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Tuberculosis of the Female Pelvic Organs.

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My object in this paper is to draw attention to certain causes of ill-health in the female sex, which until recently have been but imperfectly understood. I refer to tuberculosis affecting the different structures in the female pelvis, but chiefly to that found commencing in the Fallopian tubes. I propose to deal with the question mainly from the clinical standpoint, and to consider first, tuberculous salpingitis.

Channels of Infection. There are probably three ways in which infection may reach the tubes:—

1. From within—(a) the peritoneal cavity; (b) the blood-stream.
2. From without—an ascending infection.

1a. The peritoneal cavity in the human female communicates by way of the Fallopian tubes with the uterine cavity, vagina and vulva, whereas in the male it is a closed cavity. There is a constant circulation of lymph in the peritoneal cavity, and secretion and absorption are most active in the pelvic portion. Since the open outer ends of the Fallopian tubes dip into Douglas's pouch, in mining parlance the "sump" or draining-pit of the peritoneal cavity, it is reasonable to assume that micro-organisms, such as the tubercle bacillus, contained in the lymph, may be carried into the ostia abdominalia and be wafted on by the downward lashing cilia lining these canals.

Now the uterine end is the narrowest part of the tubes, and although rarely occluded the mucous membrane may swell from inflammation so as to dam the stream back and lead to stagnation of the contained fluid. Probably also ciliary action is soon suspended

ERRATA.

In the *January* number of the JOURNAL,

page 19 line 12, for “7 died” read “37 died.”

page 19 line 14, for “20 per cent.” read “23 per cent.”

page 59 line 9, for “*post elimatériques*” read “*post climactériques*.”

page 61 line 19, after “appel” insert “au.”

page 78 line 1, for “menorrhagia” read “metrorrhagia.”

from the same cause, and the bacilli obtain a nidus in the richly plicated folds of the mucous membrane and so set up inflammation.

Statistics show that nearly 3 per cent. of all cases of human tuberculosis occur in the genito-urinary system, and by far the majority in the latter class commence in the mucous membrane of the Fallopian tubes—in other words, it seems to be the “seat of election” amongst the female pelvic organs.

1b. Other observers believe that owing to previous lowering of the vitality of the tubes, tubercle bacilli are deposited at the “injured” point from the blood-stream. This mode of infection presupposes an existing focus of disease elsewhere. Since caseous bronchial glands are so frequently found post mortem in children, without one being always able to demonstrate by any physical examination the existence of such primary foci during life, it is possible that an apparently primary tubal affection may in reality be secondary, infective material being carried from these glands in the blood-stream. It has been shown that diseases such as measles, pertussis and epidemic influenza are capable of fanning into a blaze the smouldering contents of the bronchial glands and causing tuberculosis elsewhere; so it is just these above-named zymotic diseases which are so frequently followed by genital tuberculosis. Another factor may be the vascularity of the Fallopian fimbriæ and folds which favours inflammation, coupled with the almost glandular arrangement of the mucous membrane, so that the tubes play the part of sieves for the peritoneal exudate, enmeshing solid particles in their recesses much in the same way that the faucial tonsils act as sentinels to entrap germs about to invade the air-passages.

2. C. J. Bond has shown* that there exists an ascending mucous current along the vagina and uterus towards the Fallopian tubes. This may explain a possible infection from without, such as may follow the use of septic instruments and syringes, the wearing of infected clothes or diapers, infection from the rectum during toilet of the anus, and more especially during menstruation when the whole length of the genital tract is one humid patulous channel. The relative narrowness of the intra-uterine portion of the tubes, and the fact that the cilia lash towards the uterine cavity would seem to make such a mode of infection improbable; yet Mr. Bond demonstrated that solid particles placed in the vagina were found on subsequent operation in the Fallopian tubes. Possibly here

* *Brit. Med. Journal*, July 29, 1905, pp. 232 *et seq.*

there may be a peripheral and an axial current in opposite directions, for the tubercle bacillus, being itself non-motile, could hardly ascend against a current normally setting downwards only.

The *age limit* ranges from 5—40 years, although the greater number of cases occurs between the 14th and 25th year.

Tuberculous Salpingitis. I believe that tuberculous salpingitis is more frequently primary than is usually stated; should the abdominal ostium become blocked it may remain localized to the tubes, whereas if the ostium continues patent the infection will spread to the peritoneum and other viscera. It is unusual to find tuberculous peritonitis without tubercle in the tubes, but a completely occluded ostium will generally localize the disease and prevent infection of the peritoneum.

Tuberculous affections, generally, are common in Devon and Cornwall, and I have known there to be six cases of well-marked single or double tuberculous salpingitis in the same ward (at the South Devon Hospital) at one time. Their nature was proved by microscopical examination after operation.

It is only in the very early cases, particularly when one tube is found to be affected, that it is possible definitely to trace the primary condition, because the infection rapidly becomes generalized.

Symptoms and Physical signs. Like tuberculous processes in other organs, the inflammatory condition *per se* gives rise to very little pain, and hence is frequently overlooked until far advanced. The importance of recognizing the early stage of this disease cannot be overestimated, but such early recognition is difficult owing to the insidious onset of the disease. It is mainly a diagnosis from suspicion. A girl or young woman is brought with a complaint of indefinite ill-health. She looks delicate, and presents the classical appearance formerly known as characterizing the strumous or scrofulous diathesis; either the slim brunette with bright colour, or the better nourished type with feeble capillary circulation; in South Devon generally the former. The friends or relations will often state that the patient "has never been the same" since an attack of measles, whooping-cough or influenza. On enquiry as to the menstrual history, the fact is elicited that the periods have been more profuse, or of longer duration, latterly, and that more or less leucorrhœa precedes and follows the flow. Nothing abnormal is found in the lungs, but the lower abdomen feels tumid, though not tender, on palpation.

On passing the finger into the rectum, on one or both sides of the uterus is felt a rounded swelling, corresponding with the

situation of the Fallopian tubes. Bimanually this tumour appears to be fixed in one or other lateral fornix, and frequently is nodular, but not markedly tender.

A typical case such as I have sketched is not, however, often seen, because, owing to the painless nature of the process in its early stages, attention is not directed to the pelvis.

If a patient is brought with a history of recent amenorrhœa, leucorrhœa and anæmia—not merely chlorosis—both the tubes will probably be found affected, and in addition signs of commencing tuberculous peritonitis. Here also as a rule there has been some menorrhagia at the beginning of the illness, and further back still a history of pleurisy, or diarrhœa alternating with constipation.

I have been fortunate enough to follow up such cases by operation, and, in the early stage first described, have twice removed one tube, presenting all the clinical appearance of commencing tuberculous salpingitis, primary in origin.

Dr. Cullingworth has fully described and admirably portrayed, in his "*Diseases of the Fallopian Tubes, etc.*," the pathological appearances of the disease under review.

Personally, I have found the tube swollen and convoluted with thickened fimbriæ, the ostium plugged by a cheesy mass, and the whole tapering off to the narrow uterine end. The serous coat shining and studded with tubercles in various stages of growth, while on slitting open the tube its mucous lining was found to be of a yellow-ochre tint, soft and velvety to the touch, thrown into numerous longitudinal folds, here and there loculated, and containing a honey-like glairy fluid. Swelling of the mucous membrane having exceeded the limits of the serous coat and the tether of the mesosalpinx, a "varicose" contortion of the mucosa takes place, and for the same reason—the comparative inextensibility of the serous covering—the swollen tube becomes more or less sharply curved, and embraces the ovary in its clasp. The fimbriæ are usually swollen; they may have tubercles on their ridges, and, owing to retraction of the sharp free edge of the serosa, may present the appearance of a sea anemone with indrawn tentacles.

On microscopic examination of the cross-section of such a tube the mucous membrane is seen to be thrown into more or less complex folds, presenting an almost glandular arrangement. The submucosa is found to be infiltrated with small round cells. In recent specimens tubercle bacilli may be demonstrated by suitable staining, while in more chronic cases typical giant cells are found; in later stages still, patches of hyaline or granular material which

refuse to take up the stain. The muscular coat is thinned out and infiltrated with small-cell growth, while the serosa in a favourable section may present typical tubercles on its free surface.

It is probable that certain examples of hydrosalpinx, met with during cœliotomy for other conditions, were originally tuberculous in nature, but, owing to favourable circumstances, the inflammation has been arrested, the tube been sealed off, and the fluid become sterile.

Other natural modes of cure are inspissation of the tubal contents, caseation, and finally calcification. I met with an instance of the latter in which both tubes, of stony hardness, were found lying behind the uterus, and shut off from the general peritoneal cavity by a roof of matted bowel and omentum. The latter were studded with recent grey tubercles, and the pelvis contained clear ascitic fluid. The patient sought relief only because of the enlargement of the upper part of her abdomen.

Should the tube become adherent to the bowel (sigmoid flexure of colon or cæcum) pus may be discharged per rectum, or if adherent to and perforating the ureter near the pelvic brim, pus will be passed in *acid* urine. I have not met with an instance of a tuberculous tube discharging *direct* into the urinary bladder.

Again, the appendix vermiformis may become infected from a diseased right tube, presumably along the appendiculo-ovarian fold, or the converse may happen. In a girl of 16 years of age whose cæcum I recently resected for advanced tuberculous ulceration I found the right Fallopian tube in the early stage of infection at the fimbriated extremity.

More remote effects are the occurrence of sterility in married life—the certain occurrence in cases with double tubal occlusion and the probable occurrence if both tubes are diseased, even without absolute occlusion.

Night sweats, hectic fever, diminished or capricious appetite, anæmia and loss of body weight and vigour, as in the case of tuberculous lesions elsewhere, are usually met with during the course of this disease.

Treatment.

Whenever a diagnosis of tuberculous salpingitis seems reasonable from the general symptoms and local signs, cœliotomy should be performed. The Trendelenburg position is essential to successful removal of the deeply-seated, often adherent, tubes, and it will be

found necessary to remove the ovary as well owing to its implication—invariably secondary—in the disease. Should it be requisite to remove both tubes a small portion of one ovary, on the less affected side, should be preserved, to obviate the sudden on-bringing of an artificial menopause with its unpleasant sequelæ. All stumps should be tied off with aseptic catgut, their faces touched with liquefied carbolic acid (after scraping away diseased tissue), and, whenever possible, a cuff or hood of peritoneum should be stitched over the stump.

Even if miliary tubercle be found in the pelvis or studding the intestines the prognosis is generally good, more particularly when ascitic fluid is present. As Sir A. E. Wright has pointed out, such fluid is stale, *i.e.*, exhausted of opsonins. By its withdrawal, fresh lymph, containing the natural protective elements of the blood, is poured out and completes the cure. If in the course of a cœliotomy undertaken for the treatment of the ascitic variety of tuberculous peritonitis the Fallopian tubes appear to be the starting point of the general peritoneal infection—as they appear to be in between 30 and 40 per cent. of such cases—complete removal of both tubes as far out to the pelvic wall and as close to the cornua of the uterus as possible will usually result in a cure, especially if the peritoneal cavity be well flushed out with hot normal saline solution. Drainage of the pelvis, if thought advisable, is best carried out through the posterior fornix into the vagina; drainage above the pubes is usually futile, and, moreover, may lead to local infection of the parietal wound and almost certainly to subsequent ventral hernia. Occasionally a localized abscess is found bulging the posterior fornix downwards. This may be opened and drained from the vagina, and I have met with cases where this has been sufficient to cure the patient after prolonged open air treatment. Extirpation of diseased tubes by the vaginal route is not to be recommended, from the small amount of space there is to work in and from the impossibility of removing all disease with certainty.

In cases of doubtful nature the diagnosis may be settled by injections of new tuberculin (T.R.), and it is probable that, with more extended trial of Sir A. E. Wright's "vaccines," successful treatment, of chronic and intractable lesions more particularly, will be attained.

Infection of the parietal wound occasionally follows cœliotomy, but, with the improvement in general health, the night sweats, fever and wasting disappear, and I have seen lesions resulting from such infection heal, slowly but soundly, with a firm keloidal scar.

Tuberculous Pelvic Peritonitis. This condition is most frequently secondary to tubal disease by direct extension, but miliary tubercle is not infrequently found during the operation of ovariectomy, herniotomy or that for intestinal obstruction, without having given rise to any special symptoms. It has been shown that tubercle bacilli may pass through the thin peritoneal coat from an intestinal ulcer and in this way set up pelvic peritonitis.

Tuberculosis of the bladder is usually met with as an infection descending from the renal pelvis along the ureter or else by direct extension from the peritoneum. I have previously stated that I have not met with an instance of extension direct from a diseased Fallopian tube. The early stage of the disease is very puzzling to diagnose; in one instance vulvar pruritus was complained of, so much so as to suggest glycosuria, especially as marked polyuria and intense persistent thirst were complained of as well. Sugar was absent from the urine, but the centrifugalized deposit of freshly voided urine showed the presence of tubercle bacilli. Subsequent treatment by lavage of bladder and injection of iodoform emulsion daily did good for a time, but the latter treatment, I am sure, lowered the local resistance besides destroying the girl's appetite, and so further hurried on the fatal result. The administration of minimum doses of "vaccine" at intervals of ten days, or as soon as the positive phase declines, will in the future, I believe, be of material help.

Tuberculosis of the Uterus. This affection is probably more common than is suspected; certainly as secondary to pulmonary phthisis it has been met with, but I believe it will be found, as microscopical evidence accumulates, that a certain proportion of ulcerations of the portio vaginalis, hitherto considered as malignant, will prove to be tuberculous. How otherwise can one explain the undoubted cures of such lesions after merely scraping, cauterization or other relatively superficial treatment? I have seen several such cases where the microscopist pronounced the scrapings to be "granuloma," and in two instances tubercle bacilli were demonstrated. Formerly such cases were treated by supra-vaginal amputation and vaginal hysterectomy, the absence of any recurrence being regarded as proof that the disease had been eradicated, and where the close resemblance to early cervical carcinoma was not proved or disproved by the microscope the cases were added to the list of so-called successful treatment of uterine cancer.