetic may be used. If the patient is not too young we may generally use cocain for local application. For anesthetizing the larynx I do not consider a 20 per cent. solution in adrenalin chlorid too strong, as the adrenalin acts with the cocain in reducing the amount of congestion and edema, it increases the anesthetic effect of the cocain and diminishes the amount which may be absorbed into the circulation, a feature, by the way, of some importance in cases where the proper oxygenation of the blood has been interfered with by the obstruction to respiration, which may have existed for some time. Local anesthesia having been produced, we may, by indirect or direct laryngoscopy, obtain a view of the larynx and its contents, note the exact situation of the foreign body and the amount of swelling or other pathologic condition which may be present.

This having been accomplished, we are now in a position to attempt the removal of the foreign body. I would emphasize the word attempt, for the ease with which a novice may at times remove a button, thimble or other article from the larynx, contrasted with the difficulty encountered at times by the expert of long experience, should excite our sympathy for the future heartaches of the former, which are sure to come, as well as our generosity toward the painstaking failure of the latter. Indeed, the manual dexterity necessary to the would-be successful laryngologist is great. In this class of cases there are four factors which militate against our success: The security of lodgment of the foreign body; the amount of swelling, which may make its location hard to get at; the reflex cough, which at times persists after the most thorough cocaineization and which causes us to desist from our efforts at the removal of the body just as we are about to grasp it with the forceps, and the unsatisfactory nature of the various instruments so far devised for such procedures.

The clumsy design of the majority of laryngeal forceps would almost lead us to suspect that the instrument-maker had in mind the idea that they were to be used for the extraction of the larynx itself instead of some small article lying more or less loosely within the margins of the ventricular bands or piercing the car-