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THE SURGERY OF BLOOD-CYSTS OF THE SUPRARENAL BODY.

BY ALBAN DORAN, F. R. C. S., England.

Senior Surgeon to the Samaritan Free Hospital, London.

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Hemorrhages in the substance of the suprarenal body are well known to pathologists and physicians. They have been detected in necropsies of children who have died suddenly during a fit of coughing. Twenty years ago Dr. Herbert Spencer, now obstetric physician to University College Hospital, London, collected 130 reports on necropsies on stillborn children, all under his own observation, in the maternity department of that institution. In fifty-three cases either congestion or hemorrhage was detected in the suprarenal bodies. In twenty-four the bleeding lay in the medullary portion, and it was found that delivery by the lower pole, especially when traction is employed, distinctly favors this form of injury.

We may assume that many children survive these medullary hemorrhages, especially if unilateral. If so, may not further morbid changes develop in the suprarenal body damaged so early in life? Under what conditions may these hemorrhages begin in the adult? We know better how they may end. There is a class of tumors known as blood-cyst of the suprarenal body. Henschen and others have written on it. Indeed, as will be seen, it was recognized by the clinician, as distinguished from the pure pathologist, long before the days of abdominal surgery.

The blood-cyst is to the surgeon the most interesting form of cystic tumor known to develop in the suprarenal body. I have collected nine cases, including one in my own operative experience. My patient was a woman, sixty-two years of age. She had been subject for ten years to epigastric pain and for several months to sharp attacks of pain, referred to a firm, oval tumor in the left hypochondrium. The upper part lay under the ribs, but the tumor could be pushed downwards till the upper pole was entirely below them, and then there was resonance on percussion over part of its anterior surface. The patient was fairly well nourished, with a ruddy complexion, free from bronzing. The epigastric pains appeared to be due to dyspepsia, caused by excess in tea-drinking, so common amongst the poor of London. I removed the tumor in October, 1907, opening the abdomen through an incision along the outer border of the left rectus.

The peritoneum external to the descending colon covered the tumor. It was laid open, and then the tumor was enucleated with ease. Some large vessels ran into its inner limits above; they were secured. The aorta lay internal to the tumor, and I found the left kidney also on its inner side and mainly below it. The patient recovered, and was well six months later. The tumor was smooth externally and of a deep bronze-red color. It was unilocular, and contained about half a pint of bloody fluid. The wall was uniformly thick and soft. It appeared homogenous on section. When, however, I took the specimen to the College of Surgeons, Professor Shattuck found that it contained islets of adrenal tissue, in a stroma of pure fiber without any plain muscle cells. Adding to this histological evidence the relations of the tumor detected at the operation, it became clear that the cyst had developed in the left suprarenal body. The relatively large vessels which I secured were the suprarenal artery and vein. It happened that I removed this cyst just eleven months after I performed nephrectomy for adrenal tumor of the right kidney in a patient who also had a secondary adrenal tumor in the vagina, and I recently reported the case in THE MEDICAL BRIEF. I may add that Dr. R. Freund, of Halle, has published a second instance of secondary adrenal vaginal tumor, in the ninth number of *Zentralblatt für Gynäkologie* for this year. Thus my attention was turned to adrenal new growths, and I had the advantage of the opinion of so distinguished a pathologist as Mr. Shattuck, who examined both the hypernephromas of the kidney and vagina recorded in these pages, and the cystic tumor, the subject of the present communication. Eight more cases of blood-cyst of the suprarenal body have been reported. The first, undoubtedly genuine, was carefully described over two centuries ago by Griselius, of Leipzig: "A certain nobleman" was troubled with colicky pains, and treated his medical advisers "most contumaciously." He died from rupture of an abdominal tumor, a big cyst extending from the diaphragm to the psoas, which replaced the left suprarenal body. There was a rent in its wall, and the peritoneal cavity contained fourteen pounds of fluid blood and clots.

Rayor, of Paris, over twenty years since attended a woman, aged seventy-five, and lame in the right leg. She had frequently fallen, striking the right side, and became distressed by severe pains in the region of the right kidney. A big tumor, not tender to touch, filled the right flank. The patient died in hospital, and the tumor was found to be a cyst, full of liquid blood, occupying the site of the right suprarenal body.

A very fat man, over sixty, died in hospital of heart disease. During his lifetime the tumor was overlooked. Chiaki discovered after death a cyst, as big as an adult head, full of blood, replacing the right suprarenal body. The walls contained adrenal tissue.

The fifth case of blood cyst was under Routier. The patient was a woman aged thirty-five, troubled for three years with epigastric pains and

vomiting. A tumor was discovered in the left hypochondrium. It was exposed through a median incision, opened, emptied of 1,600 grams of brown fluid, and drained; the cyst-wall sutured to the edges of the abdominal wound, the sutures cut through. The cyst receded, and the patient died of peritonitis. The tumor was found, on post-mortem examination, to replace the left suprarenal body, and its walls contained adrenal tissue. That case is instructive, as it shows the danger of applying sutures to the wall of a tumor of this kind. The tissue is very soft, and weakened by the application of sutures. Of course, the operator had not the advantage of the previous experience of others.

Pawlik's is worth quoting, on account of a clear history of injury. A woman, aged forty, came under his care for a large, elastic, fluctuating tumor in the left side of the abdomen. Two years previously she had fallen from a ladder. Pawlik removed the cyst by enucleation, leaving a small piece of its wall on a kind of pedicle, close to the vertebral column. He found the kidney on the inner side of the lower pole of the cyst. The wall of the cyst contained islets of adrenal tissue, and a small portion of the suprarenal body itself unaltered. There were seventeen pints of bloody fluid in its cavity. The patient recovered.

The seventh case of blood cyst was reported by Triepcke and Bier. A woman, aged sixty-nine, was admitted into hospital, with a tumor of the size of an adult head, filling the right side of the abdomen. It was exposed and tapped; three and one-half pints of turbid fluid, with coagulated blood, came away. The inner wall of the cyst, seeming very unhealthy, was curetted and the cavity drained. The patient died of "shock." After death, it was found that the cyst was easily enucleable. It occupied the place of the right suprarenal capsule, and adrenal elements were discovered in its wall. The right kidney was displaced downwards, lying in the right iliac fossa. Unfortunately, the original and full report of this interesting case is not very accessible. It is otherwise with Henschen's good monograph on *Struma supernalis cystica hemorrhagica,* the name which he applies to these blood cysts of the suprarenal body, which will be found in the forty-ninth volume (1906) of the "Beiträge zur klinischen Chirurgie." The whole subject is well reviewed, and all cystic diseases of the organ in question taken into consideration. Henschen includes an original case where Krönlein operated. The clinical history is complete in the extreme. The patient was a woman, aged forty-one, subject to attacks of pain in the left hypochondrium for twenty years, beginning with an attack of pleurisy. A big, tense, smooth tumor was detected by her doctor when consulted for an attack of rheumatism. It pushed the lower ribs outwards. Krönlein tapped the left pleura, and much chocolate-colored fluid came away; then he boldly operated through an oblique abdominal incision, and succeeded in enucleating a big cyst, which also contained chocolate-colored fluid. He had to separate the cyst-wall from adhesions at the diaphragm and tail of

the pancreas, and to tie the inferior mesenteric vein, accidentally divided. The patient died on the fifth day. There was an old-standing disease of the thoracic viscera. The cyst had occupied the site of the left suprarenal body, the right suprarenal body was hypertrophied. The cyst-wall contained adrenal elements. This case deserves study in the original monograph, the remarkable association of the blood cyst with an old hemothorax is most noteworthy.

McCosh, of New York, is the first surgeon of the Anglo-Saxon world who has ever knowingly operated on a blood-cyst of this class. His patient displayed one unique symptom, Addisonian bronzing of the skin, which disappeared after removal of the tumor. The patient was a woman, aged forty-five, subject for three years to dull pains in the left loin, with acute, lancinating attacks from time to time. The loin was distended by a smooth, fluctuating tumor. It was completely and successfully enucleated and contained nine pints of dirty, yellow fluid. The operation was difficult, owing to universal adhesions, involving the aorta and vertebræ. The left kidney was displaced very low. The cyst-wall was thick, and contained adrenal elements. I leave it to the physiologist to explain why the bronzing disappeared during convalescence.

I may here mention a specimen of a retroperitoneal cyst now in the museum of St. Bartholomew's Hospital, London. I have inspected it, and it appears to the naked eye precisely like my own tumor and like the colored drawing of Krönlein's case in Henschen's monograph, but no adrenal elements have been found in its walls. Perchance they have been overlooked. Professor Shattuck could not find adrenal tissues in the tumor which I removed until after much searching into sections. This doubtful cyst was taken ten years ago by my friend Mr. Lockwood, from a girl, aged twenty. There had been a painless swelling in the left loin, growing slowly for two years. When fresh it was as big as an ostrich's egg. Enucleation was unattended by any difficulty, though the end of the duodenum adhered to its inner side. The kidney and ureter lay below the cyst. The patient, Mr. Lockwood informs me, is still living. Let it be noted that the contents were described as altered blood clot. I know of three cases of genuine retroperitoneal cysts (Monprofit, Bowlby, Bantock), undoubtedly, I believe, of Wolffian origin, and I assisted twenty-two years ago at the removal of Bantock's tumor. It is preserved in the Museum of the Royal College of Surgeons of England. It is very thin walled; indeed, it looked like a mass of soap bubbles behind the peritoneum before removal, and it is multilocular. I can testify that it did not bear the least resemblance to the thick-walled, opaque, deep red unilocular cyst which I removed from above and in front of the left kidney last October.

I need not enter into the pathology of these tumors, for information about new growths of the suprarenal body may be found in the archives of the Johns Hopkins Hospital, in recent volumes of the "Transactions of the

Pathological Society of London," and in Henschen's writings to which I have referred. Nor can I dwell on solid tumors of the organ under consideration. Mayo Robson has related his experience of their surgery. But any cyst of this organ is to the surgeon a tumor which he will endeavor to remove independently of its pathology. Therefore, I must not pass entirely over Ferrier and Lecene's report of the partial removal from the left loin of a fluctuating oval tumor of the size of an ostrich's egg. The patient was a woman, aged fifty-two. The cyst-wall was thin and contained, it was afterwards found, adrenal tissue; the contents were a lemon-colored fluid. The operator, M. Ferrier, so recently deceased, suspected during the operation that it was pancreatic, and therefore left its deepest portion alone, passing in a drain. The patient had an attack of right parotiditis on the sixth day, but recovered. I suspect that the cyst was of the lymphatic class. It is highly improbable that it was originally a blood-cyst, a type where the walls seem to be always thick and soft and the contents very characteristic. Obendorfer, Marchetti and Bosanquet have reported cases of cystic tumors of the suprarenal body, not of the hemorrhagic type, accidentally associated with diseases which brought the patients under the care of the physician. All these tumors might, under more favorable circumstances, have been successfully removed by the surgeon, but let it be remembered that Marchetti's cyst adhered to the vena cava, a condition which I have observed in solid tumors.

The above records show that blood cyst of the suprarenal body is a very definite form of tumor, so much so that when we remember how little was known till quite recently about the diseases of that ductless gland, and how even now adrenal tissue may be overlooked in microscopic research, we may safely conclude that many such cysts have come under the observation of surgeons, physicians and pathologists who have failed to recognize their true nature. Now that attention has been turned to these cysts, we shall certainly hear more about them.

The blood-cyst of the suprarenal body is associated, according to the above reports, with fairly definite clinical symptoms. A clear history of injury has been recorded in two cases, while in at least six there were painful sensations in the upper part of the abdomen and loin, with occasional sharp pains when the tumor attained large proportions. Bronzing was only seen in the American case.

The tumor forms a more or less movable body in the loin. I can not say, judging from my own case, that we have enough experience to aid us in distinguishing it, by palpation alone, from a tumor of the kidney. The clinical history, as summarized above, is that of many a case of hydronephrosis. Rayer's patient had hematuria, a most confusing symptom in days before the cystoscope. That instrument, when employed in my own case, rather misled me, as a little turbid urine could be seen issuing from the left ureter.

We may feel more confident, however, about the best surgical treatment. The abdominal incision, outside the rectus, allows the operator to reach the cyst with facility. The softness of its walls is a distinct objection to "marsupialization" with drainage, as Routier's case teaches us, while in several instances where it has been practiced with fatal results, the pathologist found that the cyst might have been removed entire with ease.

In fact, the removal of a cyst of said kind is generally easy, although never without danger. Should the surgeon take it for a renal tumor, a very probable error, he might be induced to compress the tissues on its inner side with a big clamp, with the object of securing the renal vessels. In such a case, if the cyst were on the right side the vena cava might very easily be damaged, and if on the left side the abdominal aorta would be in jeopardy. The above reports teach us how closely the cyst may be connected with those great vessels.

Enucleation, with the application of the pressure forceps to every vessel detected as the parts are put on the stretch, will generally insure the detachment of the cyst entire. The kidney will be seen when the posterior and lower part of the cyst is set free. The surgeon must be careful to ligate every vessel before removing the pressure forceps, especially those which run to the inner and upper part of the cyst-wall. For it is highly advisable to avoid oozing into the tissues, while it is all-important to secure the suprarenal artery and vein. The surgeon, however, may meet with perilous complications, as recorded in the above series.

When the suprarenal cyst has been removed, it is just possible that it may not be a blood-cyst. It is doubtful if the thin-walled cystic lymph tumors which have been successfully removed in several cases are malignant. The blood-cyst is not, strictly speaking, a new growth at all. Therefore, the prognosis after convalescence from the removal of a cystic tumor of the suprarenal body is highly favorable. It is far otherwise with tumors made up of adrenal tissue which develop in other organs, for, as recent researches have shown, they are extremely malignant.*

THE DIAGNOSIS OF BULBAR AFFECTIONS.

Ferreira (*La Presse Medicale-Archives of Diagnosis,* Vol. I, No. 1) says that weak or negative response to a small injection of apomorphine will enable the physician to detect bulbar paresis before it is clinically manifest. In this way glosso-labial-laryngeal paralysis may be detected, while incipient, by the degree of nausea and the amount of vomiting. The medulla oblongata will be found to be already seriously affected if there is no vomiting at all.

* See "Adrenal Tumor of Vagina Secondary to Malignant Hypernephroma of the Kidney," MEDICAL BRIEF, December, 1907. The author has discussed the subject of suprarenal cysts at full length in a monograph, "Cystic Tumor of the Suprarenal Body Successfully Removed by Operation," read before the Surgical Section of the Royal Society of Medicine, London, on June 16, 1908.