A CASE OF SYMMETRICAL GANGRENE ASSOCIATED WITH PERIPHERAL NEURITIS.

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F. B., aged 46, a native of Java, was incapacitated from duty as quartermaster of the steamship *Macduff* about the beginning of last January, owing to weakness and numbness of the legs. The vessel was on a voyage from the United States to Japan, *via* Honolulu; and it is noteworthy that this trouble began before reaching the intermediate port—that is to say, before cold weather was experienced. From Honolulu the weather was cold, although there was no frost on deck. During this time he remained in his berth, as he was unable to stand.

On admission to the Yokohama General Hospital the patient exhibited some oedema over the tibiae and loss of tactile sensation in the same region. He had hyperaesthesia of the inner heads of the gastrocnemii, and to a slighter degree of the quadratus magnus on the right side. Knee-reflex was absent on both sides. Cremasteric and abdominal reflexes normal. Pulse was 96, running up to 104, and even more, on slight exertion. Not to be too prolix, it looked like a case of beri-beri.

The urine was described as small in amount; in hospital it ranged between 12 and 20 ounces per diem for some days, but gradually increased under digitalis, strychnine, and convallaria. No sugar, no albumen, no haemoglobin. No history of alcoholism, but one of very severe beri-beri twenty years previously, which laid him up for over a year.

A thin black line, barely the thickness of a match, crossed the tips of the toes, symmetrically in both feet. On account of the dark skin and feet not over-clean, it needed some cleansing to establish this beyond doubt as a line of advancing gangrene.

The process extended slowly in a dry form, with a morning temperature below the normal, and in the evening touching 100°. By the later part of February a line of demarcation had formed in both legs, about 2 inches above the ankles; and on March 2nd, the temperature being continuously subnormal and the pulse and dry tongue pointing to septic absorption, I removed both legs at the "seat of election." The method of skin flaps with circular division of the muscles was adopted, and the seat of election chosen, because time was an object owing to the amputation being double, and because the knees could be easily utilised did the stumps not bear pressure well.

The skin wounds healed by first intention, but a slight bagging of serum in both wounds, accompanied with a rise of temperature to 101.6° F., obliged me to drain them. Afterwards the temperature never exceeded 99.4° F., and the patient made an excellent recovery, the contracted skin flaps forming most promising cushions. With the proper amount of pressure on the faces of the stumps the bagging would not have taken place, but I was naturally afraid of putting much pressure on the stumps of gangrenous limbs. Glutol was used in the dressing. In some half a dozen cases in which I have tried it, it seems to have proved almost too good an antiseptic, if one may say so, as it prevents the natural dissolution of epithelial cells, which form with the gelatine a glutinous scab which is difficult to remove.

There is not much doubt that this patient had beri-beri, and that paralysis of the vaso-dilator nerves of both extremities, corresponding to the interference with the vagus function so frequently found in beri-beri, and indicated by the rapid pulse, resulted in local asphyxia and death. It is highly probable also, that this result was, in no small measure, due to the stimulating effect of cold on the vaso-constrictor nerves. The loss of balance created by the vaso-dilator paralysis would permit of greater contraction of the arterio-capillary network under stimulation of the constrictor nerves. Interference with irrigation, exaggerated, perhaps, by backward pressure from the dilated veins results, if long continued, in gangrene. This may be produced by cold alone, especially in persons whose circulation is "slow" and whose vaso-dilator nerves do not open the irrigating canals with

sufficient alacrity. One is inclined to think that Raynaud's disease is to be traced to paralysis of the vaso-dilator, even more than to stimulation of the vaso-constrictor nerves, an explanation more in keeping with the presence of a peripheral neuritis.

A SUCCESSFUL CASE OF RETROPERITONEAL URETERO-LITHOTOMY.

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UP to this date very few operations have been recorded of the removal of a calculus from the ureter. With the more exact methods of diagnosis now available, such operations will undoubtedly be more frequent in the future. Any such operation, whether successful or not, should at the present time be recorded, to enable us to formulate definite lines of treatment. All must admit that many cases of hydronephrosis have been dealt with unsuccessfully from inadequate exploration of the ureters, but now aspiration or incision of the kidney will be only a *dernier ressort* after a negative exploration of the ureter by pelvic examination, rectal or vaginal, by catheterisation, or by abdominal section.

Calculi have been found to lodge either close to the bladder, about the pelvic brim, or just below the kidney. In the pelvic cavity the stone may be just beneath the vesical mucous membrane, and, in these cases, it has been extracted by dilating the urethral orifice,¹ or by incising the mucous membrane over it after suprapubic cystotomy in the male, or dilatation of urethra in the female.

When the stone has been felt by the side of the vagina at the base of the broad ligament it has been cut down upon and removed (Emmett,² Cabot,³ Rigney⁴). This "vaginal uretero-lithotomy" is advocated as being quite safe from injury to peritoneum, but its drawback is the production of a very troublesome uretero-vaginal fistula. Ceci⁵ has performed rectal uretero-lithotomy.

For stones below the pelvic brim not dealt with as above, and where the ureter is closely related to the peritoneum, they may be removed (a) intraperitoneally as in the cases of Cullingworth and Lane.⁶ Here the attendant risks from fouling of the peritoneum outweigh the ease of performing the operation; if it be done, the suturing of the ureter must be very perfect. (b) Retroperitoneally, as in the case recorded below, and in one by Twynam of Sydney.⁷

At the brim of the pelvis and above several cases have been dealt with extraperitoneally (see cases of Kirkham,⁸ Perkins,⁹ Cabot,¹⁰ Ralfe and Godlee¹¹).

The details of the case are as follows:

A. H., a married woman, aged 23, was admitted into St. Thomas's Hospital on May 8th, 1897, under the care of my colleague, Dr. Hector Mackenzie. The family history was good. At the age of 15 she first had pain in the side, which came on gradually, lasting for periods varying from one to three days. During an attack she had always intense sickness, and it was painful to pass water; the urine was noticed to be dark red with blood and very thick. Her catamenia were regular. Sometimes she would be a month without feeling any pain. At the age of 20 some swelling was first noticed, which would disappear at the times of the painful attacks. About one year ago she had a very severe attack, since which date the swelling has persisted; this took place just after the birth of a child, which lived six months. About this date (seven months ago) she was admitted into Adelaide ward for her swelling, and as this was found not to be of pelvic origin she was transferred to the medical side. The swelling was then pronounced to be of renal origin, and she became an out-patient under Dr. Mackenzie, during which time she had much the same symptoms, and the swelling increased in size.

On readmission (May 8th) she showed no signs of disease except the tumour. The right side of the abdomen above the umbilicus was markedly fuller than the left side, being especially round and prominent about 2 inches from the middle line; there was some fullness in the right flank. On palpation the tumour was lobulated, and fluctuation could be

obtained from before backwards. Its inner margin passed just over the mid-line, its lower margin was on a level with the umbilicus, and above it receded rather from the surface, passing up under the costal margin. Its position was very slightly affected by respiration. There was dulness all over it, and some tenderness over the prominence anteriorly. Urine: specific gravity 1030, and with no albumen or sugar.

May 10th. Prominence not so marked this morning; this is explained by the passage of 58 ozs. of urine in the preceding twenty-four hours.

May 13th. Still less swelling; 33 ozs. of urine passed.

May 18th. The pain in the abdomen has spread to the other side; quantity of urine passed has ranged between 13 and 39 ozs.

May 21st. Estimation of urea gives $7\frac{1}{2}$ grs. per oz.

May 27th. More pain this morning and sickness. Only 9 ozs. of urine passed in preceding twenty-four hours.

June 1st. Complaining of more pain. Urine: 1030, acid, no albumen or sugar.

Recognising that the swelling was a hydronephrosis, and from its size presumably dependent on some obstruction in the lower part of the ureter, it was determined to explore the ureters after the method of Howard Kelly. As there had been nothing elicited at the previous gynaecological examination, it was thought possible that the obstruction might be a valvular fold of mucous membrane; if the catheter could be passed beyond this, and the sac emptied, this diagnosis presumably would have been established. Simple stricture did not seem likely, as there had been no trauma, and there was no history or evidence on pelvic examination of any inflammatory exudation to cause blocking from the outside; this latter cause must be especially taken into account when hydronephrosis is present in a woman.

Accordingly on June 2nd the exploration was made. After dilatation of the urethra, the left ureter was first found and a catheter was passed in. A little urine was drawn off from this kidney, which contained a trace of albumen, but no casts. The orifice of the right ureter was difficult to find, and when found seemed distorted. The catheter could be passed in for only a quarter of an inch, then coming to a dead stop, and drawing off no urine. A bimanual examination was again made, and I was able to feel in the right ureter a body the shape of a date stone, only larger. This was undoubtedly a stone, and situated in relation with the posterior part of the cervix uteri. An operation for its removal through the vagina was contra-indicated by its posterior situation, and also by the known difficulty of treating afterwards the fistula so produced. No bad result ensued from the examination.

On June 8th retroperitoneal uretero-lithotomy was performed. The patient was placed under ether, and an incision of $3\frac{1}{2}$ inches was made, starting about on a level with and about 1 inch internal to the anterior superior spine upwards and a little inwards. The abdominal wall was divided to the superperitoneal tissue, and the peritoneum stripped off the iliac fossa and bifurcation of the common iliac artery exposed. Here, in front of it, a large thickened-walled tube was seen, which from its position appeared to be the ureter. On pricking this with a knife well below the bifurcation there was considerable venous hæmorrhage and slight pulsation, sufficient to suggest the possibility of the tube being the vena cava. Before proceeding farther the tube was followed down, and in so doing a very small tear was made in the peritoneum bounding Douglas's pouch, which was puckered up and a ligature put round: over it was placed a cyanide gauze plug. Having decided that the tube was the ureter, and proving it by a trocar and cannula, a free incision was made longitudinally giving exit to about a pint of almost colourless urine. By gentle manipulation the finger could be passed along the dilated tube. At a distance of $1\frac{1}{4}$ inch the dilatation came to a full stop and for the moment nothing else could be felt; on depressing the lower wall a small circular orifice was found, with a diameter not exceeding a quarter of an inch, but nothing more could be made out. The right index finger was then passed into the vagina, and the stone was felt. From its shape, like a datestone with pointed ends, it was difficult to manipulate, as no purchase could be got on the lower end to guide the upper end into the small orifice before mentioned. Another obstacle was in the ureter itself, which

was pouched on its posterior and external aspect backwards by the side of the rectum towards the right sciatic notch to such an extent that its antero-posterior axis exceeded the length of the stone. The effect of this anatomical arrangement was that, if in poisoning the stone between the index fingers to guide it to the orifice it slipped, it got away into the pouch, and was difficult to get again into the required position. At last, using some force, the stone was pushed upwards through the small orifice, which it dilated, into the ureter above, and then it was easily removed. The wound in the ureter, which was an inch long, was carefully stitched up with fine interrupted silk sutures, taking care that the mucous coat was not perforated. Two cyanide gauze drains were introduced, one at the upper angle of the wound passing down to the ureter, and another at the lower angle passing to the site of the peritoneal tear. The abdominal wall was sutured with fine silk, layer by layer, for the muscles, and horsehair for the skin, and the wound dressed with cyanide gauze. The patient bore the operation well.

The stone measured $1\frac{1}{2}$ inch long, with a diameter of $\frac{1}{2}$ inch, and weighed 97 grains. It was tuberculated and irregular, composed of oxalates, with a deposit externally of phosphates and some uric acid.

June 9th. Not had much pain, but slightly sick. Temperature 99.2° ; 11 ounces of urine passed, containing a considerable quantity of blood.

June 10th. Had a bad night, complaining of discomfort from the dressings from distension; been sick. Given a soap and water enema, which was attended by the passage of plenty of flatus and a great feeling of relief. Highest temperature since operation 99.8° F. In the afternoon wound dressed and both gauze drains removed without any escape of urine. A small piece of gauze was reinserted a short way at upper part of wound.

June 12th. Now quite comfortable, taking her food well; no sickness; temperature normal; urine still blood-stained.

June 15th. Wound dressed and gauze removed; no fulness or tenderness in kidney region nor over the wound.

June 17th. All stitches removed and wound healed except just at top where gauze was; no leakage of urine, and no tenderness or distension; temperature normal; urine shows very slight traces of blood.

June 24th. Feels quite well again, without any pain; sleeping well; appetite good; no tenderness or distension of kidney; urine 1020, acid, no albumen or blood.

June 28th. Getting up.

July 8th. Went to convalescent home quite well.

REMARKS.

After removing the stone the ureter was in this case stitched up by interrupted sutures. This is not in accordance with the practice advocated by others (Mayo Robson, Greig Smith, Jacobson), who state that it is quite unnecessary in the extraperitoneal operation. I think, however, it is a distinct advantage if it can be done, for time must be gained if the sutures hold, and the soaking of the cellular tissue with urine prevented. Of course in such a case if a gauze drain is not inserted and the ureter should give way, disaster is courted.

The anatomy of the parts, especially the sacculation of the ureter, with the difficulties arising from the same, is worth noting.

It will be seen from the after-notes that the setting free of the pent-up urine from the kidney had no bad effect on the wound. The fluid presumably was sterile, and so did not prevent the ordinary course of repair of an aseptic wound.

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- 5 *Abdominal Surgery*, Greig Smith.
- 6 *The Operations of Surgery*, 3rd edition.
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SKIAGRAPHIC CANARDS.—The latest American x-radiation is that by taking a skiagraph of an ordinary photograph the bones and diseased tissues can be revealed. We thought that we had seen the end of these newspaper canards.