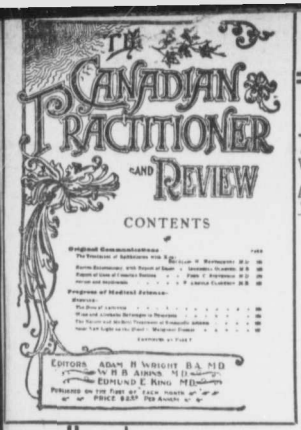

PYELO-NEPHRITIS IN PREGNANCY

By

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I must apologize to the Association for the fact that this has been called a paper; it is merely a note to draw the attention of the practitioners to a rare and serious condition.

The pregnant woman has many pitfalls to encounter, and not the least serious of these is pyelo-nephritis, the disease I propose to discuss shortly. In the literature of the subject there is not much to be found that is helpful to the practitioner or of much benefit to the student. The disease seems to have been to a very great extent lost sight of, and many works on obstetrics do not even mention it. One of the best references I find in Edgar, and even there the subject is not dealt with as fully as it might have been. The experience of any one man is necessarily limited, and we naturally turn to the larger institutions for information. In the Paris *maternité* they meet with about one case a year of pyelo-nephritis complicating pregnancy. On account of the rarity of the condition, I propose to give you in detail my experience.

In May, 1898, my attention was first called to this subject. A Mrs. B., advanced in pregnancy to the fifth month, showed evidence of ill-health. Pus appeared in the urine in very considerable quantity. She suffered from loss of appetite, headache, and some elevation of temperature. After a few weeks high fever and chills set in, with an increase of pulse. She went through with the pregnancy, and though very ill bore a living child and survived. Upon frequent subsequent examinations no pus was found in the urine, though there were at times traces of albumen. She became pregnant again in June, 1901, and when two or three months pregnant no pus was present in the urine. Gradually the old symptoms reappeared—pus and albumen in the urine, ill-health, loss of appetite, a haggard appearance, lemon-colored, waxy-looking skin. I advised the induction of labor and brought the patient to the city for that purpose, but the other consultant did not agree with my views of the case, and the patient was sent home to go on to full time. She was delivered and recovered, I believe, after a desperate illness. Owing to the action taken in the case, I have never seen the

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patient since, and can say nothing as to her subsequent condition.

The next case with which I was brought in contact was Mrs. R., a young married woman pregnant for the first time. When six months pregnant she was taken ill with pain in the right lumbar region. At first it was supposed that it might be connected with the appendix, but upon a more thorough examination after her admission into St. Michael's Hospital, the real nature of the trouble was discovered to be a pyelo-nephritis. I saw her in consultation with Drs. J. L. Davison and H. B. Anderson. She was then very ill with rapid pulse, high fever, and she looked very ill; the temperature was 105. I advised the emptying of the uterus, and passed a bougie to bring on uterine contractions. The recovery was uneventful. I lost sight of the case until she became pregnant for the second time, and again in the sixth month the old symptoms returned—high fever, rapid pulse, haggard appearance, pain over the right lumbar region, and pus in the urine. Her physicians, Drs. Davison and H. B. Anderson, being out of town, I saw her with Dr. Hendry, acting as locum tenens for Dr. Anderson, and again advised the production of premature labor. Soon after the uterus had been emptied pus disappeared in the urine, and she made a very rapid and uneventful recovery. Soon the bloom of youth returned, and she felt in perfect health. On the 16th of December, 1907, she presented herself at my office and said that she had just missed her menstrual period. I examined the urine and found it normal. She returned once or twice a month to enable me to follow up her condition upon the advance of pregnancy. Each specimen of urine was drawn from the bladder by means of a glass catheter and examined at once. About the third month of pregnancy bacteria (diplococci) were found in profusion in the urine, and a little later pus made its appearance. Her husband came to see me about her health, and expressed a wish that if anything was to be done it should be attended to at an earlier period before she suffered so much pain. He stated that already she was delirious at night and was looking ill. I referred him to Dr. J. L. Davison, one of her attending physicians, for his opinion, and he also advised that the pregnancy be terminated. The patient was sent into St. Michael's Hospital, and when I saw her with Dr. Davison I was amazed at the change in her appearance. The same peculiar haggard look, with dark rings under the eyes, the unhealthy color and waxy appearance of the skin were very apparent. There was as yet but slight elevation of temperature, but the right kidney was now excessively tender on pressure. The left kidney was not tender. The uterus was emptied for the third time. I intend to sterilize the patient by removing a

portion of each fallopian tube to prevent impregnation. This case was of particular value from a clinical point of view, owing to the fact that I was able to observe it during three successive pregnancies, and that the observations also covered the intervening periods.

The next case to be related is that of Mrs. P., admitted under my care in the Toronto General Hospital. She was 32 years of age, and had given birth to one child. She was pregnant four months. A sudden pain set in over the left kidney at the end of the third month of pregnancy; it was of a sharp, stabbing character, and did not radiate. The day after her entrance into the hospital, in the fourth month of pregnancy, a severe chill came on, and lasted for 45 minutes. She had, in all, four or five chills, at intervals of from 6 to 24 hours. When admitted temperature was 102 3-5, pulse 128, respirations 30—the urine contained pus, no casts were found, a trace of albumen was present. I append the temperature chart. The chills ceased, the health improved, and the patient is as yet under observation. She may go on to full time without any return of her serious symptoms, though this has not been my experience with similar cases. Even after delivery the patient is not necessarily out of danger, and the damage done may be of a permanent character. This is borne out by the history of the next case.

Mrs. C., 45 years of age, the mother of eight children. She had never had convulsions or swelling of the feet. When four months pregnant she had chills, but these disappeared. She had suffered from a good deal of soreness across the loins. In the last pregnancy the urine had been very scant—not a cupful in 24 hours, she said. On the 12th day after delivery she was seized with a severe pain over the left kidney, in the left lumbar region, and up the left side of the abdomen. A chill came on and was very severe. Dr. Cleland saw her; she had high fever and the urine contained considerable pus. In this case the patient had a period of ill-health at the fourth month, and then she improved and went on until full time and was delivered. Twelve days after delivery she showed the severe symptoms that called for a consultation, and I saw her with Dr. Cleland. She had severe pain, a chill, elevation of pulse and temperature, and pus in the urine. The convalescence was rather slow. For the purposes of this paper I saw her a few weeks ago, and found no ill-health, no tenderness over the loins, and a very small amount of pus in the urine, indicating a permanent lesion.

In order to show the difficulties with which we have to contend, and to emphasize another phase of this condition, I relate the following case:—Mrs. G., age 20. She entered St. Michael's

Hospital when four and a half months pregnant. She felt ill. Her temperature was elevated, varying from 100 to 103. Finding an abundance of pus in the urine, I advised that the uterus be emptied. This was objected to. I lost sight of the patient for a time, but when asked to see her again she was emaciated, looked as if in the last stages of septicæmia, and looked so ill that I hesitated to advise the induction of premature labor, feeling that it would be fraught with very considerable danger in the present condition of the patient. She was taken home, remained a week, and was readmitted to the lying-in department of St. Michael's Hospital in a desperate condition, and delivered of a still-born child. Labor set in without any interference. She lay abed for weeks, but at last regained her health. Some months later I catheterized her and obtained a specimen of urine. This was examined by Dr. Geo. Smith. It contained pus cells, singly and in groups, but they were not numerous. A diplococcus was also present in a fresh specimen. The relation of these cases, embracing, as I think they do, the sum total of my experience with pyelo-nephritis of pregnancy, may serve as of some assistance in studying the disease. The condition is in no way connected with the nephritis or albuminuria that accompanies eclampsia. There is a factor common to each condition, namely, the almost total disappearance of the pathological changes in the interval between the pregnancies. In the case of eclampsia, it is the albumen that disappears or greatly diminishes; in pyelo-nephritis it is the pus that disappears or greatly diminishes. In albuminuria of pregnancy we frequently have convulsions; in pyelo-nephritis we frequently have severe rigors; while rigors are not met with in albuminuria and convulsions are not met with in cases of pyelo-nephritis. The two diseases must, therefore, be looked upon as distinct and separate. But again they meet on another common ground. Each is specially connected with pregnancy, and the sufferers are in apparent good health when not pregnant. The cause of the onset of acute symptoms in either case is the presence of pregnancy. Pyelo-nephritis assumes serious proportions in the fourth and fifth month, while albuminuria assumes serious proportions as a rule in the latter months. In either case the disease may present serious symptoms after delivery. If pressure be the cause of the conditions, it is less difficult to explain cases of albuminuria than cases of pyelo-nephritis, because the former comes on when the pressure is at its greatest, namely, in the latter months of pregnancy. I confess that it is difficult for me to understand why the slight pressure of a three, four, or five months' pregnant uterus upon one or both the ureters should

be capable of producing such a serious disturbance in one or both kidneys. Again, it is difficult upon such an assumption to explain the occasional amelioration of the symptoms even with the increasing pressure of advancing pregnancy. And it is more difficult to explain the recurrence of the serious symptoms after all pressure has been removed by the delivery of the child. Perhaps some venous congestion of one or both kidneys may be produced analogous to the venous engorgement noticed even in the very first months of pregnancy.

The symptoms are characteristic. Generally during pregnancy a feeling of malaise, weakness, and ill-health. Then comes on the severe pain of pyelo-nephritis similar to that of the disease when produced by an inflammation ascending the ureter from an inflamed bladder. This pain may be aching or stabbing in character, and is fairly well localized. The kidney on that side becomes excessively tender to the touch. Rigors set in, and the pus is found in the urine. This ill-health may continue until labor sets in or until the uterus is emptied after the induction of premature delivery or miscarriage. This would appear to be the rule, although from my experience there appears to be some amelioration of the symptoms, with a recrudescence of the disease at a later date.

The treatment to be adopted should be that of pyelo-nephritis, whatever that may be. If the disease is, as we know it is, due to the presence of pregnancy, and if the disease is a serious one, as we know it is, surely the most rational method of treatment is to terminate the gestation. This should only be done under the protection of a consultation with one or more confrères, and should not be deferred until it becomes dangerous to the mother.

My experience does not accord with that of some other observers. It has been stated that pressure of the gravid uterus and the pressure of tumors will produce the condition. I have not found pyelo-nephritis, nor yet the further advanced condition of pyo-nephrosis as a complication of myomatous or ovarian tumors, or even of uterine cancer, with all the pressure it produces. The condition most frequently met with here is hydronephrosis, and not pyonephrosis, nor yet pyelo-nephritis. In my cases there has not been any tumor of the kidney present upon bimanual palpation of the loin. The cases have not all been permanently damaged in the interval between the pregnancies in so far as pathological changes could be made out by a urinary analysis. Pain has been a constant accompaniment of the condition, and the symptoms set in early, namely, about the fourth, fifth, and sixth months of gestation, and not in the later months.

In this country some years ago, Dr. Meek, of London, drew attention to the condition. Those who are interested in the literature of the subject will find a long list of references in a paper by Tremont Smith, in the *New York Medical Journal*, December 8, 1906.

Discussion.

Dr. Wm. F. Metcalf.—The etiology of the various forms of toxemia occurring in pregnancy is not well understood. Why one patient presents symptoms of nephritis without pus in the urine, with eclampsia, and in another the urine is loaded with pus and even pus casts, with no symptoms of eclampsia, while others have repeated rigors with high temperature but no increase of polynuclear leucocytes and no evident impairment of kidney function, is a question yet to be solved, and the medical profession is indebted to Dr. Ross for the report of so many cases from his personal experience of an affection which, though not common, is doubtless frequently overlooked.

I have one case at present under observation. In my records of the last three years, I find only one other case reported, of which the following in brief is the history:

Mrs. D. S., aged thirty-four. Had missed four menstrual periods. For ten days she had severe chills, with fever reaching 104 deg. Leucocytes, 26,200, of which polymorphonuclears made up 98 per cent.; erythrocytes, 2,400,000; hemoglobin, 50 per cent. Vaginal examination excluded salpingitis. Pain in the right renal region was severe. Tumor could be palpated. Urine examination: Very cloudy, with heavy white deposit; spec. grav., 1010; albumin, more than would be accounted for by the pus present; microscopically, masses of pus-cells and many small round epithelial cells. Specimen taken by catheter gave pure culture of colon bacillus. The patient's opsonic index to the colon bacillus was 1.4. The temperature was typically septic, showing striking remissions.

The case was so clearly one of pyonephrosis, and the patient was in such bad condition, that I did not think it advisable to catheterize the ureter. Cystoscopy and catheterism of the ureter are essential to a positive diagnosis in some cases, but are difficult in the later months.

Here was a woman, anemic and poorly nourished, in a condition most favorable for sepsis. Little pressure is necessary to obstruct the ureter; the pressure of the urine, thus dammed back upon the renal structures, would disturb the vitality of their cells, while the stagnated urine is readily infected by the

colon bacillus. In 19 out of 21 cases reported by Rovsing, the colon bacillus was found in pure culture.

I advised termination of the pregnancy because of the bad general condition, and ether was administered on February 4th, a dead macerated fetus being removed. The blood-examination, twenty-four hours later, gave 9,800 leucocytes, of which 92 per cent. were polymorphonuclears; forty-eight hours later there were 4,800 leucocytes, with 82 per cent. The following note appears ten days later: "Many specimens of urine have been examined and there has been a steady improvement; to-day's sample still shows many pus-cells, some albumin, no casts, sp. gr., 1011." On March 2nd, the report is that the deposit, fine and white, is lessening in quantity. On May 9th, "a few pus-cells, an occasional red blood corpuscle, and a few small round epithelial cells remain." The patient has remained in good health since.

The right kidney is the one usually involved. Swift reported 41 cases in which the right kidney only was affected in 37. This fact points to pressure as a factor, since the left ureter is somewhat protected by the sigmoid flexure, and the diagonal attachment of the mesentery tends to allow the small intestine to fall to the left. I do not agree with Dr. Ross's statement that the pressure on the ureters is greater in the later months of pregnancy. I believe it to be greatest just before the uterus rises above the pelvic brim; and it is true that a vast majority of cases are first observed in the fifth month.

In all the cases reported by Swift, in which bacteriological examination was made, the colon bacillus in pure culture was found; it is therefore likely that the condition of the alimentary canal is an important etiological factor. This would suggest that digestive disturbances and constipation in the pregnant woman should receive especial attention.

According to the reports of cases found in the literature, it is not always necessary to empty the uterus. Twenty-eight of these forty-one cases went to term. Spontaneous premature labor occurred four times, induced premature labor only once, yet eventually in twenty-nine of these cases pus entirely disappeared from the urine. When the infection is bilateral, we may be left no choice but to empty the uterus; but Legueu (*Rev. de Gyn.*, 1904) urges that we should carefully distinguish these cases from those that are unilateral. He performed nephrostomy in eight cases where the condition was unilateral, and says that the operation does not compromise the pregnancy. He further says that, in urgent cases, *before* the child is viable, the operation

is incontestably indicated; however, when the child is viable he would prefer premature delivery. Milligan reported (*Ob. Rev. de Gynec.*, 1906) a case of recovery after nephrostomy. Fournier, reporting two cases, states that in one nephrostomy was refused and at the seventh month the patient was delivered of a dead child, while in the other, a case of a severe type, nephrostomy was performed and a living child born at term."

Treatment, aside from operative measures, will, of course, be aimed toward overcoming the infection by the same means used in any form of pyelo-nephritis. The urine should be made a less favorable culture medium by the administration of such substances as urotropin and helmitol, and insisting upon the ingestion of large quantities of water. In the case under observation this method alone has been employed, since operation was refused. The patient has been in bed about two months. She is improving, but there is still pus in the urine.

In brief, we are dealing in the pyelo-nephritis of pregnancy with a condition from which the mother may recover with little of treatment except hygienic measures in a large percentage of cases; but, in all except the most advanced intoxications, our greatest concern is for the life of the child. For this reason we may properly consider Legueu's operation as a valuable suggestion in selected cases.

Dr. Ross is to be congratulated upon his splendid results in the cases reported.