GONORRHEA IN WOMEN.*

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The two strongest instincts in the human being, in the order of their importance, are the instinct of self-preservation and the instinct of self-perpetuation through offspring, more commonly spoken of as the sexual instinct. The sexual instinct in reality is merely a part of the instinct of self-preservation. The generative tracts in the two sexes are the central organs of the sexual instinct, and their period of functional activity is simultaneous with the period of greatest vitality in the individual. Gonorrhea, a mutilating inflammation, known to the human race since the dawn of history, attacks primarily the lower genitourinary organs. In the male these organs form one continuous tract, so that when the inflammatory process passes upward along the urethra, the generative organs are attacked by continuity of tissue. In the female the anatomical arrangement is quite different. The urinary and genital tracts, although in close juxtaposition, are entirely distinct. This fact and the shortness of the female urethra with its good drainage are a tremendous advan-

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tage to her as far as urethral infection is concerned, and relegates such an infection to a position of minor importance. My remarks will be limited to a consideration of the disease as it attacks the lower uro-genital tract only, namely the urethra and trigonum vesicae, the vulvo-vagina and the cervix uteri. Emil Noeggerath of New York City drew widespread attention in 1878 to the far-reaching and insidious character of the disease in his monograph on "Latent Gonorrhea." In the following year came the discovery by Neisser of the Gonococcus as the infecting organism. As the result of the work initiated by these two men, our knowledge of the disease has been greatly increased in recent times. The incubation period is short, a few days or less, and it gains a foot-hold most easily in the cervical and urethral canals and the ducts of the glands of Bartholin. The latter open by minute orifices upon the vulva just external to the hymen at its lateral attachment. The vagina itself is as a rule not much involved, as it contains few glands, and its mucous membrane is covered with resistant stratified epithelium, a sort of modified skin. This statement applies, however, to mature women, as in children and women past the menopause the vaginal tissues do not withstand so well the inroads of the disease. Leucorrhea, a muco-purulent and more or less creamy discharge, which is one of the cardinal symptoms of gonorrhea in women, is found in the vagina, whence it flows over the vulva excoriating the external parts, and not infrequently infecting secondarily the anus and rectal mucosa. It is derived chiefly from the inflamed cervix and the upper genital tract. In passing I would remark that the rectum is also sometimes infected primarily as a result of coitus per anum.

Contrary to our experience in men, in whom a purulent urethral discharge is almost universally suspected of being gonorrheal in origin, in women, partly owing to the fact that leucorrheal discharges are frequently met with as a result of other causes, the true nature of the process often passes unrecognized and may be attributed to such agencies as "catching cold." This failure to recognize gonorrhea as such is the more likely in that the intense scalding urination met with in males is in females apt to be modified into frequent urination with more or less burning during, and tenesmus following the act.

In making the diagnosis of a past infection, our suspicions are

aroused by the history of a sudden inception of frequent burning urination, leucorrhea and vulvitis, with, in many cases, the symptoms of acute inflammation of the upper genital tract, following upon marriage or suspicious coitus. The diagnosis is confirmed by finding the gonococcus in the secretions, and other manifestations such as a diseased uterus and appendages, maculae gonorrheicæ, condylomata acuminata, inflammations of the vulvo-vaginal glands or their ducts, and Bartholinian cysts, as well as chronic gonorrheal urethritis, and inflammations of Skene's glands and ducts, which lie on the floor of the urethra and open at the meatus.

The inflammatory process is aggravated by the physiological congestion incident to menstruation and pregnancy, and in case the bacteria are hard to find, a smear from the interior of the cervix after the monthly period may reveal them. After wiping away the secretion from this locality and from the urethral orifice and those of the ducts of Bartholin's glands, smears may be made on slides or cover-glasses, dried and stained with a one per cent. watery solution of methylene blue. A typical stained specimen should be kept on hand for comparison. The gonococcus is Gram-negative, and Bismarck brown makes a good counterstain.

The frequency of the infection in the two sexes has been variously estimated, Noeggerath making the high one of four out of five men who subsequently marry and three out of five married women. I am inclined to follow Erb, who makes the low estimate from his statistics of 50 per cent. of men and five per cent. of women.

The disease is certainly difficult to eradicate once it has become chronically implanted in the cervical glands or higher up, and may remain latent for years, some claim for a life time. It bursts into renewed activity under the excitation of irritants, instrumentation, trauma and physiological congestion, such as occurs during the puerperium. Germs from chronic processes may develop full virulence when transferred to new surfaces, such as the child's eyes during labor.

The treatment of the acute stage resolves itself primarily into the prevention of further contamination of self and others, and its keynote for the patient is rest. The diet should be bland, and alkaline drinks are freely given. The urine is thus diluted and

rendered less irritating. The bowels are moved freely daily. Hot alkaline or potassium permanganate (1–2,000) vaginal douches are used several times daily, and the vulva is protected from the irritating discharges from above by bland ointments or powders. Pruritus is relieved by hot compresses of lead and opium wash or weak carbolic acid solution. For pain, hot water bags over the pubes, hot sitz baths and rectal suppositories containing opium and belladonna will give relief. A mixture containing tincture of hyoscyamus and acetate of potash has proved itself efficacious in lessening the urethral symptoms in the acute stage. Chronic urethritis is treated successfully by topical applications of silver nitrate through the endoscope. The ducts of Skene's glands may be incised and cauterized, and Bartholin's glands excised, when diseased. A chronically inflamed cervix often requires a plastic operation, such as Schroeder's or amputation, for its cure. Abortive treatment by antiseptics, while greatly to be desired, is generally ineffective and inapplicable at the time the patients apply for treatment.

SERIOUS COMPLICATIONS OF GONORRHEA IN THE FEMALE.*

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So many cases of urethritis heal without annoyance, so many infections seem finally to center in the cervix, so many infections are recognized only after careful examination, that it is small wonder that the gonococcus is considered to be a superficial parasite growing on the surface and extending gradually by continuity. When viewed from the standpoint of a superficial disease alone, many fail to recall that gonorrhea may be an acute infection extending upwards through the entire genital or urinary tract with great rapidity. In adults the gonococcus is said to grow poorly on the peritoneum. As a rule, this is true, but occasionally an acute general gonorrheal peritonitis does occur and this naturally happens more frequently in the form of a mixed infection.

The upward spread may be (1) acute; (2) it may be only fairly

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acute and associated with remissions and not characterized by very marked or painful symptoms; (3) it may be limited to the tube alone, the sequelae then being sterility or a subsequent ectopic gestation.

Serious complications depend upon the patient's point of view. Even with the more mild surface involvement of the tube, a woman passionately desirous of having children would naturally view sterility as a very severe complication, and if this view of the etiology were more generally accepted, a resulting ectopic gestation might likewise be placed in the same category. The parents of any child afflicted with vulvo-vaginitis of gonorrheal origin, even if the annoyance be only external, must consider this a serious illness. Many fail to realize that this condition may, even without associated symptoms and with apparent healing, may affect the later development of the tubes and ovaries and may be the cause of subsequent sterility.

In the very young, and in older girls, such gonorrheal vulvitis, vaginitis, or endo-cervicitis may be acquired in numerous ways. The number of these cases in certain districts is very large; they are stubborn to treatment, not infrequently recurring when apparently healed. In addition, an acute pelvic or general peritonitis of gonorrheal origin is not rare in children. Because the symptoms resemble other conditions the gonorrheal etiology is often overlooked. An involvement of the peritoneum by the gonococcus in children occurs with all the evidences of peritonitis and is sometimes very sharp in its onset, producing rigidity of the recti, temperature, pain, vomiting, and abdominal distention. In the absence of a recognized cause it is generally diagnosed as appendicitis and frequently operation is performed for this indication. The rule should be formulated that every attack of peritonitis in female children which simulates appendicitis should have the gonorrheal possibility excluded.

Operation is not followed by bad results, yet these cases improve on symptomatic and non-operative treatment. The same point holds good in adults, in those cases where there is a rapid upward extension of the infection, the external local symptoms being too slight to call attention to the specific etiology. In those instances in which adhesion of the tube does not occur quickly pus is poured out into the peritoneal cavity and is accumulated in the cul de sac of Douglas. Bimanual examination

in patients with very tender abdomens and rigid recti may give no tangible evidence of the involvement of the adnexa. Here, too, the diagnosis of appendicitis is often made and only operation discloses the real condition of affairs. In the acute stage pus may be localized in the cul de sac of Douglas, or a pyosalpinx may develop or a tube-ovarian abscess or an ovarian abscess, making the early evacuation of pus a necessity. The chronic type of burrowing pelvic abscesses with final rupture into the other organs such as the rectum, the vagina, the bladder, or through the abdominal wall, constitute, of course, some of the serious but very rare possible complications of this disease. But as a rule it is the changes in tube or ovary, produced as the result of the slower and deeper involvement by the gonococci, which produce pain and such interference with normal functions that operation for the relief of these annoyances is demanded. Many do sum up the serious side of gonorrhea in women by the rather indefinite phrase " pus tubes." From the woman's standpoint, gonorrhea is a serious disease when viewed as a tubal, ovarian and peritoneal complication. When located in other structures it may be annoying to the patient, but rarely does it make life so miserable as when the tubes, ovaries and peritoneum, especially the ovaries, are involved. The sequelae we have to consider are pain, the resulting sterility, and the operation which is done either to relieve the patient of the severe accumulations of pus, or to relieve the pain which is making a chronic invalid of her.

Whatever portion of the genitourinary tract may be the primary location of the gonorrheal infection, because of the chronicity of the lesion, or because of the areas to which this infection may extend, the condition always possesses inherent power of causing serious trouble to the bearer or another. Take the element of extension which may occur a long time after the infection. Unless the pregnant woman be infected *after* the early months of gestation, gonorrhea in such a pregnant woman often runs a mild and slightly febrile course in the postpartum period. Postpartum gonorrhea is a rather late infection, the upward extension usually being of a mild nature, only occasionally running that severe type characterized by some or most of the symptoms of a severe local peritonitis. So mild, so unrecognized, however, are the large number of these postpartum cases that only repeated bacteriological examination proves their number to be

very great. Yet these cases may infect the eyes of the infant producing, as everyone knows, one of the very severe complications which not infrequently results in the loss of sight of one or both eyes.

This upward postpartum spread of a cervical or cervico-uterine gonorrhea is responsible for many cases of the so-called one child sterility. This same tendency to upward spreading holds good in post abortum cases and after curettage.

Let us remember that it is the deep penetration of the gonococci which so often renders the pelvic condition serious and which produces such deep structural lesions that neither time nor the most careful treatment, nor even operative intervention, can restore the involved organs to future normal function. In the case of the mucous membrane of the rectum and especially of the urinary tract there may be a mild or very acute involvement resulting in the severer forms of annoyance especially urethro-cystitis, or rarely pyelitis. There are few complications which cause more suffering than acute urethro-cystitis. As a matter of fact, in many cases the gonococci can and do penetrate deeply into the subepithelial tissue of the urinary tract producing, as is well known, that very annoying complication chronic gonorrheal trigonitis, and occasionally, though rarely, stricture of the ureters. Deep penetration of the uterine lining by the gonococci may occasionally occur, resulting in such a deep penetration of the muscular wall that intra-mural abscess may result.

In further proof that the gonococci may enter the subepithelial connective tissue in any case Wertheim has shown that they are found in the sub-endothelial connective tissue of the peritoneum, in the bladder wall, in the vaginal wall. They have been found in the connective tissue of the synovia, in gonorrheal arthritis, in the tube wall, in edema of the foreskin, in myocarditis gonorrheica, in endocarditis gonorrheica. As a general rule the gonococcus causes no pus in the connective tissue, but can do so, as in ovarian abscess, periurethral or perichondral abscess, abscess of the metacarpus, about the knee joint, etc., As a factor in mixed infection the gonococcus has been found almost everywhere.

Since deep penetration is of frequent occurrence, entrance by the gonococci into the circulation is a complication which can be readily understood. Gonorrheal rheumatism is caused by

the entrance of gonococci into or about the joints through the medium of the circulation. It generally occurs in association with the acute stage of gonorrhea in some location, but this is not always the case. This involvement is of various degrees of severity. We observe the slight forms of arthralgia characterized by pain and swelling, the pain being worse in the evening. There are cases of involvement of the sheaths and bursæ about the joints. Then comes the more serious degree—effusion into the joint, and then finally, when complicated by other cocci comes arthritis with suppuration. The condition differs from other rheumatism in that only a few joints are affected. The disease does not jump from one joint to another. There is no effect produced by the salicylates. This disease is also to be found in very young infants and children and is then generally monarticular. The blood in patients with gonorrheal rheumatism, who have gonococci at the same time in the urethral discharge, has been examined and gonococci have often been positively identified in the blood.

Findley quotes Osler as saying that in many respects gonorrheal arthritis is the most damaging, disabling and serious of all the complications of gonorrhea. Osler recognized the following clinical varieties:

a. Arthralgia where there is no redness or swelling but the patient complains of constant pain about the joints.

b. Polyarthritis, where two or more joints are involved, are red and swollen. In the acute stage febrile symptoms are present.

c. Acute gonorrheal arthritis, where but one joint becomes the seat of an acute inflammation, which is marked by much swelling, redness and pain together with a low grade of fever.

d. Chronic hydrarthrosis, one joint is usually involved. The knee is the joint of predilection. There may be no pain. redness or swelling.

e. Bursal and synovial form, the articulation may not be involved, only the bursæ, tendon sheaths and periosteum. The sites of predilection are the patella, tendo-achillis and olecranon.

f. Septicemic, this form of arthritis is associated with septico-pyemic symptoms and often with acute endocarditis.

g. The painful heel of gonorrhea, this is due to a periostitis and exostosis of the os calcis.

Finally, gonococci circulating in the blood may produce as the most serious complication ulcerative endocarditis. Ulcerative endocarditis may have nothing to do with pregnancy at all, occurring from gonorrhea in any location, especially the urethra, but if associated with labor or with the pregnant state, systemic symptoms with evidences of local or constitutional involvement may dominate the scene.

Cases have been reported in which the gonococci alone were found in the blood and on the valves, and where cultures have been grown. This furnishes proof positive that gonococci may be deposited anywhere by the blood current.

It would be of value to learn from the internists how great a part the gonorrheal toxins play in the production of myocarditis and in the production of benign endocarditis.