

In rickets and in syphilis the nutritional impairment affecting the bones never to my knowledge produces a condition of this kind, and the general condition of these cases is apparently excellent.

Direct injury, if severe enough, might cause a flattening of the head of the femur, and in children of this age the head is certainly impressionable. Should this be the cause in these cases, the thickening and shortening of the neck without evidence of fracture remains unexplained. We all know that the history of injury, especially in children, should be given much latitude, but in this group of cases, with a history of distinct injury in all of them, it seems to me that it must be considered, and at this time it seems to me that a possible explanation of the condition is that the injury may indirectly cause this condition by causing injury or displacement at the epiphyseal line, whereby the nutrition of the head, coming mostly through the neck, is impaired; and by the poorly nourished epiphysis bearing on the acetabulum, it becomes flattened. From such an injury a hyperemia of the neck of the femur would occur, and by this to stimulate bone growth the thickening of the neck may be explained.

Of the occurrence of a similar condition appearing in the apparently normal hip, I shall not, at this time, attempt to offer any explanation. Contre-coup and sympathetic inflammation may be considered, but these are, to my mind, very remote possibilities.

If a hyperemic condition is present in the neck of the femur as a result of a deranged circulation, it may be the explanation of infection taking place at this point, as is seen in the fifth case. It does not seem probable to me that the change in the head in this case is secondary to the infection in the neck, for we see many cases of infection in the neck, and in none of these have I seen the condition described present in the head.

It is unnecessary for me to say in closing that in reporting these cases I make no claim to any definite conclusion, both on account of the small number of cases observed and from the length of time they have been under observation; still, I am glad to have brought them to your attention in the hope that in so doing more cases of this type may come under observation and that by further study their true etiology may be determined.¹

THE SYMPTOMATOLOGY AND DIFFERENTIAL DIAGNOSIS OF TUBERCULOSIS OF THE CECUM.*

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In the *Annals of Surgery*, November, 1907, I published a paper having for title "Tuberculosis of the Cecum, with a Report of Two Cases." In this article I considered the subject of tuberculosis of the cecum in a general way, but upon the

present occasion I desire more particularly to discuss in detail the symptomatology and differential diagnosis of this affection, because it is worthy of the special attention of both the physician and surgeon. The surgical treatment will not be referred to.

In the clinical type of tuberculosis of the cecum, which I shall particularly consider, because it is practically the only one that enters into the domain of surgery, is the hypertrophic form. In the end it gives rise to a tumor in the right iliac fossa, but this rarely is present as an early symptom. Usually for a long time, which may extend over several years, the patient will suffer from various intestinal disturbances, such as alternating constipation and diarrhea and pain in the right iliac fossa. This may be termed the initial stage of the affection.

Tuberculosis of the cecum is frequently primary, that is to say, it appears in subjects who have never had any former manifestation of tuberculosis. However, one may occasionally have a case which follows other tuberculous localizations. The affection may also follow a gastro-enteritis, typhoid fever, dysentery, intestinal affections of tropical countries and cholera.

During the early stages pain is hardly ever wanting. Sometimes it is indefinite, the patient complaining more of a feeling of weight and a generalized dull pain in the lower abdomen. Soon, however, it becomes localized in the right iliac fossa, where it gives rise to a prickly and dragging sensation, but more frequently it will cause paroxysms of true colic. The paroxysms sometimes occur without any appreciable cause, but oftentimes the patient will say that he has strained himself, has taken a long walk, has been exposed to cold damp weather, or they may follow a period of constipation. The paroxysms succeed one another at variable periods of time, sometimes within a few days, while at others there will be several months' interval. Then, again, there may be a certain regularity in their appearance.

The intensity of the pain varies. Exceptionally it may be so slight that the patients can continue their work, but more frequently the pain is very acute and violent. The entire right iliac fossa is painful and radiates from the cecal region towards the hypogastrium, epigastrium, umbilicus, right thigh or leg.

At this time, palpation of the right iliac fossa will sometimes elicit a rigidity of the abdominal wall and will always give rise to an exacerbation of the pain. Generally speaking, food is well tolerated and appears to have no effect on paroxysms. However, several cases have been recorded where the paroxysms were increased in violence after eating, and, in one or two instances, it was so severe that the patients have refused food on account of the attack of pain following. The duration of a paroxysm varies, sometimes lasting only a few hours, at others for several days. In some few cases it has been continuous. After disappearing there is usually a lameness in the right iliac fossa.

During the paroxysm constipation usually is

¹ The Roentgenograms of these cases, except the fifth, are from the Roentgenological Department of the Children's Hospital.

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present. The walls of the cecum, which have become hypertrophied, obstruct, to a certain extent, the onward progress of the feces. The abdomen becomes distended and peristaltic movements of the intestine may be seen. Then, under the influence of intestinal contraction, sometimes from the opportune administration of a purgative or an enema, the obstruction is overcome, the pain ceases and the intestine empties itself. Not infrequently this is followed by a diarrhea for several days, due to intestinal irritation from stasis of the feces. The diarrhea is of short duration and in no way resembles the diarrhea of a tuberculous enteritis. However, cases have been recorded where constipation has been completely wanting and diarrhea alone accompanied the paroxysms of pain.

The stools, even when diarrhea exists, usually present no special characteristic. Only infrequently do they contain pus and mucus or false membranes. On the other hand, blood is quite frequently noted; sometimes it is red and makes its exit from the anus at the commencement of defecation, while in other cases the stools are simply bloody. Occasionally, the blood is digested, and then we have a melena with blackish stools mixed with dark matter similar to coffee grounds.

Other digestive disturbances, such as an anorexia, nausea and vomiting, which are particularly frequent during the paroxysms of pain, are occasionally encountered. The general health is not usually involved, but towards the end of the initial stage there is some loss of flesh and strength, night sweats and a slight elevation of the temperature.

It must be admitted that during the initial stage the symptoms are so vague that it is almost impossible to formulate the diagnosis. However, the predominance of pain in the right iliac fossa, the alternating constipation and diarrhea and abdominal distention will usually lead one to suspect an obstacle present in the intestinal tract, more particularly in the ileo-cecal region, the maximum point of pain. Soon appears a tumor, which will then remove all doubts.

The second period is that of tumefaction and is really the surgical period of the affection. Usually inspection of the abdomen remains negative. It rarely appears retracted, and in most cases is moderately distended. It is only when the patient is extremely thin and the tumor large in size that a tumefaction in the right iliac fossa will be noted.

In order to properly carry out palpation, the intestine should be emptied the day before by a mild laxative or an enema. The patient should be placed in such a position that the muscles of the abdominal wall are relaxed. Generally, the pressure used during palpation should not give rise to pain, excepting over the right iliac fossa, at which point it will be rather acute and will usually disappear as soon as contact with the abdominal wall has been removed, but in some cases it may persist for a little while after.

In the painful region a tumor will be discovered

and, in order to detect it, the right flank should be seized by the surgeon's left hand, the thumb forward and the fingers behind, while the right hand searches for the cecum. As the latter cannot escape towards the hypochondrium, it thus becomes imprisoned in the iliac fossa.

Normally, the cecum occupies the middle portion of the iliac fossa, so that a tuberculoma of the organ occupies the same location. The lower pole of the tumor rarely reaches Poupart's ligament, usually being several centimeters distant from it. Its external aspect will also be found about two fingers' breadth from the iliac crest, while its internal aspect reaches the external border of the right rectus.

As to the upper pole, according to the size of the tumor it will be more or less near the right costal border. When it is very large, or if it has invaded the ascending colon, it may extend upwards under the false ribs. It should also be recalled that the cecum may occupy an atypical situation, behind the bladder, in the cavity of Douglas, in the vesico-uterine peritoneal cul-de-sac, between the right side of the liver and the diaphragm, to the left of the median line, or in the neighborhood of the umbilicus. These locations readily explain the occasional occurrence of an abnormal location of the tumor. The neoplasm, which, in most instances, does not extend beyond the external border of the right rectus, may occasionally go beyond and even upwards towards the umbilicus to the median line.

The shape of the tumor is often vertically elongated in the direction of the ascending colon, but this is far from being constant. It may be transversal, while in some cases it has assumed an oval or rounded shape. In size, it also varies, being compared to a hen's egg, an orange or a fetal head. Its surface is rarely smooth, being most frequently irregular and unequal, while in consistency it is firm and elastic.

Careful palpation will also show the connections formed with the growth. It is rarely adherent to the anterior abdominal wall, and, in most cases, it may be moved slightly from right to left. An up-and-down movement is less frequently encountered. In some cases the growth has been found to follow the respiratory movements, and in one case the neoplasm was so movable that it was diagnosed as a tumor of the small intestine. On the other hand, it has been found so tightly bound down that the case was thought to be a fibroid of the abdominal wall or an osteoma of the iliac bone.

I would here point out that when the tumor is not in direct contact with Poupart's ligament, and when it enjoys a certain mobility, the ends of the fingers progressively pushed in between the abdominal wall and the lower pole of the growth may frequently allow one to produce ballotement.

Percussion will also give us some data, but they are far less important than those furnished by palpation. The center of the tumor is nearly always dull, surrounded by a zone of decreased resonance and then by one of sonority. Superficial percussion may elicit sonority when a deeper

percussion will produce decreased resonance. At other times sonority may be obtained over the entire extent of the neoplasm. These variations are due to the varying thickness of the walls of the cecum, the character of its contents, its state of emptiness, to direct contact of the tumor with the anterior abdominal wall, or the presence of loops of the small intestine interposed between the tumor and the abdominal wall.

Vaginal examination should always be resorted to, because in several instances the tumor, being independent of the uterus, was accessible by pushing up the right lateral cul-de-sac. Then, again, vaginal examination will demonstrate the integrity of the right adnexa.

Rectal examination will rarely allow one to reach the growth, but, nevertheless, this should not be neglected, because the condition of the prostate will be ascertained, an important fact given the rather frequent occurrence of tuberculous foci in this gland. Occasionally small lymph nodes may be detected in the right groin.

The functional symptoms are here the same as in the initial period, but usually more marked. The appetite is poor, but even when it has been preserved, the patients not infrequently have a marked distaste for food, particularly fat.

Digestion is somewhat delayed and nausea and vomiting, particularly frequent during the paroxysms of pain or periods of constipation, are noted.

Diarrhea may arise and be very obstinate. On the other hand, these patients may remain for a number of days without having a movement, in which case there is intestinal obstruction rather than a true occlusion, which is so frequent in cases of carcinoma of Bauhin's valve or of the large intestine. Purgatives and enemata always overcome the condition. Very rarely has an emergency operation been required.

The general condition is not long in becoming bad. The loss of flesh becomes more marked, sometimes very rapidly so. The strength diminishes and the patient finally is obliged to give up work and remains in bed. At this time examination of the urine reveals neither sugar nor albumin, but quite frequently indican is present, indicating pathologic fermentation in the intestine.

I have pointed out that intestinal occlusion is exceptional, but chronic invagination has been reported, likewise a case of hydronephrosis, resulting from compression of the right ureter from the tumor. The renal lesion disappeared after the cecum had been removed.

If an operation is not undertaken in these cases, the patient may die at the end of this period, which will vary from one to five years from the commencement of the accidents. Likewise, the lesion may be the starting point of some other tuberculous focus, particularly pulmonary tuberculosis.

The third stage of the affection I would define as that of abscess and fistula, but this is not often reached, because before these have had time to take place, the patient has usually been operated on. Undoubtedly some of these cases have been reported as appendicitis, but if these reports are

carefully read, the diagnostic error becomes more or less manifest. Its resemblance with appendicitis is only apparent, and in the patient's history there is never any sudden commencement with the acute pain in the right iliac fossa, nausea, vomiting, rigidity of the rectus and cutaneous hyperesthesia. Then, again, in cecal tuberculosis, there is never any generalized peritoneal infection, but, on the other hand, around the tuberculous neoplasm foci of encysted peritonitis with abscess formation may arise from perforation of the cecal walls or by migration of the bacteria through them.

The abscess may then take on an acute type, or that of the ordinary cold abscess. In the latter the tumor will be found to increase in size, its outlines less distinct, pastiness soon followed by fluctuation occurs and then the skin becomes thin, and finally pus, having all the characteristics of the tuberculous variety, makes its exit and a stercoral fistula results. All this takes place without any rise in temperature and the patient will only complain of slight pain in the iliac region.

In the acute form the peritoneal reaction is more marked; pain is sharp, the abdomen distended, while there is constipation, vomiting and a high temperature. Palpation of the right iliac fossa reveals a deep-seated induration which soon becomes softened. Edema of the skin then takes place and soon becomes red, and if an incision is not soon made, ulceration occurs through which fecal matter escapes along with pus, and a stercoral fistula is formed. Usually the fistula is seated in the right iliac fossa, but not infrequently it may be in the lumbar region and sometimes in the neighborhood of the umbilicus or anus.

Examination of the pus will reveal Koch's bacillus along with the other ordinary pyogenic bacteria.

The reason why this final outcome of cecal tuberculosis is not often observed is because the tuberculoma has been discovered in its earlier stages and resection of the cecum has been done. Death is the usual outcome when the affection reaches the third stage.

Beside the evolution which I have just given, there are other cases where the tuberculous process, instead of involving the totality of the ileocecal segment, becomes localized at some one spot, either in the wall of the cecum or the appendix. I have met with one case where, in all probability, the appendix alone was involved. The patient was operated on for a supposed acute appendicitis by a competent out-of-town surgeon. Two weeks after the operation the abdominal wall broke down and gave rise to a fistula secreting a small amount of thin pus. Several months later an attempt was made to close the fistula, but was unsuccessful. This last operation was done about eighteen months ago. The patient was referred to me for my opinion, and there is no doubt in my mind that partial or total resection of the cecum will be necessary in order to permanently do away with the trouble. I would also remark that at the time the appendix was re-

moved the patient presented marked evidences of a tuberculous process in both pulmonary apices, although the tubercle bacillus was not found in the sputum. The pulmonary process has now cleared up and, as the patient is in very fair general health, I propose later to make an attempt to do away with his fistula.

There is still another variety of tuberculosis which is limited to the ileo-cecal region. I refer to prececal tuberculous adenitis, without any apparent lesion of the intestine. Several such cases have been recorded. The small size of the tumor and its relationship to the cecum may lead to the probable diagnosis of prececal tuberculous adenitis, but a positive diagnosis can hardly ever be made, for the reason that a tuberculoma developing in a limited point of the ileo-cecal segment may give rise to small neoplasms quite similar to enlarged lymph nodes.

Up to the present I have only been referring to those cases where the tuberculoma formed a large tumor involving the greater part of the ileo-cecal segment, or a limited lesion giving rise to a small tumor. I would now consider those cases where no tumor has been present. Here, intestinal perforation is the only symptomatology encountered; whether it is seated in the terminal portion of the ileum, the appendix or cecum is of little importance, for the symptoms are always the same. If the perforation occurs suddenly, an acute peritonitis ensues, while, on the contrary, if adhesions have had time to develop, an encysted peritonitis results with a fecal abscess in the right iliac fossa. In the latter case a more or less voluminous collection will be found in the right iliac fossa which, after a time, will break through the abdominal wall, giving exit to pus and fecal matter, the outcome being a fistula. The location of these abscesses and fistulae varies; sometimes they will be found in the iliac region, sometimes in the lumbar region or the buttock. If an operation is not undertaken, the patient loses flesh and strength and dies cachectic, or from a generalization of the tuberculous process.

I would now discuss in detail the differential diagnosis of the hypertrophic form of cecal tuberculosis, because, as I have already pointed out, this is, above all, the surgical form, and I shall only briefly refer to the differential diagnosis of the other types, which are far less frequently encountered.

In the first period of hypertrophic cecal tuberculosis, namely, that where the functional disturbances are making themselves evident, the affection must be distinguished from chronic appendicitis. In this affection, just as in the early stages of ileo-cecal tuberculosis, pain and digestive disturbances are present. Pain is spontaneous and dull, or, on the contrary, it may be produced by riding, long walks, etc. It is localized in the right iliac fossa in many cases, or it may extend throughout the abdomen, but when this occurs it starts from the right iliac fossa or is the last to disappear in this region. As to the digestive disturbances, the patient instead of having a real distaste for food, voluntarily ab-

stains from certain food which he knows will give rise to pain. Nausea, vomiting, diarrhea or constipation are frequent, and the abdomen may or may not be distended.

After a time the patient loses both flesh and strength, and this clinical picture certainly resembles ileo-cecal tuberculosis in its early stages. A careful study of the symptoms, however, will usually lead to the diagnosis of appendicitis, and I have frequently noted that the pain in chronic appendicitis is apt to have a certain time for its appearance, this being usually in the early morning. In chronic appendicitis pain may always be elicited by gently depressing the abdominal wall over the cecum and may give rise to reflex pain around the umbilicus or even in the epigastrium. I have rarely been fortunate enough to palpate the appendix in these cases.

One should also take into consideration the early stages of the development of carcinoma, actinomycosis and inflammatory growths, but, as the diagnosis of these lesions is practically always impossible in the developmental period, I will not further insist on this point.

When tuberculosis of the cecum has reached its second stage of development, namely, that of tumor, one will have to take into consideration diseases of other organs which may give rise to a tumor in the right iliac fossa. As these are very numerous I shall only refer to the most frequent, those which have already given rise to a diagnostic error, and I would first refer to cancer of the stomach. Although of very rare occurrence, a cecal tuberculoma may simulate gastric cancer. In a case recorded by Auscher, the patient, a female who, during life, had presented all the symptoms of gastric carcinoma, showed at autopsy a tuberculosis of the cecum which was the starting point of a chain of enlarged lymph-nodes extending along the aorta up to the mediastinum. Roux in his case could feel between the umbilicus and the right costal border, a little to the outside of the rectus, a small, hard, irregular tumor, not quite as large as a kidney, everywhere distinctly limited except at its lower aspect, where it became lost towards the umbilicus, and which gave the impression of an advanced carcinoma of the pylorus infiltrating the stomach walls along the greater curve. The illusion was completed by a mass which appeared to be the stomach. However, when the organ was distended, the tumor could be isolated and thus excluded the diagnosis of gastric cancer.

Diseases of the gall bladder may also give rise to a mistaken diagnosis. Besides their own functional symptoms, in cases of cholecystitis, with a large distended gall bladder, with the signs of a progressive obstruction of the biliary tract, the hepatic dullness continues with that of the tumor without any interposition of a line of sonority. However, in one case recorded by Itié, a diagnosis of a massive cecal tuberculosis was made when in reality the case was one of cancer of the liver and gall bladder extending very low down.

In hydronephrosis the tumor is much nearer the median line than the tumor of cecal tubercu-

losis. The renal tumor is elastic, sometimes fluctuating and subject to variations in size, its diminution or disappearance always coinciding with a polyuria. In dislocated kidney the organ will be found wanting in the lumbar fossa. Wherever it may be seated in the abdomen it gives rise to a special pain when palpated and is movable vertically and is likewise reducible. I should hardly refer to movable kidney in connection with cecal tuberculosis had it not been for the fact that no lesser surgeon than Czerny had made an erroneous diagnosis, and Roux has also mentioned a case where a similar mistake was made.

Chronic adenitis of the iliac lymph nodes will probably not give rise to error, because the tumor almost always succeeds a visible tuberculous lesion of the lower limb, or one seated in other regions whose lymphatics are tributary to these glands. A chronic adenitis gives rise to a less movable tumor and is seated lower down in the iliac fossa. It gives rise to no functional symptoms or those of intestinal stricture.

Hydatid cysts of the right iliac fossa are rare, although one was published a few years ago by Diculafoy and Marion which gave rise to some confusion with ileo-cecal tuberculosis.

A tuberculous stricture of the hypertrophic type of the small intestine may occupy the right iliac fossa, and, in point of fact, it is probably its usual site. According to Bernay, fibrous and cicatricial tuberculous strictures are almost always encountered in the upper two thirds of the small intestine, while the stenosis due to a hypertrophic tuberculosis is almost always met with in the lower fourth of the ileum. In both cases the same functional symptoms are present, namely, diffuse pain, which is not long in becoming localized over the seat of the lesion, constipation and diarrhea, with a temporary predominance of one or the other. However, in the case of a tumor of the small intestine, the pain has a more constant relationship to digestion, recurring periodically four or five hours after eating. Abdominal distention is more frequently met with, and the peristaltic movements are more pronounced. If vomiting occurs, it may sometimes take on a fecaloid character, a thing which is most exceptional in ileo-cecal tuberculosis. Loss of flesh and strength and cachexia are more rapid in cases of tumor of the small intestine. Then, again, the tumor will be apt to be more movable when arising in the small intestine. Consequently, a differential diagnosis is not impossible, particularly when one carefully studies the symptomatology of the two affections.

Given a case where a tumor of the cecum has been discovered, a differential diagnosis remains to be made, and, in the first place, we have to consider a stercoral tumor. In certain subjects, particularly women at the time of the menopause, stubborn constipation is often met with, complicated with digestive disturbances and vomiting. In the right iliac fossa a tumor elongated in shape and occupying a vertical position will be found. It is pasty in consistency and its nature generally easy to recognize. This stercoral mass

does not alone exist in the cecum, but usually it continues throughout the colon, sigmoid flexure down to the rectum. Proper purgation and the use of enemata will cause the tumor to disappear by emptying the large bowel of its contents.

The diagnosis of chronic invagination is almost always possible. Beside the symptoms common to ileo-cecal tuberculosis, a chronic invagination of the ileo-cecal segment possesses its own distinctive signs that are not found in the case of a tuberculous growth and which allow one to differentiate it from the latter. The age of the patient is of great importance, because chronic invagination is particularly frequent in childhood, while cecal tuberculosis is rare at this time, and I am aware of no case where this disease has developed under the age of ten years.

The stools in invagination are usually bloody, while the tumor formed by the lesion is rounded or elongated. It is not always located in the right iliac fossa and is more frequently met with below the umbilical region. It may present variations in size, while an attack of colic may increase the extent of the invagination. By rectal examination the finger will discover in many cases a conical tumor rather soft in consistency and fungous. What occasionally complicates the diagnosis is that a tuberculous tumor of the ileo-cecal region may give rise to a chronic invagination, and, under these circumstances, it is readily conceived that a differential diagnosis is quite impossible.

Besides its analogy with tuberculosis, actinomycosis of the ileo-cecal region presents numerous characters belonging to it alone, which will usually permit one to come to a right conclusion as to the affection. In the early stage the diarrhea is either dysenteriform, accompanied by tenesmus, or it may be muco-membranous, a condition of affairs which is most infrequent in tuberculosis. Attacks of constipation are not frequent. On the other hand, the pain has no special characteristics, occurring in acute paroxysms and colics which cover a period of a few days to two or three months. Palpation of the right iliac fossa is painful. The appearance of the tumor is remarkable from the fact that it almost always coincides with the disappearance, or at least a decrease of the pain, only leaving a sensation of tension in the right iliac fossa.

The objective characters of the growth are also rather characteristic. At the beginning the growth does not involve the abdominal wall; it is only slightly movable and more or less bound down. Its outline is indistinct, and prolongations towards the small pelvis often exist, which may be detected by vaginal or rectal examination. In consistency the tumor is extremely hard, but, nevertheless, this is not equal, and projecting masses of unequal firmness may be detected. Another very important character is that in actinomycosis the tumor may remain stationary for months, with slight alternatives of increase and decrease in size, a condition of affairs which is never met with in cecal tuberculosis.

Finally, when actinomycosis of the cecum has

come in contact with the abdominal wall, it very rapidly invades the latter, sometimes extending up to the umbilicus, or even over to the left iliac fossa. But whatever may be the extent of its development, it is always of a woody hardness in the beginning, with badly defined outline; it immobilizes the region that it occupies to such an extent that it gives to the examining finger the feel as if all the structures had been transformed into wax.

Carcinoma of the cecum has certain resemblances to cecal tuberculosis which are far more marked than in the preceding maladies. The prodromal symptoms are identical, and in both lesions pain, alternating diarrhea and constipation, anorexia, difficult digestion, nausea and vomiting, loss of flesh, and occasionally intestinal hemorrhages, are met with. It has been said that in the case of cancer the presence of blood in the stools is more frequent and in greater amount. This is quite true for carcinoma of other portions of the large intestine, such as the hepatic and splenic flexure, the sigmoid flexure and rectum, but in carcinoma of the cecum the melena is almost as infrequent as in tuberculosis, where it has only been recorded a few times. The appearance of the tumor does not help in the differential diagnosis, because, in both affections, its physical characteristics are practically identical.

The evolution of the disease may throw some light on the subject. In carcinoma the progress is quite rapid, hardly ever extending over more than a year and a half, while, on the contrary, cecal tuberculosis is far slower in its evolution, often taking several years to undergo it. I will point out, however, that exceptionally carcinoma of the cecum may take on a very slow development.

The pain is different in the two affections under discussion. In carcinoma it is usually so mild that the disease may undergo its evolution in an almost latent manner, while in tuberculosis the pain, which is rarely wanting, is usually acute and severe, occurring in paroxysms. Although fecaloid vomiting merely indicates some obstruction to the onward progress of the feces, it must be admitted that it is a symptom decidedly in favor of cancer, true occlusion being much more frequent in intestinal carcinoma than in tuberculosis.

The presence of enlarged supraclavicular lymph nodes, the result of a cancerous embolus, is in favor of the diagnosis of carcinoma, while enlargement of the axillary glands, arising from a pleural lymphangitis, is more in favor of the diagnosis of tuberculosis. The co-existence of pulmonary lesions, with an evening rise of temperature and night sweats, likewise indicate a tuberculous process rather than a carcinomatous one. The straw-colored tint of the carcinomatous patient is very characteristic, while subjects the possessors of a tuberculous foci are simply pale, their paleness being due to anemia. Of course, the presence of the bacillus of tuberculosis in the feces will remove all doubt as to the diagnosis.

At a more advanced stage the appearance of ascites, edema of the lower limbs, a phlegmatia

alba dolens, a cancerous focus in the liver or some other viscus will render the diagnosis of carcinoma certain. But these signs cannot be waited for, and one should operate at once, removing the growth whether it be a tuberculoma or a carcinoma, and even then the uncertainty of the diagnosis will not be always done away with, because a number of memorable histologic errors have been made in the past between the two processes.

Consequently, it may be said that the differential diagnosis between carcinoma and tuberculosis of the cecum is still a very difficult matter, but this uncertainty should not detain the surgeon from operating, because the removal of either lesion can only be of benefit to the patient, and, in both cases, the earlier this is done, the more successful will be the outcome.

I will now consider pericecal and ileo-cecal tumors having a purely inflammatory nature, and would say at once that their diagnosis is a very delicate matter.

After a very insidious commencement, characterized by pain, various dyspeptic disturbances, nausea, vomiting, diarrhea and constipation, symptoms of chronic intestinal occlusion make their appearance, and a tumefaction or a distinctly limited tumor may be palpated in the right iliac fossa. Its surface is either smooth or lumpy, generally of hard consistency, painful on pressure, not adherent to the abdominal wall, and quite movable, but fixed at the bottom of the iliac fossa.

A number of instances of simple inflammatory tumors giving rise to a mistaken diagnosis of hypertrophic tuberculosis of the cecum have been reported, and I am aware of no means by which a differential diagnosis may be arrived at. Nevertheless, the inflammatory nature of the affection may be suspected, especially if, in the patient's antecedents, there is a history of a typhoid ulceration, chronic entero-colitis, or a pericecal inflammation of the peritoneum arising from an appendicitis, an inflammatory affection of the peri-renal space, of the ureter, or right ovary, and this sometimes throws some light on the diagnosis.

Considering now the differential diagnosis of tuberculosis of the cecum which has arrived at the stage of fistula, the first affection to be examined is Pott's disease. It is usually a rather easy matter to correctly interpret the true cause of purulent fistulae produced by caries of the spine, even when a deformity of the latter is wanting, likewise paraplegia. The search for Koch's bacillus in the pus is of no aid, because in both diseases it may be met with. But the presence of a painful spot over the spinous apophyses revealed by percussion, an increase of the patellar reflex, limited motion of the spine, principally in bending, the large amount of a purulent secretion, and the location of the fistulous opening which is nearly always above Poupart's ligament and the absence of intestinal disturbances will lead one to infer that the spine is the seat of the process.

Some hesitation is quite permissible in making a differential diagnosis between tuberculosis of

the iliac bone and a tuberculous fistula derived from the cecum. In both diseases Koch's bacillus may be present, but the presence of a painful spot, always at the same point, distinctly localized over the iliac bone, exploration of the fistula by which the sound reveals denuded bone and absence of intestinal symptoms are naturally all in favor of tuberculosis of the bone. The co-existence of a bone lesion and tuberculosis of the cecum will certainly increase the diagnostic difficulties, and in one or two instances this combination has occurred, and, although of very great infrequency, I mention it in order to be complete.

Fecal fistula arising from carcinoma of cecum is a rare condition and, from what I have already said in speaking of cancer of this organ, I hardly need to revert to it here.

Actinomyces, when fistulae have developed, presents certain peculiarities which can nearly always permit it to be distinguished from tuberculosis. When this disease arises in the cecum or the appendix, the fistulae are numerous in most cases and their outlet is frequently quite distant from the right iliac fossa. The external opening of the fistula is surrounded by a violet-blue ring, a coloration never met with, I believe, in tuberculosis.

In actinomyces one fistulous tract will close and then another will open beside it, a phenomenon most exceptional in tuberculosis. In the former disease the fistulous tract is often very large and the pus to which it gives exit is horribly fetid, having a fecal odor even when it does not contain feces. Sometimes it is a badly mixed grayish serum; at others, a brownish-yellow pus containing small yellow or blackish grains. Sometimes the yellow grains are absent, and when this is so, the organism may be found in the fungous lining of the fistula, and, lastly, the inguinal lymph nodes are rarely involved.

Fecal fistula arising from the appendix is not very infrequent, and a diagnosis can usually be correctly made by ascertaining the patient's antecedents, likewise the progress and development of the affection.

I have now come to the end of this address, as I do not think it necessary to consider the differential diagnosis of a tuberculoma limited to a small portion of the ileocecal segment, of prececal tuberculous adenitis, or to localized and generalized peritonitis following a perforating tuberculous process of the ileocecal region, because up to date no symptoms have been discovered which will allow one to discriminate with any degree of certainty. They are surprises of the operating table when they are not those of the autopsy.

Dr. John D. Rockefeller has agreed to build a hospital, to cost \$25,000, for the Women's and Children's Medical and Surgical Dispensary, Cleveland, a charitable dispensary, which has been maintained by the women physicians of the city for thirty years, on the condition that \$25,000 is raised as an endowment fund. — *Jour. Am. Med. Asso.*

New Instrument.

A SIMPLE AND CLEAN INSTRUMENT FOR VACCINATION.

BY FRANCIS H. WILLIAMS, M.D., BOSTON.

THE instrument consists of a piece of stiff platinum wire, 1 mm. in diameter and 5 cm. long, fused into a piece of glass tubing which serves as a handle. The other end of the wire, flattened by means of a hammer to a width of rather more than 2 mm., has been well rounded with a file and its edge roughened by making shallow cuts in it with a knife blade. (See cut, three-quarters size.) This roughening is important, for if not done the instrument bores into the skin and causes unnecessary pain while the outer layer is being removed. With the roughening, and if skillfully used, there is little or no pain.

To use the instrument, the platinum wire is first sterilized by heating to a red heat in a flame; it cools in a moment, and the end is then pressed gently against the tense skin, which has also been sterilized, and the handle rotated between the thumb and finger of the right hand until the serum appears. A convenient way of making the skin tense is to grasp the arm with the other hand and draw the skin between its thumb and finger.

The instrument is ready for use on another patient after further sterilization.

The scars would indicate that the patient had been vaccinated against smallpox if physicians made it a custom to draw the serum from three places in the form of a V.



Three fourths of full size.

Clinical Department.

SIXTEEN CASES OF PUERPERAL TOXEMIA.

BY D. C. DENNETT, M.D., WINCHESTER, MASS.

IN writing on this subject from my own experience I find I simply repeat, for the most part, a little of what is written in the textbooks. No claim of originality is made, but I believe that a repetition will do no harm, because I find that the old idea of "uremic convulsions" is, even now, more generally entertained than one might suppose. I also know that the cases of any one man in private practice are not numerous enough to be of much statistical value except as they may be added to the sum total of a great many others. Compared with past statistics of this locality, one might say from the cases here reported that puerperal toxemia was endemic in Winchester in the spring and early summer of 1908.

Extreme symptoms of the toxemia of pregnancy may suddenly supervene in the pregnant woman who up to the moment was considered well, who had shown no symptoms, made no complaint, no change of diet, environment or occupation. The urine may or may not have