The Inflammatory "Pelvic Mass."

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The genital tract in the female—the vagina, uterus and Fallopian tubes—may be considered as a cylinder, bifurcate in its upper portion, interposed between the external body surface and the peritoneal cavity. This bifid cylinder is patent throughout its length, and its upper extremities, the abdominal ostia of the tubes, are as open and unprotected as is the vulvar introitus below; throughout its course there is no obstacle, or even impediment, to any reciprocity between the external skin surface and the great mesothelial lymph space. Bacteria of all kinds, pathogenic or non-pathogenic, may track anywhere throughout its length, and through it find easy entrance to their great hunting-ground, the peritoneal cavity. Exposed so above and below, swung between unyielding bony walls, packed about with little resistant cellular tissue, and richly supplied with absorbent lymphatics, this genital cylinder undergoes always the periodic stress of menstruation, endures at times the strain of pregnancy and labour, and suffers the various traumata of child-birth or abortion. Gonorrhœal or pyogenic infection attack it not uncommonly from below, and tuberculosis from above. In consequence, viewed both from its anatomical disposition, and its many physiological vicissitudes, it, of necessity almost, is frequently, (too frequently it is true) the channel of ingress of acute peritoneal and systemic infection, and is itself very often the seat of local injury and disease.

It is solely with the local inflammatory disease of this genital cylinder that this paper proposes to deal; and only as this disease manifests itself in the upper portion of this cylinder, the portion above the pelvic floor—the uterus with its intra-ligamentous cellular tissue, the parametrium, and the Fallopian tubes. To these structures must be added the ovaries; for these latter organs, resistant as they are to infection usually become involved in the inflammatory process by reason of their close apposition and lymphatic supply. We speak, then, of inflammations of the uterus, its adnexa, and the pelvic cellular tissue, for it is any or all of these structures, when involved in an inflammatory process, which come to constitute the inflammatory "pelvic mass." In particular terms the inflammatory "pelvic mass" is a metritis, a salpingo-ovaritis or a cellulitis, single or combined, unilateral or bilateral, together with the attendant intraperitoneal adhesions and exudate. All degrees of the process

occur, from the unilateral small deposit, either cellulitic or tubo-ovarian, to the complete so-called "choked pelvis," where the viscera are no longer discrete or discernible and the pelvis appears as run full of plaster-of-Paris, occupied to the uttermost by a single, firm, undifferentiated mass. No matter the gradation of this process, the lesion constitutes itself as the inflammatory "mass." It is of the etiology of this "mass," its varieties, life history and treatment that I propose to speak.

Even as the poor, the inflammatory "mass" in the pelvis is always with us. It is extremely common, and a right understanding of its etiology, its exact recognition or diagnosis, and the wise method of treatment come to constitute no small part of the special knowledge of the abdomino-pelvic surgeon. Since the opening of the Royal Victoria Hospital in 1894, 4,200 cases have been treated to a conclusion in the Department of Gynæcology. Of this number, 832, roughly one-fifth of the total, have been instances of inflammatory disease of the uterus and its adnexa. This, I think, represents fairly the experience of every gynæcologist, that about one-fifth of his practice is concerned with inflammatory lesions of these viscera. Moreover, since, in the spread or extension of this disease, there is no boundary or dividing wall between the pelvis and the abdomen, this inflammatory mass may, and often does, invade the latter. The whole lower abdomen, and even the flanks, may be occupied.

The mechanism of this extension or spread is the formation of the reactionary zone, lymph adhesions and exudate thrown out to oppose the infective process. All viscera are levied into the service so as to form a retaining wall. If the initial focus be parametrial the main spread is always extraperitoneal, and the conflict is marked by the induration zone of cellular tissue. While if the lesion be visceral from the first, the struggle is chiefly waged within the peritoneum. The various viscera, first of the pelvis and then of the abdomen, become matted together. The omentum, the great peace-maker, is, as usual, quickly involved, and one after the other the successive coils of intestine. So the process extends, often at intervals quiescent, only to break forth anew; and its ultimate size is measured solely by two things—the extent and virulence of the infection and the individual's comparative resistance. So it varies from the small hen's egg mass, unilateral and entirely pelvic, to the large abdominal tumour. Though constituted in this way, when slow of formation its periphery may become so sharp and distinct, its whole contour so well defined that it not infrequently simulates a broad ligament or ovarian cyst.

Instances of diffuse spreading peritonitis with little or no local reaction or "walling off," which occasionally arise in the pelvis, are, of course, not included here; they give rise to no local mass.

As I have said, the inflammatory "pelvic mass" is primarily either

within or without the peritoneum, the site depending largely upon the nature of the infection.

Within the mass itself any stage of the inflammatory process may be discovered. Frequently it is only the initial stage of lymph exudate and œdema with round cell infiltration, as seen in the catarrhal salpingo-ovaritis, hydrosalpinx or cellulitic deposit. All stages of necrobiosis and tissue necrosis occur, and not infrequently there obtains surgical pus—the pyosalpinx, the tubo-ovarian or ovarian abscess or the extraperitoneal focus. Concerning the presence of pus, the temperature chart is human, and is therefore not infallible.

Such then is the actual entity, the inflammatory "pelvic mass." I shall now deal very shortly with its etiology and the clinical features of its three chief varieties.

Any systematic knowledge of inflammatory lesions in the pelvis goes back only some thirty years. Noeggerath's paper was published in 1872, but it was not until 1879 that Neisser isolated the gonococcus. Hegar's monograph on genital tuberculosis appeared in 1886, and though Döderlein published his classical paper in 1892, any exact information in regard to pyogenic infection of the pelvis practically begins with the present century. Only during the past dozen years have the flora of the healthy genital tract been described and classified. Numerous and exhaustive studies have recently been made, and the aggregate result is as follows:—Pathogenic organisms are frequently present in the lower segment of the genital tract. From the healthy vagina of pregnant women the streptococcus pyogenes, the staphylococcus, numerous diplococci, including the gonococcus and the bacillus coli communis, have been repeatedly recovered. While in every sense objectionable aliens, these organisms do not of necessity occasion disease, for the resistance of the healthy mucosa is great. They are, of course, in the parturient canal specially dangerous. When pathogenic they produce, each in its own way, the general and localized infections with which we are unfortunately so familiar. Such local infection is invariably the cause of the "pelvic mass,' for from the "mass" itself these same organisms can very often be recovered and cultivated. Not always so, it is true, as some, particularly the gonococcus, perish rapidly in their own toxins. The rule of their presence obtains, and their several varieties, their different behaviour, the methods of infection, the choice of the tissues and the resulting lesions; in a word, their pathogenic life history have been, and still are, the subjects of study. In this connection should be remembered always the researches of Menge, Kronig and Stoltz, and in our own country the work of Andrews, Hyde, Williams, MacDonald and Little.

Much remains to be done, but from our present day knowledge the following practical points may be gathered:—The organisms

that are chiefly pathogenic in the female genital tract are three, or they fall into three groups, Neisser's gonococcus, the streptococcus in its several varieties and the tubercle bacillus. The staphylococcus aureus, the bacillus coli and the pneumococcus, which are comparatively seldom found, and then usually in mixed infections, and the various saprophytes, which are relatively unimportant, may be for the time disregarded. I also shall not speak of the singular infections from bowel or blood-stream frequently found in senile conditions. There remain the three outstanding infections—the gonococcal, the streptococcal and the tuberculous. The first two invade the genitalia from below, and constitute the so-called ascending infection; while the last attacks from above, its primary pelvic focus being always the Fallopian tube, and is known as the descending infection. The unbroken genital mucosa of the healthy adult is attacked only by the gonococcus and the tubercle bacillus. A vaginitis in a woman otherwise healthy means always a gonorrhœa. Streptococcal infection occurs only in a canal damaged by child-birth or abortion or wounded by some trauma, either accidental or deliberate.

The host once invaded, their pathogenic life history begins. Each lives it in its own way. The gonococci prefer always the mucous membrane, spread by contiguity, do not penetrate very deeply, and so do not specially implicate the blood-vessels and lymphatics. From the vagina they enter the cervix, traverse the uterus, and finally reach the Fallopian tubes, where they flourish. A salpingitis results which almost invariably involves the ovary, the catarrhal salpingo-ovaritis of gonorrhœal origin, which is as a millstone hung about the neck. So it may persist more or less quiescent for years, a perpetual torment. Pus at any time may form, often a mixed infection, the pyosalpinx with indrawn fimbriæ, or the tubo-ovarian abscess. The lesion remains generally intraperitoneal and tends to become bilateral. With time the virulence of the organism becomes attenuated, and in purulent exudate it rapidly perishes.

The streptococci from their point of entrance neglect the mucosa and penetrate deeply from the first. Rapidly they implicate lymphatics and blood-vessels, and are swept therein. Their choice is always the loose vascular connective-tissue, and they find this in abundance in the parametrium. They multiply therein, and remain for the greater part extraperitoneal, the viscera being only secondarily involved, save the ovary which lies in the direct lymph channel. Pus may, or may not, form, and the inflammatory "mass" is commonly unilateral, and may remain pelvic or extend to the groin or flank. The virulence of the organism is extreme, though they lie for years quiescent.

The tubercle bacillus from some previous focus, frequently a caseating gland, drops in detritus to the pouch of Douglas. By the

lymph current it is swept into the Fallopian tube. Tubercle formation, a chronic salpingitis or a pyosalpinx with everted fimbriæ, even of enormous size, may develop. The condition is usually bilateral, is almost entirely intraperitoneal and the ovary frequently escapes. Though its life is long its virulence is not great. (I have purposely not spoken of the blood infection.)

Such, then, is the life history of these several organisms, and in their respective ways they so give rise to the inflammatory "pelvic mass." It is with this mass as a clinical entity that we now have to deal. Very fortunately for the clinician, these three infections often persist as they begin, separate and distinct, and behaving in a way peculiar to each, remain recognizable from beginning to end. All in common occasion the "inflammatory mass," but the "mass" of the one can clinically be distinguished from that of the other. Instances of cross-infection and hybrid growth, of course, occur; but these are the exception and not the rule. So in actual practice there emerge the three clinical varieties—the gonorrhœal, the streptococcal and the tuberculous, to name them in the order of their frequency and importance. I shall draw very broadly their distinguishing clinical characteristics:—

1. The gonorrhœal variety of the inflammatory "pelvic mass." A history of purulent leucorrhœa and previous urinary disturbance is sometimes of value. Pus in the urethra or vulvo-vaginal glands, or evidence of old inflammation for example, a skenitis or the *maculæ gonorrhoicæ* about the Bartholinian ducts are important; a Bartholinian cyst is pathognomonic, while a granular vaginitis or a catarrhal cervix may both occur. Such evidences may persist for years in untreated cases, and most cases are untreated, and their tale is unmistakable, a gonorrhœal infection has passed that way. Noeggerath's latent gonorrhœa leaves, of course, no such serpent's trail. The resulting "mass" is a salpingo-ovaritis, and may be of any size. It is frequently pelvic and not large; very often it is bilateral with the uterus recognizable between. Whether single or double these "masses" are commonly elastic, have a definite rounded contour and a boundary sulcus more or less distinct, which marks the lesion as visceral and intraperitoneal. To the bimanual examination, and this is the important point, the sense is that of a rounded or pyriform body with no complete indentification with the uterus or pelvic wall. The "masses" occupy the pouch of Douglas, and the uterus may not be greatly displaced. All degrees obtain; sometimes the landmarks are entirely obliterated, but the above is a common finding. The diagnosis is based upon the evidences of gonorrhœa below and the physical characters of the "pelvic mass."

2. The streptococcal variety of the inflammatory "pelvic mass." The history is valuable, and begins with child-birth or abortion, or some operative interference sometimes self-imposed. If acute, the

fever is high and the illness extreme. Pain is marked often down one leg, and that knee is flexed. Examination may, or may not, show an old gonorrhœa; if so, there is a mixed infection. The vagina is hot and dry, and the "pelvic mass" is usually unilateral, firm and discoid in shape with no limiting sulcus. Within the pelvis it gives the sense of set plaster-of-Paris firmly fixed to the pelvic wall. The uterus is often greatly displaced and the rectum compressed from before backward. The "mass" is of any size, and may project into the pelvis below or extend upward to the groin or flank. The uterine appendages may be indistinguishable, but frequently are swollen and sensitive. The diagnosis is based upon the history, and the recognition of the "mass" as extraperitoneal.

3. The tuberculous variety of the inflammatory "pelvic mass." Frequently the history is only of failing health and some menstrual depravity; this is the lesion of the young and unmarried. There is no evidence of gonorrhœa, though there may be cervical catarrh. The mass is cornucopia-shaped, and frequently bilateral, elastic, rounded and with definite contour. Pea-like nodosities may be found in the isthmian portion of the tube. The uterus is recognizable and not greatly displaced. The ovaries may be healthy and distinct. The diagnosis rests upon the history, absence of the evidence of gonorrhœa and the character of the elastic, fusiform, intraperitoneal "pelvic mass."

In all three cases the leucocyte count and cultures taken from the "mass" may be of distinct service; where tuberculosis is suspected the Von Pirquet reaction is often valuable.

The relative frequency of these different infections is fairly to be judged from my own practice. From 164 operative cases, 113 were gonorrhœal; 19 were tuberculous, 17 were streptococcal (12 puerperal and 5 non-puerperal) and 15 were of mixed infection. Here, as elsewhere, gonorrhœa far outnumbers all the rest put together.

Treatment of the "Inflammatory Mass."

Palliative treatment. During the past eight years I have treated 344 such cases. Of these 180, or more than half, escaped operation; palliative and hygienic treatment gave fair results. Of this palliative treatment rest is the great factor, and rest in bed; and youth and individual resistance determine the result. The nature of the infection or the size of the "mass" is here no contra-indication, for nature may work pelvic miracles. Witness the three following cases:—

1. Girl of 18, patient to Dr. Evans, gonorrhœal "choked pelvis," with the crest of the "mass" nearly to the umbilicus. Palliative treatment gave, in a year, a pelvis normal to palpation. The girl subsequently married, and was safely delivered of a child.

2. A woman of 28, tuberculous salpingitis. Four years ago both tubes swollen to the size of the index finger, and were nodular and

sensitive. Steady improvement followed rest out of doors. For a year she has resumed her ordinary life, her menstrual habit has been restored, and the tubes are now normal in size, though slightly fibrous and nodular.

3. Woman of 35, with a large left-sided, extraperitoneal "mass" in the pelvis reaching to the iliac crest. The whole left half of the pelvis was occupied, and the uterus was pushed far to the right. The patient was bedridden, complained of sciatic pains, and the left leg was flexed and wasted. She gave the history of puerperal infection the year before; this was probably streptococcal, as the illness was acute for three months, though there was no abscess formation. Under palliative treatment which included hot air baths, massage and electricity, the condition rapidly improved. A year later all functions were restored, and the patient was active and about the house, though there was still a small "mass" in the pelvis.

Operative treatment. Here I have followed always the technique established by Dr. Gardner, the Chief of the Department. In eight years I have operated upon 164 cases of the inflammatory "pelvic mass" with three deaths—a mortality of 1·8 per cent. In all these cases the recognition of the nature of the infection and the method and time of interference are all-important. Upon these things everything depends. If the infection be streptococcal it is never safe to open the abdomen, as the organisms are persistently virulent. Moreover, the main "mass" here is always extraperitoneal, and consequently irremovable, and even if the diseased uterus or its appendages be extirpated the chief lesion is still beyond surgical help. A cœliotomy in such a case is absolutely futile and extremely dangerous. It should never be performed, as a streptococcal peritonitis is almost inevitable. Yet such an operation, even as other surgical blunders, is not so rare. I have performed it twice myself; and the result was, in one, a death, and in the other a protracted and stormy convalescence. Crossen, of St. Louis, tabulates a series of 23 such cases, where, after a cœliotomy, 5 died; a mortality of nearly 22 per cent. In all these cases then the abdomen should remain unopened; surgical interference should only seek to establish drainage, to evacuate abscess cavities as they form, and the methods should be always extraperitoneal, either a colpotomy below or above the groin or a flank incision. Mixed infections, either gonorrhœal or tuberculous, if they occur here, must wait. Sixteen such cases I have treated in this way without a death. One, a puerperal case, lay in hospital six months and required four successive incisions; while another, infected from the careless use of a sponge-tent, became convalescent only after three operations for drainage. The great difficulty is always to recognize the condition. Yet in most instances its personality is plain, and to be forewarned of it is to make few mistakes.

In the gonorrhœal "pelvic mass" all surgical interference is contra-indicated during the acute stage. A cœliotomy at this time incurs heavy additional risk, and in waiting there is no harm. The exacerbation sooner or later burns itself out as the organisms perish. Posterior colpotomy with complete tunnelling of the "pelvic mass" is a wise, curative and conservative measure, and should, I think, be even more frequently undertaken. Extirpation of the diseased organs should only be made as a last resource.

With the tuberculous "pelvic mass" the converse obtains. If the lesion is progressive the sooner it is removed the better. Posterior colpotomy has here no place. Extirpation is the only cure.