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THE DIAGNOSIS AND TREATMENT OF ACUTE SALPINGITIS

ACUTE salpingitis often resembles acute appendicitis. The differential diagnosis is of great importance because one requires conservative and the other radical treatment. While an operation would be detrimental to the patient with an inflammation of the tubes, it frequently saves the life of the patient with an inflammatory lesion of the appendix.

The form of salpingitis in which we are particularly interested occurs in the course of gonorrhea and affects principally the tubal mucosa (endosalpingitis). It may take place suddenly in a patient, who to all appearances has been quite well, who has been unaware of any lurking pelvic lesion.

Acute salpingitis may occur also in the course of a postabortal or a postpartal infection; the inflammation then involves especially the outer surface of the tube (perisalpingitis) and is secondary to a cellulitis of the broad ligaments, oophoritis or pelvic peritonitis. Here the infectious agent is predominantly the streptococcus.

It is true that postabortal or postpartal salpingitis may be due to the gonococcus; the disease extends upward along the mucosa of the genital tract; the clinical manifestations are less violent than in the streptococcus infections and the lining of

the tubes is especially involved (endosalpingitis). In nearly all postabortal or postpartal infections the associated facts point clearly to the pelvis.

Our concern in this paper is more with an initial attack of gonorrheal salpingitis that is independent of gestation. It is in this form that a decision between salpingitis and appendicitis becomes of great importance.

The symptoms of the two may be very similar. There is pain in the right lower abdomen, elevation of temperature and pulse, nausea, vomiting, abdominal distention, muscle spasm and tenderness.

How shall we attempt to distinguish between the two diseases? The diagnostic features may be pointed out as follows:

Previous Health and Facts Relative to the Onset.—Some history of discomfort after eating, distention of the abdomen and constipation may be expected in appendicitis; previous attacks of "cold in the bladder" or an irritating leukorrheal discharge in salpingitis.

Indiscretion in diet (corned beef and cabbage) before appendicitis; a menstrual period (at the onset, during or after the flow) before salpingitis.

The first pain epigastric in appendicitis, nausea and vomiting more pronounced; menstrual cramps often suggested by the onset of salpingitis; pain may be bilateral.

Elevation of Temperature and Pulse.—In appendicitis the temperature is often low (99° F.) in proportion to the increased pulse rate (100); in salpingitis it is often high (101° F.) at the outset with elevation of the pulse in proportion (100).

Leukocytosis.—The leukocyte count for the most part is higher in appendicitis (15,000–20,000); lower in salpingitis (10,000–15,000); the nonsegmented polymorphonuclears in proportion.

Sedimentation Time.—There may be an unchanged normal rate in appendicitis (50 per cent) even in the suppurative forms; there is nearly always (90 per cent) rapid sedimentation in salpingitis.

Certain reasons for these apparent inconsistencies may be suggested. Leukocytosis, the result of acute inflammation, precedes a change in the sedimentation time. It takes a while for the alterations in the blood, whatever they may be, to become manifest. The same is true as the inflammation subsides for the leukocyte count goes down before there is any indication of improvement in the sedimentation rate.

In acute salpingitis occurring during the course of gonorrhea the process has been going on before the acute symptoms appear, the attack is an outburst of flames from the fire that has been smoldering; sufficient time has elapsed for an increase in the leukocytes as well as an increase in the rate of sedimentation.

In postabortal and postpartal infections the very existence of pregnancy without any of the other factors such as hemorrhage and trauma will give the same result.

In appendicitis, the inflammation is a sudden matter, pain becomes a prominent feature before those changes that produce rapid sedimentation have had their effect.

Pelvic Examination.—*Inspection of the external genitalia* often yields no information of any value. For even without gonorrheal infection a patient may have a leukorrheal discharge or the mucosa of the introitus and the vestibule may be inflamed. And as it is not usual for salpingitis to occur in the stage of acute infection of the urethra or of Bartholin's glands, the finding of the gonococcus in smears would be quite exceptional. We can say only that without any appearance of inflammation at all, the diagnosis favors appendicitis.

Sometimes it may be impracticable to *inspect the cervix* and in many instances no positive conclusions can be drawn from its appearance. A purulent discharge from the external os favors the diagnosis of salpingitis but the gonococcus seldom will be identified in the smears; a mucopurulent discharge does not necessarily indicate a gonococcus infection.

It may be taken for granted that the total absence of an inflamed mucosa or a leukorrheal discharge in all probability rules out salpingitis, but no positive conclusions may be drawn

in borderline cases. The cleanly woman by careful douching may remove nearly all evidence of gonorrhea from the external genitalia or from the cervix. We must not forget furthermore that the patient suffering with a gonorrheal infection may be stricken with a coincident inflammation of the appendix.

As a rule *bimanual pelvic examination* gives little information. A tube acutely inflamed for the first time will not be recognized as a mass. There is so much tenderness and rigidity of the abdominal muscles in the acute stage of salpingitis and so little induration of the inflamed parts, that one cannot expect to feel the affected structures individually. When the tenderness is on both sides of the lower abdomen and movement of the cervix greatly increases the pain, it may be taken as evidence of a bilateral inflammatory lesion affecting the pelvic organs.

If a mass is palpable on either side of the uterus or if uterine displacement or other abnormalities are detectable one must not forget that these changes may have been present antecedent to the attack. The picture of bilateral tenderness may be present also in the case of an acute appendicitis if the organ occupies a pelvic position or if in addition there is a spreading peritonitis.

Occasionally an inflamed appendix may be palpable per vaginam but only when it occupies a pelvic position, is greatly enlarged or is surrounded by inflamed omentum or a collection of pus.

Abdominal Palpation.—The tenderness is usually localized at the position of McBurney's point in the case of appendicitis; it may be lower when the cecum is low or higher in a retrocecal appendix. At any rate the tenderness is more likely to be confined to the right side. The greatest tenderness is below the position of McBurney's point in salpingitis; it may be on the left side; it is often bilateral. Rigidity and muscle spasm have the same distribution.

Summation.—Although the differential diagnosis may be very easy, it is sometimes quite difficult. Since a correct interpretation of the symptoms directly affects the course of treat-

ment in doubtful cases, we may find ourselves between the horns of a dilemma. We do not wish to open the abdomen only to find that the patient has a gonorrheal salpingitis in which the appendix may figure merely by proximity.

Neither, and this is much more important, do we wish to stand idly by and permit a diseased appendix to perforate or a spreading peritonitis to progress until the life of the patient is in jeopardy.

It is better to operate and be wrong than to delay the operation and be wrong.

Fortunately in the difficult cases a few hours of observation enable us to reach a decision in a large majority of patients. During this short period we place the patient under such a régime that no harm is likely to come from the delay and we watch her closely. Even when it is quite certain that the symptoms are being produced by a gonorrheal inflammation of the tube we follow the same plan; then as the diagnosis becomes plain and the trouble is undoubtedly pelvic, we need not be so careful about giving things by mouth and analgesic drugs.

Treatment.—At the outset of the period of observation we prescribe: rest in bed in the Fowler position; ice-bags to the lower abdomen; fluids by enteroclysis (Murphy drip) or by hypodermoclysis.

We give nothing by mouth; we withhold morphine or other opium derivatives (codeine, heroin, dilaudid); we forbid laxatives as well as large or drastic enemas.

In the highly nervous, frightened and not very sick patient, bromides or barbiturates by the rectum or barbiturates (sodium luminal) hypodermically may occasionally be prescribed.

If we wish to use the Murphy drip there is no harm in clearing the lower bowel in order to reduce distention and to promote absorption of the salt solution from the rectum. An enema of mineral oil and milk of asafoetida, each 4 ounces, with enough soapy water to make a pint is all that is needed. With the patient hospitalized and under favorable circum-

stances, hypodermoclysis of normal salt solution and intravenous glucose are the procedures of choice for dehydration.

During this period we make repeated observations relative to pain, nausea, vomiting, peristaltic sounds, elevation of temperature and pulse, leukocytosis.

In the case of gonorrheal salpingitis there usually will be an abatement in each one of these symptoms. In appendicitis this is less likely to occur although it is quite possible.

A persistence of pain in spite of the ice-bags, a continuation of nausea and vomiting, a fever even below 100° F., with a tendency of the pulse to increase in disproportion, a mounting leukocytosis and a preponderance of nonsegmented polymorphonuclears, stubborn distention, rigidity, muscle spasm and tenderness, all these point to the appendix. The peristaltic sounds are of special diagnostic value. If they remain normally active, we may be somewhat reassured that at least there is no tendency for the trouble whatever its nature to extend to the peritoneal surfaces. On the other hand distinctly limited, diminishing or absence of peristalsis is an ominous sign.

General Observations.—In judging the symptoms presented by the patient there are several facts to bear in mind.

The appendix may be extensively involved without great elevation of temperature.

A rise in the pulse rate out of proportion to the temperature must be regarded with alarm.

If the appendicitis is spreading rapidly and the patient is overwhelmed with the toxic products there may be little increase in the leukocytes.

With gonorrheal salpingitis the temperature is nearly always above 100° F., often 102° F., and the pulse is in proportion.

A leukocytosis above 18,000 would be unusual in a purely gonorrheal salpingitis. When there is a mixed infection with the streptococcus as for example in postabortal salpingitis, the degree of leukocytosis is much greater.

In the sedimentation rate we seem to have an added diagnostic sign of much value.

Recapitulation.—Our first concern then is to make sure that we are dealing with a salpingitis and not an appendicitis. This anxiety in a doubtful case may lead the surgeon to open the abdomen and find that he is wrong. Under such circumstances he will do well to acknowledge his error, let the appendix alone, close the incision and treat the salpingitis by conservative methods.

Operative treatment of salpingitis in the acute stage is harmful. Organs are sacrificed which may otherwise be saved. The patient is exposed to some risk of a spreading peritonitis and although she recovers there is quite likely to be a residuum of painful and annoying sequelae from intestinal and omental adhesions.

To avoid manipulation and traumatism of the infected parts is of the greatest importance. With a continuation of the measures already advised the symptoms are allayed and the inflammatory products are gradually absorbed. After the fire is out nature will do much to restore the damaged part. After a long period and when every vestige of the infection has disappeared, the permanent alterations may be estimated and then, if need be, treated by conservative surgery.

To bring about this later stage of gonorrheal pelvic inflammatory disease there are several aids. The chief of them is heat in some form to the pelvic organs. Heat not only promotes the absorption of inflammatory products but in certain degrees, as in fever therapy by physical means (superheating cabinets), actually destroys some of the bacteria.

Although we have never used the heat cabinet treatment in any but the later and subacute or chronic phase of pelvic inflammatory disease there are those who advocate it early with the purpose of impairing the vitality of the infecting organisms. It is a procedure requiring trained personnel and is suitable only in a hospital (Warren, Scott and Carpenter). It is not devoid of risk and patients should be selected with as much care as if they were about to undergo a major surgical procedure (Krusen).

One hears so much at present of sulfanilamide as a gon-

ococcide. The drug may ultimately prove to be of great value (Dees and Colston). Its use is still more or less in the experimental stage. Probably its greatest field will be at the very beginning of gonorrhea when the infection is still confined to the usual sites (urethra, Bartholin's glands, cervix). One doubts whether the use of sulfanilamide would ever be advisable after the disease has reached the fallopian tubes during the acute stage of the infection.

As a rule we wait for the acute process to die out with rest and cold and then employ heat in some form to assist nature in the restoration of the affected parts. The old-fashioned prolonged hot vaginal douche has many points in its favor and if the patient has help at hand so that the douche may be given properly and supplemented with hot applications to the lower abdomen there is nothing better and it has a further advantage that the treatment may be undertaken in the patient's home.*

*DIRECTIONS FOR A HYDROTHERAPEUTIC VAGINAL DOUCHE

Purpose: A hydrotherapeutic vaginal douche is for the purpose of reducing congestion or inflammation of the uterus, tubes and ovaries by the application of heat to the nearby vaginal vault.

Position: The hips should be elevated above the level of the shoulders as shown in the diagram below. In the sitting or semisitting position the vaginal walls remain in contact with each other; the surface is not smoothed out; the vaginal vault is not distended and the douche water escapes almost as soon as it enters the vagina.

Rate of Flow: The hydrotherapeutic douche should be taken slowly so that the water remains in contact with the vaginal mucosa for at least an hour.

Temperature and Amount: The water should be as hot as can be comfortably endured (110° F.). As a hydrotherapeutic douche requires distention of the vaginal vault with the heated solution for a period of an hour, a considerable quantity of water will be necessary, 3 to 6 gallons.

Elevation of Bag or Tank: The bag should not be elevated much above the hips; it should be just high enough for the water to run slowly. About 18 to 24 inches above the level of the buttocks is usually a sufficient height. The rate of flow is regulated by the height of the bag; it should be slow so that a given amount of the heated water will maintain distention of the vaginal vault for as long a time as possible.

Maintenance of the Temperature: It is absolutely necessary to maintain the heat of the water during the entire length of the hydrotherapeutic douche. This is easily possible if there is a second person to refill the douche bag; other-

With the Elliott douche a greater degree of heat may be applied and with less trouble, but of course the apparatus must be brought to the patient or the patient sent to the apparatus.

In addition to heat, the use of foreign proteins (boiled milk) given parenterally will assist in the absorption of inflammatory products.

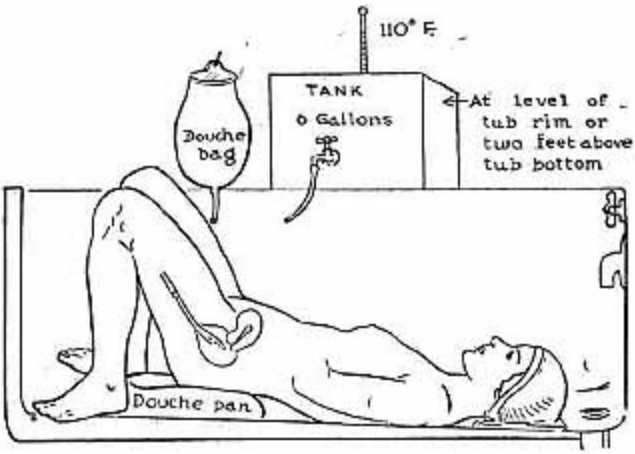

Fig. 364.

While these plans of treatment are being pursued some attention may be paid to the areas of initial infection in the urethra, Bartholin's glands and the cervix. The avoidance

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wise the patient will do well to provide herself with a tank of large capacity having insulated sides which retain the heat.

Bath Tub or Bed: If the douche is taken in the tub it will not be necessary to use a douche pan; the hips may be elevated upon a folded bath towel. If the patient lies in bed and uses a douche pan, someone must be at hand to empty it as required.

Sterilization of Water and Medication: The douche water need not be sterilized, just clean hot spigot water will do. No medication is necessary for this sort of a douche but a teaspoonful of common salt or baking soda may be added for each gallon in order to soften the water.

Care of Douche Bag and Nozzle: The douche bag or tank should be rinsed clean after each use. The douche nozzle should be of glass or of hard rubber with lateral perforations; it should be thoroughly cleansed after use and kept in a clean towel.

of a reinfection is of the greatest importance. It seems to be quite possible that gonorrhea will die a natural death if let alone. The difficulty in preventing a reinfection of the married woman by her husband, or of the unmarried by her paramour needs no elaboration. With some diplomacy on the part of the physician and a spirit of cooperation in the patient, reinfection may be prevented.

In the chronic stage local treatment of Skene's tubules, Bartholin's glands and of the cervix may be undertaken. One should not be in a hurry to interfere since with heat and time the disease may entirely disappear. Nevertheless in some cases and after all the acute manifestations of the disorder have subsided, Skene's tubules, Bartholin's glands and the diseased cervical mucosa need attention and may be excised. The last of these is very often badly done and indiscriminate "coning" of the cervix or any plan that may interfere with later conception or childbirth should be avoided. It is better to split the cervix with a radio knife and then with adequate exposure and under plain sight remove the diseased mucosa; no sutures are required and during the course of healing there will be a reapproximation of the cervical lips.

With foci of infection in the external genitalia and cervix eliminated and every vestige gone of active inflammatory trouble in the pelvis, the patient may be quite comfortable and no longer a menace as a carrier of the gonococcus. If there are no troublesome symptoms and reinfection is prevented, no further treatment is needed. The patient may be regarded with complacency and let alone. But if the pelvic disease has left behind a residuum of adherent and painful adnexa, or if the patient is very anxious to conceive, then the needed studies, preparation and conservative operative procedure may be carried out with every hope of a satisfactory outcome. The conflagration is over and now the surgeon's skill will not be hampered by tissue infiltration with inflammatory products and surrounded by inflammatory exudates. It may be impossible to restore the patency of the fallopian tubes but diseased ones may be removed, adherent ovaries may be released,

and the operative fields may be so well peritonealized that there will be no aftermath of painful adhesions. The power of reproduction may be lost but the menstrual function has been preserved.

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