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PUERPERAL THROMBOSIS OF THE INFERIOR VENA CAVA.

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A CASE of puerperal septicæmia which recently came under observation at the Monsall Fever Hospital presented two features of interest—the one clinical, the other pathological. In the first place, it is an undoubted instance of the occurrence of a very high temperature—namely, 111·2 degrees Fahrenheit, five weeks before the death of the patient; secondly, it affords an example of that rare condition, thrombosis of the inferior vena cava, together with all its tributary veins.

The notes of this case are as follows:—

M. B., aged 30, multipara, was admitted to Monsall Hospital on March 26, 1902, as a case of puerperal fever. In the family history and personal history there was nothing of note. She was confined on March 21, the labour being easy, and apparently differing in no way from her previous confinements. She was attended by a midwife only, and the surroundings were apparently the reverse of hygienic. On March 22 she felt feverish, and shivered; there was also some headache. The next day she was delirious, and complained of pain at the lower part of the stomach, more on the right side than the left. She became rapidly worse until her admission to Monsall Hospital on the fifth day after confinement.

On admission the patient was a thin, ill-nourished woman of careworn appearance. She was obviously ill, and complained chiefly of pain which was referred to the lower part of the abdomen, and was more intense in the right iliac fossa; it was dull and persistent, and had never been acute, and was accompanied by headache and nausea; the temperature was 101·5, respirations 24, pulse 84. There was a little fœtid muco-purulent vaginal discharge.

On examination the abdomen was generally slightly distended, and moved well with respiration; the uterus could be felt above the pubes, and was tender, more especially to the right of the middle

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line; there was neither abnormal dulness in the abdomen, nor anything unusual to be felt there. The urine and fæces were passed naturally, and without pain; there was persistent hiccough. Per vaginam, the os was patulous, and the cervix split; the uterus was four to five inches long, and in normal position, there being nothing abnormal in Douglas' pouch. The heart and lungs and urine were normal.

The next day she was distinctly better, and the discharge was less offensive, the tongue cleaner, and moist, and the appetite good; the temperature was 99·44. The uterus was then explored with the finger, and the mucous membrane was found to be soft and friable throughout; at the fundus there was a patch which felt like the placental site, but there was nothing that could be dislodged by the finger. An intra-uterine douche of weak iodine water was given.

The next day she was not so well; the temperature went up to 104·2, and she had a rigor lasting ten minutes; the vaginal discharge was scanty, and a little fœtid. Another intra-uterine douche was given, and on March 29 the temperature fell, and the discharge became free from odour and greater in quantity; she looked and felt better.

On March 30 there was another rigor, and the temperature rose to 105°. There was no increase of pain, and no abdominal distension, and no sign of pelvic, or general peritonitis; there was, however, some vomiting and hiccough; another intra-uterine douche was given, and a little *débris* came away.

On March 31 she was much worse, vomiting frequently, and in great pain, which was referred chiefly to the umbilicus. On this date Dr. Fothergill saw her in consultation, and it was decided to curette the uterus. This was done forthwith under chloroform, and the lining membrane of the uterus was well scraped down to the muscle, several pieces of placenta being removed. The operation was followed by very free bleeding, and as the uterus failed to contract on manipulation, injections of hot water were given, also ergot subcutaneously, and the uterus and vagina were plugged with sterilised gauze. Subsequently a large saline enema was given and retained. After the operation the patient was blanched, and collapsed.

The next day the patient was more comfortable. The plugs were removed, and the uterus douched with hot water. It contracted firmly, and from this date to the end of the illness nothing abnormal occurred in connection with any of the pelvic organs. The temperature, however, remained high and remittent, and rigors occurred at intervals.

Dr. Fothergill saw her again on April 6. The temperature, as

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registered by three different thermometers at 6 p.m., was 111·2. This was verified by personal observation. Even with a pyrexia of this extent there was no collapse, and the temperature came down to 107° after hot sponging. Phenacetin gr. x. in brandy ʒii. was then given, and the temperature dropped to normal. On examination there was nothing wrong with the uterus, but there was pain and tenderness over the saphenous opening on the right side, followed quickly by signs of thrombosis of the femoral and saphena veins on the same side. This was followed, two days later, by the same process on the other side; both legs were œdematous, and a cord could be felt in the situation of each popliteal vein subsequently. From this point onwards to her death, on May 14, there were no symptoms except increasing weakness, though the temperature continued high and remittent, with repeated rigors. There was no sign of suppuration or embolus in any other organ. The immediate cause of death was œdema of the lungs.

A *post-mortem* examination was made 24 hours after death. The uterus and pelvic organs were normal except for an old split in the cervix. The body of the uterus was 3½ inches long, and there was no evidence of septic inflammation; there was no sign of general or pelvic peritonitis. The inferior vena cava was filled with firm ante mortem clot, which extended into the iliac veins, and, in fact, all veins below the heart were filled with clot, which below the bifurcation of the vena cava was firm and tough; in the vena cava itself and the renal veins it was softer, but had obviously been formed before death. There was no sign of thrombosis in the veins of the thorax or upper extremities or head and neck. The lungs were œdematous, and the heart muscle pale and flabby; the right pleura contained a little serous fluid. The other organs were healthy, and there were no abscesses anywhere.

For the above notes we are indebted to Dr. Basil Rhodes, Assistant Medical Officer to the Hospital. This case was at the outset most commonplace in character, being simply an example of septic infection of retained portions of placenta. The first interesting feature was observed when these placental fragments were removed with the curette on March 31st. Their presence in utero, together with the inflammatory process due to their infection must have kept the uterine sinuses of the placental site very large, for as the curetting progressed blood gushed out from the os uteri in a spout an inch in diameter. No contractile power could be awakened in the flabby infected uterine muscle, and the bleeding was stopped only by plugging the uterine cavity with gauze.

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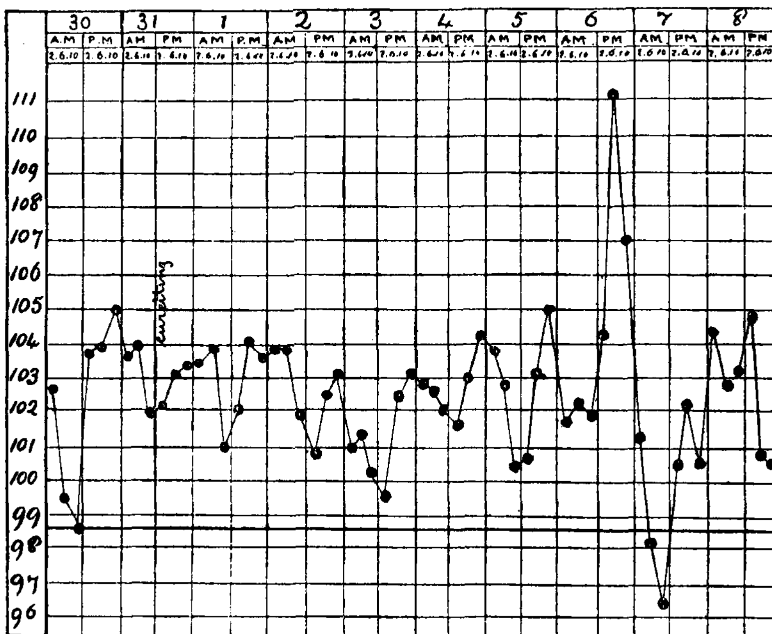
When we examined the patient together on April 6th the temperature had just been recorded by three different thermometers as 111·2° F. The patient's cheerful aspect and humorous conversation on this occasion were very striking, and formed, together with the three thermometers, a most memorable clinical picture. The only physical sign revealed by a searching examination was slight swelling and tenderness over the saphenous opening on the right side. We could arrive at no explanation of the remarkable rise in temperature. After sponging with hot water the pyrexia quickly passed, and the temperature became sub-normal, the figure recorded at 10 a.m. on



Temperature Chart. Thrombosis of Inferior Vena Cava.

April 7th being 96·4° F.—a drop of no less than 14·6 degrees in sixteen hours. The chart continued to be wildly erratic, 99° and 108° being recorded on the 13th, 98·8° and 107·4° on the 15th, and so on, with excursions not quite so wide, until the end. The fatal lesion appears to have progressed very gradually, and without producing any symptoms definite enough to permit of a diagnosis, or to mark the stages of its advance. Vomiting and diarrhœa occurred from time to time, but did not persist. Albumen appeared in the urine a week before death, so if we may follow the example of Raynaud and other writers, it may be judged that by that time at least one of the renal veins was blocked by thrombosis. There was a

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systolic murmur at the pulmonary area, but we are not able to state the date at which this appeared. Robin and other writers have described violent pain in the lumbar region, somnolence and other features which were absent in the present case.

Thrombosis of the inferior vena cava forms the subject of a considerable mass of literature. Vimont[1] collected 112 cases, in most of which the thrombosis was limited in extent, and was secondary to malignant disease of the kidney and other organs. Krauss[2] compiled a complete account of the subject up to the year 1895. Lombardini,[3] in the same year, attempted to lay down rules by which the part of the inferior vena cava affected could be diagnosed. He classifies the symptoms indicating obliteration of the lower, middle and upper thirds of the vessel, but his work is not convincing. Œdema of the legs, œdema of the abdomen, dilatation of the superficial abdominal veins, renal symptoms and hepatic symptoms are the features upon which the diagnosis may be based. It is allowed that primary thrombosis of the inferior vena cava can occur, but in most instances the condition is secondary to inflammation and thrombosis in a tributary vein. In very few cases has the primary thrombosis occurred in the utero-ovarian and hypogastric veins. Some of these are by no means recent. Thus in 1828 Dance showed that a puerperal inflammation in the wall of the uterus affected the right ovarian vein, the vena cava being then involved. Sinnhold reported two cases. In a woman, aged 35, a puerperal thrombosis of the right utero-ovarian veins extended as high as the renal veins, when emboli produced gangrenous infarctions in the lungs. A woman, aged 26, was the subject of thrombosis in the pampiniform plexus, the uterine veins, the iliac veins and the vena cava. Leudet described a case of phlebitis in the utero-ovarian veins, iliac veins and vena cava, with clotting extending into the left renal vein. Lancereaux also mentions thrombosis of the utero-ovarian and hypogastric veins with extensions in the femoral and renal veins, the vena cava being obliterated up to the diaphragm. The above are all instances of puerperal thrombosis. In a case recorded by Léonard, however, the condition followed upon a phlebitis secondary to a vaginitis which was caused by a pessary. These cases were mainly pre-bacteriological in date, but when Vidal, in 1889, proved that puerperal thrombosis is septic—usually streptococcic—in origin their nature became clear. The study of puerperal thrombosis in its

1. Vimont. *Thèse*, Paris, 1890.
2. Krauss. *Inaug. Diss:* Tübingen, 1895.
3. Lambardin. *Thèse*, Paris, 1895.

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early stages is, of course, most important from a practical point of view. Advanced cases, such as those just mentioned, have a merely pathological interest. We refrain, therefore, from multiplying examples of the condition, and merely abstract, in conclusion, a case of striking interest quite recently reported by Hoche:—*

A woman, 31 years of age, miscarried in the fifth month of her tenth pregnancy. The fœtus was expelled, but the midwife in attendance failed to remove the placenta. Some days later the patient was admitted to hospital (October 6th) suffering from rigors and blanched by hæmorrhage. The temperature was high; the pulse rate 130. The placenta was removed, but the patient's state did not improve. Three days later temporary good results followed intra-uterine douching. On October 12th violent pain was felt in the lumbar region, and on the left of the fundus uteri there was great tenderness on pressure. The abdominal veins became very apparent, more especially on the right side. The uterine cavity was curetted. The pain and tenderness disappeared on the following day, but a febrile condition, with rigors, persisted. On the 18th a systolic cardiac murmur appeared. The pulse rate was then 120, and there was œdema at both bases. Diarrhœa began on the 20th, when the condition of the lungs was worse. On the 24th the patient became somnolent, and vomited thrice. The quantity of urine suddenly became diminished by one-half, and albumen appeared in quantity. On the 28th there was œdema of the legs, which during the next few days spread upwards over the abdomen and reached the thorax. Ascitic fluid was also present. The febrile state continued. On November 7th rigors occurred with dyspnœa, and the signs of pulmonary œdema became more pronounced. Death occurred on November 10th.

The *autopsy* was made on the same day. There was fluid in the abdomen. The uterus was twice the normal size. The utero-ovarian veins were thrombosed, and the thrombosis had spread to the inferior vena cava. The clot extended up into the right auricle and through into the right ventricle, its extremity being found floating in the pulmonary artery. The process had also extended down into the iliac veins. The renal vein on the right side with its branches was also thrombosed, as were some of the sub-hepatic veins. The uterine cavity was slightly dilated, and had a red vegetating surface. The appendages were not abnormal. The lungs contained hæmorrhagic infarctions, and were congested and œdematous. There were renal

* *Annales de Gynæcologie*, May, 1902. See *Journal of Obstetrics and Gynæcology of the British Empire*, Vol. II., p. 67.

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infarctions, mostly pale. The liver contained thrombosed veins, but not infarcts. The heart contained the thrombus mentioned, and detached portions of clot, but was not itself diseased.

The writer points out that the violent pain in the lumbar region was the main symptom which pointed to thrombosis of the vena cava. Insomnia, rigors and dilatation of the superficial abdominal veins were noted at the same time. Supposing therefore that the vessel was attacked on October 12th, the patient lived a month after this occurrence. The appearance of the cardiac murmur on October 18th points to that date as the time when the clot invaded the heart. The diarrhœa, which began on the same day, was probably symptomatic of thrombosis of the hepatic vessels. The vomiting, somnolence, relative anuria and albuminuria which were noted on the 24th expressed the obliteration of the right renal vein. It is notable that œdema did not follow the thrombosis of the vena cava until 16 days after its occurrence, as indicated by symptoms. The blood was found to be sterile on October 15th and 25th. At the *autopsy* cultivations were made from various organs. Their results, though not amounting to absolute demonstration, lead the writer to believe that infection by the gonococcus was the essential element in the causation of the disease.

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