mortem room. Many of the described examples have shown no local malignancy, displacing and not infiltrating, and remaining very definitely encapsuled. This has given rise to the statement that absence of hæmaturia is characteristic of this growth. This statement is, however, much too absolute. Authorities whose records cannot be questioned—Israel, for example—have described series of such cases in many of which hæmaturia was a prominent symptom.

It appears clear that the renal tumours arising in adrenal "rests" do not belong exclusively either to the group of simple tumours or to that of malignant tumours. Some undoubtedly are simple clinically and "typical" histologically, others malignant clinically and "atypical" histologically.

PERITONEAL PSEUDO-MYXOMA ORIGINATING FROM THE VERMIFORM APPENDIX.*

BY

WILFRED TROTTER, M.S., F.R.C.S.,

SURGEON, EAST LONDON HOSPITAL FOR CHILDREN; ASSISTANT SURGEON, UNIVERSITY COLLEGE HOSPITAL.

THERE is, perhaps, no part of the body which shows so varied a series of morbid processes as the peritoneum. This is in part due, no doubt, to the immense variety in the nature and severity of the injuries to which the peritoneum is subject and its equally inexhaustible versatility in responding to them. In the almost infinitely finely graded series of peritoneal lesions we may make a rough distinction into two classes: First, those which are primarily microbic or in which a microbic process comes secondarily to acquire pre-dominant importance, and secondly, those in which the

source of injury is non-microbic and the resulting process of reaction runs its course without microbic complication. The first class includes practically all the forms of peritonitis which are at all commonly met with by the clinician. The second class, which is perhaps more familiar to the pathologist, is, as a whole, very uncommon clinically, and on that account its rare appearances in practice are likely to be the cause of difficulty in diagnosis and prognosis. It comprises the changes which accompany the presence in the peritoneal cavity of foreign substances which are absorbable slowly or not at all, irritating enough to produce some reaction but not enough to produce any extensive transudation of organisms from the bowel, and in themselves relatively

or wholly aseptic. Such conditions may, for want of a better name, be referred to—following the custom of German pathologists—as "foreign body peritonitis."

Two broadly distinguishable types of this form of peritonitis present themselves. First, that in which the irritating substances are numerous and small, such as the ova of tapeworms, the hooklets of echinococcus embryos, or minute fragments of undigested food left after a spontaneously recovering or successfully treated perforation. In this form the reactive changes are usually much more prominent than the irritant itself, and the resulting picture is that of a pseudo-tuberculosis which may bear to the naked eye, and even to the microscope, the closest resemblance to a true tuberculous peritonitis.

The second type of foreign body peritonitis is that in which the irritating substance is very conspicuous and the reactive changes very slight. The commonest example of this condition is the *Pseudo-myxoma peritonei*, which occasionally follows the rupture of certain ovarian cysts.

Through the movements of the intestinal coils the contents of the cyst are distributed amongst the viscera throughout the whole peritoneal cavity, producing very peculiar and thoroughly characteristic changes, which were first described by Werth¹ as a foreign-body peritonitis. In consequence of the mechanical and chemical irritation of the peritoneum there arises a reactive inflammation which leads to a slow removal of the gelatinous material by absorption, organization, and encapsulation. The last occurs by penetration of the masses of mucinous material by vascular processes derived from the connective tissue of the peritoneum. These processes ramify throughout the gelatinous masses, subdividing them by a fine connective tissue network.

This is especially marked, as a rule, in the great omentum, which is hugely thickened, and appears to be transformed into a congeries of translucent cysts (Merkel).²

Following the demonstration of the true nature of this condition by Werth in 1884, there was some controversy as to how far the course of events was as he had described, and how far the result was contributed to by actual metastasis of the original growth upon the peritoneum. Olshausen

was able to show that the latter mechanism did at times act, but the original explanation of Werth remained uncontroverted for many cases, and was strengthened indirectly when, in 1901, Fraenkel³ published the first case in which a similar condition was shown to be due to the rupture of a vermiform appendix distended with mucus. The case was that of a man of 79, who had died of cerebral softening without having shown during life any evidence of an abdominal disease, so that the condition was found quite unexpectedly *post mortem*. Large free gelatinous masses of mucoid material were found in the pelvis and in the right iliac fossa; the peritoneum in contact with the masses showed a peculiar villous condition due to the out-

growth of fine ramified processes covered by endothelium. The case remains unique in the fact that there was no encapsulation of the mucoid material as there has been in all the other cases yet described. There was a cystic dilatation of the appendix, which had ruptured.

Fig. 1.—Piece of omentum removed at operation. The specimen has lost a great deal of its mucinous material through being stored in alcohol for many months. Still, however, the resemblance to a colloid carcinoma is very close. The lighter parts of the photograph show the normal omental fat, the darker parts are the translucent gelatinous masses of encapsuled mucin incorporated into the substance of the omentum.

Fig. 2.—Microscopic section under low power of pseudomyxomatous omentum. The delicate stroma-like network of inflammatory exudate and the general resemblance to a colloid carcinoma are well shown.

* Read before the Pathological Section of the Royal Society of Medicine.

Since this observation of Fraenkel a few more cases have been published, but the total number is still very small. In January, 1908, an interesting and valuable contribution to the subject was published by Neumann of Berlin.⁴ He was able to give references to 8 cases, and to add a remarkable and in some respects unique case of his own. In the literature since then I have been able to find no other case, so that the one I shall briefly report below would seem to be the tenth on record. In addition to Fraenkel and Neumann's cases, the other observations have been three by Oberndorfer,⁵ and one each by Nager,⁶ Merkel,⁷ Hueter,⁸ and McConnell.⁹

The condition is no doubt in fact a rare one, for a necessary antecedent to it is a distended and aseptic or relatively aseptic appendix which is sufficiently free from surrounding adhesions to allow perforation into the general peritoneal cavity to occur. On the other hand, it seems very unlikely to be so rare as the smallness of the literature suggests. There are indeed two strong reasons for supposing it not very rarely to escape observation or diagnosis. In the first place, several cases have been found unexpectedly *post mortem* in old persons, and show that the condition may run a perfectly symptomless

case was regarded as a fairly ordinary example of appendicitis, although the very rapid appearance of the swelling and the persistence of it were recognized as unusual.

At the operation there was a considerable amount of clear free fluid in the peritoneal cavity. The omentum was much enlarged by the presence of large rounded nodules of gelatinous translucent appearance. The parietal peritoneum as far as it could be explored, the caecum, and the ascending colon were thickly set with similar masses. There were many recent filmy adhesions. No trace of the appendix could be made out, but as the condition was regarded as certainly one of inoperable colloid carcinoma, and any manipulation produced free haemorrhage, no extensive search was made. A mass of omentum the size of a man's hand was ligatured off and removed, and the wound was closed.

The patient recovered very rapidly; he left the hospital in less than a fortnight, and from that time to this has had no abdominal symptoms whatever. At present—eighteen months after the operation—the most careful examination of the abdomen reveals no abnormal sign of any kind.

The piece of omentum removed (Fig. 1) reproduced with perfect exactitude the appearance of advanced colloid carcinoma. Several pathologists to whom I showed it had no doubt whatever as to its nature. Microscopically, the structure at first sight gives the same impression of a cancer the cells of which have been completely transformed into colloid. More exact observation shows that the stroma enclosing the gelatinous masses is a product of inflammatory reaction rather than

Fig. 3.—Part of pseudomyxoma of omentum under higher power. A, Omental fat; B, mucinous material; C, strand of inflammatory exudate containing many round cells; D, vascular process growing out from omentum into the mucinous material.

course, while secondly, the appearances met with present an astonishing resemblance to colloid carcinoma, so that doubtless some cases are regarded as primary colloid carcinoma of the peritoneum. It may be mentioned that Nager described his case as a cystic endothelioma.

CASE.

The patient was a man aged 36. In the spring of 1907 he had had an attack of pain in the right iliac fossa. It was fairly severe, but did not prevent him from getting about. This pain lasted for about ten days, and during the course of it the patient for three or four days passed dark porter-coloured urine containing blood. The abdomen was repeatedly examined with great care, and beyond some tenderness in the right iliac fossa nothing whatever abnormal was found. The pain disappeared spontaneously, and the patient was quite well for a year, that is, until May, 1908, when he suddenly developed an attack of appendicitis. The onset was abrupt and severe, there was a rigor, and the temperature rose to 104° F. Twenty-four hours after the onset the right side of the abdomen was rather rigid, and a large mass could be felt in the appendix region. In spite of the very alarming invasion, there was at the end of thirty-six hours a distinct decline in all the symptoms; the mass in the iliac fossa could be felt more distinctly, and was at least the size of a man's fist.

The attack continued rapidly to subside; by the fourth day the temperature was normal, and the patient looked and felt quite well. The pulse was slow, the appetite good, and the bowels acted normally. The large swelling was, however, practically unchanged. It was intended to wait for the disappearance of the mass before removing the appendix, but as in a month no diminution had occurred, and the patient began to have pain when he got about, operation was decided upon. The

Fig. 4.—Part of pseudomyxoma of omentum showing a mucinous mass, over the surface of which the endothelial cells of the peritoneum have grown.

a fibrous tissue, and that the gelatinous substance gives the reactions not of colloid but of mucin. The specimen corresponds closely with those described in the other cases.

MACROSCOPIC ANATOMY.

A.—Distribution of the gelatinous material. Three fairly well marked types of the condition can be distinguished according to the amount of peritoneum involved.

1. Universal dissemination over the peritoneum (McConnell, Nager).
2. Localization to ileo-caecal region and pelvis, usually with involvement of peripheral part of omentum (Fraenkel, Hueter).
3. Localization to immediate neighbourhood of appendix (Oberndorfer's 3 cases).

Most observers mention the extraordinary resemblance to colloid carcinoma.

B.—Condition of appendix. In 2 cases this is not described. In all the others there was distension by mucinous material.

Three varieties have been met with:

1. Simple distension following obstruction by scarring, or in one case by a carcinoma of the appendix.
2. Diverticula of the mucous membrane which reached the surface and ruptured.
3. A kind of multiple cystic degeneration of the appendix wall.

In most cases there was an actual perforation. In one it seemed probable that the appendix had burst, and then healed after discharging its contents, which were again accumulating at the time of the examination.

MICROSCOPIC ANATOMY.

The gelatinous substance shows the microchemical reactions of mucin (thionin, mucicarmine, etc.). With the exception of Fraenkel's case the mucinous masses were always encapsuled by recently formed inflammatory tissue, which was usually of extreme delicacy on account of the slightness of the irritation. In one case (Nager) there was evidence that absorption was occurring through the lymphatics. There is a tendency for the peritoneal endothelium to grow over and cover in the foreign substance. On the other hand, the endothelium may persist under cover of a layer of mucinous material, and in this case the cells are apt to become cubical or columnar.

Most observers have found scattered amongst the gelatinous substance chains of cubical or columnar cells of epithelial appearance. Such are present in the sections from my case. Some observers regard these as derived from the epithelial lining of the appendix, others think they are due to transformation of the peritoneal endothelium—a more probable view when we bear in mind the known capacity of these cells to show cubical or columnar forms under abnormal circumstances.

CLINICAL FEATURES.

The cases have come under observation in four different ways:

1. As an unexpected *post-mortem* condition when there had been nothing clinically to suggest its presence.
2. As a cause of slow but pronounced abdominal enlargement, in one case lasting ten years.
3. As an unexpected discovery during an operation for hernia (Hueter's case).
4. During operation for appendicitis. In one case acute appendicitis (Neumann); in one case quiescent appendicitis (case reported here).

In Neumann's case the tumour was found to be localized in the right iliac fossa, and was successfully removed with the appendix. This is the only case which has been treated radically. It and the case I report here are the only ones in which the patient has recovered. The latter case is remarkable in that spontaneous recovery followed abdominal section, with partial removal of the gelatinous material, and without removal of the appendix.

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PELVIC HAEMATOMA OF OVARIAN ORIGIN.

By THOMAS HOLMES, M.S., M.D. LOND.,

HONORARY GYNAECOLOGIST TO THE PORTSMOUTH MATERNITY CHARITY AND THE EMSWORTH VICTORIA HOSPITAL.

In reading in the *JOURNAL* of January 29th, p. 262, the report of Dr. Lockyer's paper, the cases he quotes, and those quoted by others who joined in the discussion, remind me of a paper I published some three years ago in the *JOURNAL*,¹ the title of which was, On the Cause of Acute Illness supervening during Menstruation. In this paper I gave notes of several cases of illness starting during the menstrual period, the cause of which I believed to be excessive haemorrhage into a Graafian follicle; in one case the haemorrhage apparently ruptured through the follicle and became intraperitoneal, forming a haematocoele. All these cases occurred in virgins, and there was no suspicion whatever of pregnancy.

Since writing the paper I have seen two cases in consultation, tending to bear out the view I took of their origin, which Dr. Lockyer's paper strongly confirms.

CASE I.

A married nullipara, aged 20, was always menstruating on the 28th of each month, but this time started some little time before. She was seized with intense abdominal pain on the left side, and then commenced to lose blood from the vagina.

The pulse was 120, soft and compressible, the temperature normal; there was no pallor, and no shock, but intense and constant vomiting. The breasts were quite virginal, the vaginal discharge was bright red, without clots or shreds in it. There was a little dullness in the left iliac fossa, where tenderness was most marked. The uterus was not enlarged high up, and the cervix not softened. The pouch of Douglas was full of a soft, elastic substance feeling exactly like blood clot, and there was an indefinite mass in the left fornix; rectal examination confirmed this. The patient absolutely refused operation, and was most intractable during convalescence, but was walking about in a fortnight.

CASE II.

I had arranged to operate for another condition; just before the operation she told me of the great suffering she had experienced ever since her last period. On opening the abdomen I found the right ovary enlarged and distended, with blood clot from a Graafian follicle, which was just on the point of rupturing into the peritoneum.

The intense nausea and vomiting, reminding me of an injured testicle, has always struck me as a feature of these cases, as opposed to an extrauterine gestation, and seems to be explained by the injury to the ovary.

I have not referred to modern literature on the subject, but this last week in looking up some of the older writers on diseases of women, I find that Barnes,² who distinctly recognized extrauterine gestations, in his article on haematocoele quoted Nélaton and Langier, who insisted that a great cause of haematocoele arose during the physiological work of ovulation. Churchill³ does not seem to recognize extrauterine gestations, but says that rupture of a Graafian follicle during its extreme congestion at a menstrual period is the cause of haematocoele.

My object in writing three years ago was to draw attention to a class of case which, so far as I knew, was not described in any textbook, or, if the cause were mentioned, was not emphasized sufficiently as the origin of very serious illness. It is not only serious at the time, but, as I hope to be able to show later, may in its minor degrees be one of the determining causes of such chronic sources of trouble as ovarian dysmenorrhoea and prolapsed and adherent ovaries, which often seem difficult to explain in the absence of ordinary infective processes.

Several of my cases occurred a good many years ago, and were not confirmed by operation; but in one case the illness was followed by very disabling dysmenorrhoea. And I believe that, just as in a haematoma of the testicle it may be necessary to remove the organ in some cases, so in some of these cases it may be necessary to do oophorectomy to prevent chronic invalidism; and that although in married women the diagnosis from an extrauterine gestation may be impossible until the abdomen is opened and the part examined, yet one must always in virgins bear in mind the possibility of this origin of a haematocoele.

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A CASE OF FAMILY ALBUMINURIA.

By

J. NEWBERRY FERGUSON, M.B., B.C. CANTAB.,
M.R.C.S., L.R.C.P.

The presence of albumen in the urine is not now regarded as an invariable indication of renal disease. Leaving out of consideration those cases in which albumen may enter the urinary tract below the renal tubules, as in pyelitis, cystitis, prostatic abscess, or urethritis, persons in perfect health occasionally pass small quantities of albumen. The great majority of such cases belong to the class of paroxysmal or functional albuminuria, and there is usually some relation between the passing of albumen and excessive physical exertion, excessive ingestion of albuminous food, emotional disturbances, or some other cause.

The case of a man constantly passing large quantities of albumen over a period of many years, without any apparent cause, must be regarded as rare, and the fact that all the members of the same family present the same peculiarity in varying degrees renders the matter the more worthy of notice.

One of the functions of the kidney, while ridding the blood of the waste products of metabolism, is to prevent