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## A STUDY OF RETRO-PERITONEAL NEOPLASMS WITH SPECIAL REFERENCE TO DIAGNOSIS.

Read before the Southern Surgical and Gynecological Association at St. Louis, Mo.

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**Definition.**—For the purpose of my paper I accept the limitation suggested by Mr. Lockwood for retro-peritoneal neoplasms. The term implies a solid or cystic tumor growing behind the peritoneum, into its folds and not connected with any of the great retro-peritoneal organs. So we at once eliminate from our consideration tumors of the kidneys, pancreas, uterus and so-called broad ligament ovarian cysts. Neoplasms connected with any of the retro-peritoneal viscera usually present sufficient evidence in their history, symptoms and physical signs to enable us to ascribe their site of origin.

**Origin.**—Surgeons are not very careful in determining at the time of operation the true origin of the tumor with which they are dealing. The spirit of the pathologist is for the time eclipsed by the surgical emergencies. Therefore, I feel safe in assuming that many retro-peritoneal neoplasms have been encountered, the surgeon, recognizing the inoperable character of the case or awed by the apparent insurmountable difficulties, abandons the attack and consigns the patient and the diagnosis to oblivion. The structures involved primarily in these growths are the retro-peritoneal cellular and fascial tissue, retro-peritoneal and mesenteric glands, the sheaths of the great blood vessels and the vertebræ.

**Pathology.**—The type of tumor usually encountered in the retro-peritoneal space belongs to the connective tissue group. A careful study of these cases shows that they are of a mixed variety, the predominating type being sarcoma and lipoma, occasionally fibroma and myxoma are seen. An analysis of the twenty cases of solid retro-peritoneal tumors collected by Rogowski showed sarcomatous tissue in every one.

The peculiarity of retro-peritoneal sarcomata is that they are encapsulated. According to Mr. Cripps, they do not recur when removed. From a careful

investigation of the literature on this subject I think the speaker was safe in making this assertion inasmuch as about 95 per cent. of the patients die from the operation or before it.

The predominating microscope picture is generally of the spindle cell sarcoma, yet in literature we see such descriptive terms as myxo-sarcoma, lipo-sarcoma, fibro-cysto-sarcoma, etc. Metastasis occurs in about one-half the cases, the liver, lungs and mesenteric glands being the parts involved.

**Frequency.**—There seems to be a general understanding among surgeons that these tumors are so rare that they are scarcely worth special study, and this is borne out somewhat by Mr. Lockwood, who says that no specimen of retro-peritoneal sarcoma has been exhibited in the Obstetrical and Pathological Society of London, and prior to 1895 the Medical Society of London had no opportunity of discussing this peculiar pathology, yet in 1889 Rogowski was able to collect twenty cases. In a recent discussion in the Royal Medical and Chirurgical Society of London, Mr. Shield reports a very instructive case of retro-peritoneal sarcoma and from the limited discussion that it elicited one would infer that the members were quite unfamiliar with the subject.

**Age.**—They occur after maturity, from 28 to 59 years. Mudd's patient, the oldest on record was 71 years. In one case reported by Joseph Austein, the patient was a female 4 years of age.

**Sex.**—These growths occur alike in both sexes.

**Duration.**—Duration of life history of retro-peritoneal tumors is usually about six months, though some cases have lasted for years, but usually when the tumor has existed for so long a time the original growth was some form of typical neoplasm and sarcomatous change engrafted upon it. Thus in Waldeyer's case in which the tumor weighed sixty-three pounds, there was some history of abdominal tumor for several years; the microscopic examination showed it to be a lipo-myxo-sarcoma.

**Causation.**—There is no recognized cause for these growths, yet in some cases the malignant growth appears as secondary to some local injury or suppuration. Rogowski reports a case of Neumann in which tubercular abscesses occurred some ten years before the appearance of a sarcomatous tumor at the site of suppuration. There has been some effort to assign these growths to specific origin, yet we would scarcely expect a gumma in the loose retro-peritoneal tissue without its occurrence in other organs.

**Diagnosis.**—The difficulty that surrounds the differential diagnosis of abdominal swellings is notorious, and a solid growth that can not be attributed to any of the great organs should at least arouse suspicion. Clearly it is of the greatest importance that we should learn to diagnose these retro-peritoneal tumors before they have seriously affected the health of the patient, acquired such universal attachments, and distorted the abdominal viscera. And it appears that the diagnosis would be much easier in the early stage if the investigation is made under anesthesia.

Retro-peritoneal tumors possess certain well marked characteristics not found in primary intra-abdominal neoplasms. The latter originate primarily between the duplications of the peritoneum, are attached to the organs from which they spring and have their attachment between the intestines and pelvic cavity, while retro-peritoneal tumors "originate in the retro-peritoneal space and as they develop they encroach

upon the peritoneal cavity, and push the organs contained therein either forward or to the side, in a most typical manner." (Witzel).

*General condition.*—A patient bearing a retro-peritoneal tumor exhibits pronounced constitutional disturbance. The usual large size of the tumor and its location, give rise to disturbances of the digestion and respiration. The kidneys are frequently displaced and compressed by the growth, the spleen is entangled in the mass and the blood vessels and lymphatics of the digestive tract are partially obstructed. Consequently these patients are usually emaciated, suffer from intermittent diarrhea and not infrequently with nausea and vomiting and gradually a pronounced cachexia is developed.

Such a growth, whose history does not extend over a period of a year, frequently a much shorter time, develops this condition more rapidly than in ordinary intra-abdominal tumors.

*Morphology.*—The appearance of the abdomen in these growths is by no means characteristic. They grow anteriorly, as VanderVeer says, in the direction of least resistance; yet the size and location has much to do with the morphology.

In Mudd's interesting case the abdomen was exceedingly pendulous, the tumor resting on the patient's thighs. In other cases the contour of the abdomen is very striking, the tumor causing great swelling in the upper portion and bulging but little in the side or below the umbilicus.

In the interesting case of lipoma reported by Terrier and Guillemain, this characteristic appearance of abdomen was exceedingly striking. These tumors are usually asymmetrical and frequently extend into the pelvis, in one instance producing complete uterine prolapse. The direction of the growth of the tumor alters the appearance.

The superficial veins of the abdomen are usually very much enlarged, a fact easily accounted for, both by the pressure of the tumor upon the vena cava which frequently occurs, and by the distortion of the mesenteric veins due to displacement of the viscera.

Contrary to what one would suppose, these tumors are sometimes decidedly influenced by respiration. In Ransohoff's case, a very large tumor which lay chiefly on the right side intimately connected with the liver, was moved distinctly with each respiration. This phenomena was evidently confusing to the surgeons. As a general rule, however, these tumors are not influenced by respiration.

*Palpation.*—These tumors, whether lipomata or sarcomata, do not give upon palpation the elasticity or fluctuation observed in a tumor with fluid contents, and certainly not that hardness observed in ordinary uterine fibromata. Lipomatous tumors, particularly, impart upon palpation a special feeling which may be likened to that of the liver. (Terrier and Guillemain.)

Tumors that grow from the root of the mesentery and develop between its folds are very movable, but those attached along the vertebra or in the retro-peritoneal spaces of the flanks are fixed.

The surgeon, in palpating these tumors, must bear in mind that many of these solid growths are undergoing cystic changes and this alteration sometimes deludes, as the tumor does not present a uniform density upon manipulation. It is a well known characteristic of lipomatous tumors in any part of the body to impart on palpation a deceptive sense of fluctuation.

In Mudd's, Ransohoff's and Guillemain's cases of large retro-peritoneal lipomata fluctuation was apparently distinct. This sign together with the lobulated character of the tumor is confusing and more than once has lead the operator to mistake it for multilocular ovarian cyst, especially of the type of cyst described by Rokitansky.

*Percussion.*—This is our most reliable method of diagnosing these tumors. In all retro-peritoneal tumors whether they originate close to the vertebra or to the side, their growth is usually laterally and in these cases, according to Witzel, the colon bears a most typical and diagnostically important relation to the tumor. At first, while yet the tumor is small, the colon is external, later it is pushed forward and lies in front and, finally, the tumor attaining great dimensions and still growing laterally, the colon lies centrally in front of the tumor. Appreciating this fundamental fact we can intelligently apply our physical test of percussion.

Barring the relation of the colon, as above expressed, these tumors are usually dull upon percussion. And unless they are very large and project into the pelvis there is usually an area of resonance between the tumor and the symphysis. When situated upon the right side their relation and connection with the liver is so intimate as to efface any area of resonance between that organ and the tumor. When large the resonant area is upon the side opposite to the tumor or that part of the abdomen occupied by the displaced intestines. The relation that the colon bears to the tumor can be easily determined by inflation of the gut with gas. Unless this precaution is taken the ordinary pressure applied with a pleximeter or hand, in making mediate percussion, may cause a dull note. Percussion does not always yield the same note in any individual case. In the second case reported by Lockwood, immediately after admission to the hospital the tumor was dull upon percussion; it grew rapidly in the next fortnight and was decidedly resonant. This was explained at the operation; the growth of the tumor being rapid it extended into the mesentery, separated it widely and the intestines which were at first laterally displaced were now by the growth of the tumor, elevated and distributed over its surface.

From this clinical observation I would draw the following conclusion, that intra-mesenteric tumors may be resonant upon their upper surface and the dullness marked in the flanks, a condition closely resembling ascites. Furthermore, it is a clinical feature of retro-peritoneal growths that the area of resonance varies with the position of the patient. Consequently it is not surprising that many a dry tapping has been made through a failure to recognize these clinical peculiarities.

While not an advocate for the use of the aspirator in intra-abdominal diagnosis, yet under proper conditions this instrument will reveal valuable evidence, not only as to whether the growth is solid or cystic, but as to its nature. In retro-peritoneal sarcoma aspiration reveals only a little blood or bloody serum in the needle. This sign was one of the convincing points that enabled Wier and Bull to correctly diagnose a case reported by Devlin. In lipoma, on account of the slight vascularity of the growth, no blood is withdrawn. By puncture of ordinary cysts, whether mesenteric, kidney, ovarian or echinococcal, characteristic fluid will appear in the canula.

*Blood in the urine.*—In only one case in which the

kidney was not involved is there recorded any change in the character of the renal secretions. Usually there is entire absence of blood in the urine of these cases.

There are two special symptoms that occur in the history of post-peritoneal growths deserving of mention. First, the occurrence of intestinal obstruction which has been noted in the history of many cases. Witzel records a case in which volvulus is diagnosed but the patient was suddenly relieved. She was pregnant at the time, and after the termination of her labor, a large swelling still remained in the abdomen which reached to the umbilicus. Again symptoms of obstruction came on, operation was attempted but the tumor was too deeply imbedded in the structure of the loin to attempt its removal. Autopsy showed it to be a retro-peritoneal sarcoma. While volvulus is mentioned in many cases, the condition does not usually advance to that stage. There are numerous attacks of partial obstruction, due to intestinal distention, giving rise to pain, nausea and vomiting, symptoms relieved as soon as free evacuations are obtained.

The second special symptom that I wish to emphasize is edema of the extremities. It is a symptom that may occur very early in the history of the growth; it is due to pressure on the vena cava and should materially aid us in making a diagnosis.

While we have attempted to analyze the special symptoms present in retro-peritoneal growths, yet we must admit that no one is pathognomonic and a diagnosis must be reached by exclusion.

*Complications.*—The most serious complication attending these retro-peritoneal growths, and one that indicates usually peritoneal metastasis or serious obstruction to the circulation, is ascites. This, together with the distension due to distortion or pressure, usually characterizes the closing scene of the case.

*Prognosis.*—The prognosis in lipoma and other forms of innocent or typical tumors is ultimately as grave as in sarcoma. The disturbance of digestion, respiration, circulation and lymphatics sets up a condition that soon undermines the constitution. The relative benignity of these tumors justifies, in all cases, an exploratory operation. In intra-mesenteric growths of all forms, the prognosis is necessarily grave. The injury to the circulation, the devitalization of the peritoneum and the difficulty attending the enucleation and often the necessary resection of the intestine, renders the operation an exceedingly grave one.

#### RETRO-PERITONEAL CYSTS.

A generic classification of retro-peritoneal cysts is even more difficult, in view of our meager knowledge of the subject, than that of solid neoplasms. Adhering to our original idea of considering only tumors disconnected with the great viscera, we find four varieties of retro-peritoneal cysts: 1, retro-peritoneal cysts with chylous-like contents. These are cysts of the lacteals which, by retention and rupture, give rise to true mesenteric cysts containing chyle; 2, retro-peritoneal serous cysts (Prizewoski); 3, dermoid cysts which originate in the structures which persist from fetal life; 4, traumatic cysts (Schonwerth).

*Pathology.*—Large cysts with chylous-like contents have frequently been found. Their retro-peritoneal nature is unmistakable, from the relation they bear the colon and mesentery, and in one remarkable instance the tumor lay behind the kidney. These tumors bear a very intimate relation to the mesentery; they are separated from the liver.

The origin of these cysts is in the lacteals, or they may, by accident or disease, have some connection with the thoracic duct itself. The character of the contents is the interesting feature of their pathology and diagnosis. Perhaps one of the most carefully observed and accurately recorded cases is that by Gustav Kilian. This surgeon, after many attempts to obliterate the sac by aspiration, finally cured the patient by operation. The fluid in its macro- and microscopic examination and chemic analysis very closely resembles milk.

A second form of retro-peritoneal cyst deserving, perhaps, more attention than it has received, is the retro-peritoneal serous cyst, originally described by the pathologist Prizewoski. A complete summary of all knowledge we possess on this variety of cysts may be found in the dissertation of Dr. A. Ohelinski, in Krakau. He concludes: 1, that retro-peritoneal serous cysts, while not often observed, are not of such great rarity. The reason of this is lack of, or faulty knowledge of the existence of such growths; 2, they are cysts of slow evolution; 3, their origin is, according to Prizewoski, the Wolffian or Müllerian bodies; 4, they are innocent in their behavior; 5, contents clear, serous fluid; 6, extirpation is a simple operation, comparatively free from danger.

The parasitic, dermoid and traumatic cysts, the three other retro-peritoneal forms, possess nothing peculiar or distinctive because of their special location and do not require further consideration.

*Differential diagnosis.*—The exclusive or differential diagnosis of retro-peritoneal tumors from conditions which closely simulate them is perhaps one of the most difficult problems in surgery. A conclusion can only be reached by systematic investigation of each individual abdominal organ and its function, and in a careful study of the tumor itself, its physical characteristics, its relations, and with the assistance of the aspirator, a careful microscopic and chemic analysis of its contents.

Retro-peritoneal tumors must be differentiated from every form of tumors found within the abdomen, but we encounter particular difficulties in distinguishing these growths from tumors of the kidney, cysts of the pancreas, uterine and ovarian tumors.

Kidney and retro-peritoneal tumors possess certain features in common. They are both retro-peritoneal, in both the large intestine lies in front, both are dull between the tumor and vertebral spines, no space between the kidney or tumor in which the fingers can be dipped, both grow anteriorly, consequently there is no prominent lumbar projection. Respiration influences either tumor but slightly.

Retro-peritoneal tumors that grow between the mesentery are movable, all other forms are firmly fixed. Kidney tumors, unless inflamed, can be moved laterally and upward, and whether solid or cystic, no matter what the size, retain some, often much, of their natural outline; the kidney has no sharp edges. Retro-peritoneal tumors affect but little the normal function of the kidney. In renal tumors there is alteration in the character and quantity of the urine and finally if the tumor be cystic the aspirator will reveal the characteristic fluid in either case.

*Cysts of the pancreas.*—Cysts of the pancreas are also resonant upon percussion. They underlie the stomach, usually, and push the colon down. The tumor is generally in the epigastric or left hypochondriac region. It is not upon the physical signs,

however, that we rely for differentiation. Cysts of the pancreas have been found only in adults, retro-peritoneal cysts may occur at any age. Pancreatic cysts are very painful, patients suffer with colicky pains in the epigastrium often of great violence; they have fatty stools, are frequently jaundiced; their digestion is impaired; there is rapid emaciation; the skin becomes pale and yellow, a symptom said to be pathognomonic. Diabetes mellitus is occasionally associated with pancreatic disease. These phenomena are, with exploratory aspiration, sufficient to discriminate the case.

Küster emphasizes the great value of inflating the stomach and colon as a means of developing the relation of pancreatic swellings.

Tumors of uterine or ovarian origin assume any dimension and position in the abdomen and differential diagnosis of these from the tumors under consideration can only be made by thorough investigation into the history and subjective symptoms, and by careful vaginal and abdominal examination and joint manipulation.

The majority of retro-peritoneal tumors are revealed only at operation and it appears that they are more frequently mistaken for ovarian or uterine tumors, perhaps because of the frequency of these growths.

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## ADDISON'S DISEASE; TWO CASES IN ONE FAMILY.

BY L. W. SCHWAB, PH.G., M.D.

CHICAGO, ILL.

My object in reporting this case is its rarity, difficulty of early recognition and the fact that two brothers died from this disease within thirteen months of each other.

I will first give the younger brother's case.

Mr. C., aged 55 years, married, Spanish descent, salesman in wholesale drygoods house.

*Family history.*—Father is 82 years old and in good health, though he had a slight cerebral hemorrhage last winter, but entirely recovered. Mother died at 62 years of age, from fatty degeneration of heart and kidneys. The necroscopic report does not give any

clue as to the cause. An elder brother died, at 57 years of age, from Addison's disease. One brother, still living, is 45 years old and in fair health. Two sisters died in childhood from scarlet fever.

*Patient's history.*—Average weight 165 pounds, dark and sallow complexion and troubled with chronic constipation; moderate smoker and user of alcoholic liquors. Previous health always good with the exception of the constipation. Health began failing about eighteen months before his death, the first indication of which was a general progressive weakness, anemia, followed by emaciation. In May, 1896, he took a two weeks' vacation, then returned to work feeling some better.

He seemed fairly well until July 17, when he had a severe attack of vomiting and diarrhea lasting four days. This then ceased for about ten days, when he was again taken with diarrhea lasting three or four days. The alternation of diarrhea and constipation, or normal condition, continued throughout the whole course of the disease. The diarrhea generally lasted from three to four days and was followed by from ten days to two weeks of normal condition of bowels or constipation.

Vomiting was not a permanent symptom until about six weeks before his death, although he was continually nauseated after eating.

With the onset of the attack of vomiting and diarrhea, a marked numbness of the hands and wrists occurred, which lasted several days. After this passed off the feet and ankles became in the same condition. The numbness of the feet and ankles remained, and this condition extended upward until it reached the crest of the ilium.

The circulation was quite feeble and sluggish from the beginning. The appetite was good and at times almost ravenous. There was no pain, though he suffered from extreme exhaustion.

In January, 1897, he suffered from a general eczema, most marked over the back, which lasted about three weeks. The skin became bronzed in color about four months after his health began to fail. It varied in shade, at times being darker than at others, and on the parts where the eczema had been prominent it was darkest. The urine was negative.

After March 28 he was confined to bed. From this time on there was frequent vomiting besides nausea.

On and after March 30 he was unable to void urine. This was probably due to atony of the bladder. By this time the anemia had become very marked and he was also very much emaciated.

*Treatment.*—The treatment was principally symptomatic. The diet was largely milk, beef juice, eggs, clam broth and fruits. Massage was used on the limbs but had no appreciable effect. Catheterization was employed to empty the bladder.

In medicines, compound licorice powder in 2 to 4 gram doses in the evening, and occasionally a half bottle of the solution of the citrate of magnesia, mornings, were given for constipation. The eczema was readily cured by means of alkaline drinks and the use of a paste locally, consisting of starch and glycerin. The nausea and vomiting were controlled by aromatic spirits of ammonia in doses of 2 to 4 c.c. The diarrhea was controlled by the use of carbolic acid, tinct. catechu, bismuth subnitrate and chalk mixture. Tonics like iron, quinin, strychnia and arsenic were employed, but with very little effect.

The powdered dessicated sheep's suprarenal capsules