We may say, therefore, that in the absence of local disease nose-bleeding is associated with high blood pressure.

Summary

Seventeen patients (4.5%) from a group of 374 with high blood pressure had bled from the nose, and in 8 of these this was the presenting symptom. It is likely that these findings are an underestimate of the true frequency of epistaxis in these patients. Attention is drawn to the occurrence of gut-bleeding, in the absence of discoverable gastro-intestinal disease, in this group.

Thirty-two patients with nasal disease who were admitted to hospital because of nose-bleeding showed a normal distribution of age- and sex-adjusted diastolic scores. Eighty-nine patients without local nasal disease had an age- and sex-adjusted score distribution totally different from that of the general population.

Nose-bleeding, in the absence of local nasal disease, is therefore associated with high blood pressure.

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THE DIAGNOSIS OF PSEUDOMYXOMA PERITONEI

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Exactly a century ago Spencer Wells began his series of ovariectomies. Among the first 114 cases which he reported (Wells, 1865) there were two examples of pseudomyxoma peritonei. It was not, however, until 1901 that the same condition was found as a complication of an appendicular mucocoele in a male patient (Fraenkel, 1901). Since that time reports of a single case or of a few non-gynaecological cases of pseudomyxoma have appeared at intervals, the largest series being that of Masson and Hamrick (1930), who described six cases from the Mayo Clinic. The exact nature of the material present in the peritoneal cavity is uncertain; it has variously been described as mucus, mucin, and pseudomucin. The origin of the mucinous material is also disputed, some pathologists believing that it is secreted by appendiceal cells which have been transplanted to the peritoneum, while other workers think that it is the product of a peritoneal reaction to irritation.

In many of the cases in which pseudomyxoma has developed in females with pseudomucinous cysts of the

ovary, some appendicular lesion has also been present. A mucocoele is found in about one out of every 1,000 appendices removed, and, as only a few mucocoeles rupture, pseudomyxoma peritonei, which is not of ovarian origin, is a rare condition. A correct diagnosis is usually not made until laparotomy is performed. We recently observed two cases within a period of a few months; the experience gained with the first case enabled a correct pre-operative diagnosis to be made in the second.

Case 1

A 59-year-old man was admitted to hospital complaining of increasing abdominal distension and breathlessness, which had begun three months previously. He looked healthy, but his abdomen was strikingly enlarged, with an everted umbilicus and distended venous channels coursing upwards. A fluid thrill was easily elicited, but shifting dullness could not be demonstrated. No masses or abdominal organs could be palpated. A tense irreducible hernia was present on the right side, and there was oedema of both ankles.

Paracentesis abdominis was performed, but fluid could not be obtained, even with the largest cannula, until suction was applied. With strong suction only a few millilitres of mucinous material were obtained. Laparotomy was then carried out. The abdomen was found to contain about 4 litres of rather tenacious material; as much of this material as possible was removed. There were a few small cystic masses attached to the omentum, but other structures could not be identified. A course of radiotherapy was subsequently given, without benefit; the patient's abdomen continued to enlarge, but his general condition remained good. Two further laparotomies were necessary in order to remove the accumulated mucinous material; some large honeycomb-like masses were also found in the abdomen. A biopsy of one of the masses showed that it consisted of mucoid material and fibrous tissue, but no viable epithelial cells were seen. The operations were carried out at intervals of nine months, but at none of them was it possible to determine the origin of the condition. Symptomatically the patient was much improved after each operation, but six months after the last laparotomy his general condition had begun to deteriorate. Because of his large abdomen he was confined to a bath-chair at home.

Case 2

A 60-year-old man was admitted to a chest hospital on account of a productive cough and small haemoptysis. Full investigation did not reveal any pulmonary lesion, but a mass was noted in the right upper abdomen. He was therefore transferred to a general hospital. On admission there the patient looked fit and well. His abdomen, however, was grossly distended and the presence of an undefined mass in the upper abdomen was confirmed. A definite fluid thrill was present, but there was no shifting dullness. On rectal examination a firm mass could be felt projecting backwards from the recto-vesical pouch. Barium-meal radiographs revealed an indentation of the wall of the stomach; gall-stones were also present, and in the region of the lower pole of the caecum there was a calcified ring about 4 cm. in diameter (see Fig.). A diagnosis of pseudomyxoma peritonei was made and operation advised.

At laparotomy the abdomen was found to be filled with slightly greenish semi-translucent material of the consistency of a half-set jelly; several litres of this material were removed. There were numerous large plaques and masses like honeycombs adherent to and obscuring the omentum and intestines. It was impossible to locate any primary lesion, as the appendix and gall-bladder were hidden in masses of tissue. A biopsy from this tissue showed that it consisted mainly of mucinous material, with some fibrous tissue: in some places a well-differentiated intestinal type of epithelium was seen. Following this operation the patient

remained well for 11 months. He was then readmitted in a semiconscious and severely dehydrated state, the result of an acute obstructive episode similar to pyloric stenosis. His abdomen was still very distended, and several irregular masses were palpable. With gastric suction and correction of his fluid and electrolyte derangements his condition improved. A second laparotomy was carried out and 7 litres of mucinous material were removed. Analysis of this material showed it to contain 100 mg. of cholesterol and 12 mg. of calcium per 100 ml. After the second operation he felt much more comfortable but his general condition later began to deteriorate.

Radiograph showing incompletely calcified shadow in the right iliac fossa. Case 2.

Diagnosis

The case histories summarized above are, we believe, typical of pseudomyxoma peritonei. They reveal a reasonably consistent and characteristic clinical picture, but in spite of this, no report has been found of a correct diagnosis being made in a non-gynaecological case before paracentesis or laparotomy was performed. This failure to make a correct diagnosis is undoubtedly due to the rarity of the condition.

Pseudomyxoma peritonei usually occurs in patients over 50 years of age; either sex may be affected. There is usually no definite history suggestive of abdominal disease; only a few patients have had surgery carried out for ovarian or appendicular lesions. Painless abdominal distension is the commonest presenting symptom. The patient's abdomen has usually been enlarging for some months before he seeks medical advice. Edlund (1950) stated that colicky pain was often present. This type of pain is presumably due to bouts of subacute intestinal obstruction, which occur in the later stages of the disease.

Apart from his abdomen, the patient with pseudomyxoma peritonei looks healthy. He is well nourished and there is no evidence of cyanosis or anaemia. In marked contrast to the general appearance of well-being, the abdomen presents a typical picture of advanced disease. It is grossly distended with fluid, and irregular masses can often be palpated on abdominal and rectal examination. In the age group affected

abdominal distension may be due to cancer with ascites, cirrhosis of the liver, or heart failure, but in none of these conditions does the patient maintain a generally healthy appearance for many months or years. It is the remarkable disparity between the healthy look in the patient's face and the seemingly hopeless findings in his abdomen which should suggest the correct diagnosis of pseudomyxoma peritonei.

Valuable confirmatory evidence may be obtained by testing for fluid in the abdomen. In almost all cases a well-marked fluid thrill is easily elicited, but when the test for shifting dullness is carried out the dullness will not shift (Elliott, 1957). It should be remembered, however, that these tests for fluid will vary with the viscosity and total amount of mucus within the abdomen, and on the extent to which the mucus has become organized. Mucus of low viscosity might give a positive test for shifting dullness; when its consistency is that of a half-set jelly it no longer moves about within the abdomen, but still transmits a fluid thrill. Work is now in progress to determine whether the intraperitoneal production of mucus can be inhibited by serotonin antagonists and whether the mucus can be rendered more fluid by the administration of hormones and enzymes.

The raised intra-abdominal pressure elevates the diaphragm and interferes with respiratory movement; breathlessness may result as in Case 1. An external hernia may develop for the same reason, and several cases have been diagnosed by the surgeon finding mucinous material within a hernial sac. Mucinous material can enter and track down inside the psoas sheath, and present as a lump in the thigh (Masson and Hamrick, 1930; Palmer *et al.*, 1958). Major veins are sometimes compressed; oedema of the legs is not uncommon, and in Case 1 abnormal venous channels had opened up in the abdominal wall. Three out of the four patients with pseudomyxoma peritonei described by Edlund (1950) had frequency of micturition which was probably due to bladder compression. In the later stages of the disease the adherent masses of tissue often distort and obstruct various parts of the alimentary canal, and intestinal obstruction is the commonest cause of death.

Biochemical investigations are seldom helpful. Rosenfeld (1949) has stated that the blood sugar may be abnormally low and there may be alterations in the albumin:globulin ratio. Straight x-ray examination of the abdomen of the patient reported by Tedeschi *et al.*, (1949) showed an incomplete circular shadow in the right iliac fossa similar to that noted in our second case. This type of shadow is probably due to calcification in the wall of an old appendix abscess or mucocoele (Ogilvie, 1915) or in the fibrous tissue surrounding and encysting some of the mucinous material. Faulkner *et al.* (1954) noted a similar type of shadow in their patient who had a urachal cyst causing pseudomyxoma peritonei. Once the mucinous material has become organized into honeycomb-like masses, barium-meal or barium-enema examination may reveal indentations and distortions of the alimentary tract. Gallstones and duodenal ulcers have been found in several patients.

A correct diagnosis of pseudomyxoma peritonei during life has usually been made only when the abdomen has been explored by paracentesis or laparotomy. In some of the reported cases the mucinous material has been of sufficiently low viscosity to flow

through a cannula. However, in other patients, such as those reported above, the viscosity of the intra-peritoneal material is such that ordinary paracentesis fails to produce any fluid. When a "dry tap" is obtained on an abdomen showing a fluid thrill, the possibility of pseudomyxoma should at once be considered, and gentle suction applied to the cannula in an attempt to draw off some of the mucinous material. The diagnosis may be confirmed by peritoneoscopy (Tedeschi *et al.*, 1949).

At laparotomy the diagnosis is of course obvious, but the surgeon may be in some doubt whether he is dealing with a benign or a malignant condition. It now seems probable that most cases of pseudomyxoma peritonei are benign. A mucocoele of the appendix should always be sought, and in females the pelvis should be examined for a pseudomucinous cyst. It was formerly believed that many cases of pseudomyxoma peritonei were due to ruptured colloid carcinomas of the appendix (Masson and Hamrick, 1930; Woodruff and McDonald, 1940), but, as with minimal surgery these patients lived for many years, it seems likely that the tumours were either carcinoid or organized mucinous masses containing hyperplastic but benign epithelial elements. When the mucinous material is very tenacious or has become partly organized proper exploration of the abdomen may be impossible.

Summary

The diagnosis of pseudomyxoma peritonei is described and two typical cases are reported.

There is a striking contrast between the general well-being of the patient and the advanced signs present in the abdomen.

When a fluid thrill is present in the abdomen failure to demonstrate shifting dullness or to withdraw fluid on paracentesis should suggest the diagnosis.

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In future the British Commonwealth and Empire Nurses War Memorial Fund will be known as the British Commonwealth Nurses War Memorial Fund. The Fund was founded in 1946 to provide a worthy memorial to the nurses, midwives, and auxiliaries of the British Commonwealth who died in the second world war. The memorial consists of a Nurses' Chapel in Westminster Abbey, and a trust fund which awards postgraduate travelling scholarships to nurses and midwives of the Commonwealth. Up to date 84 scholarships have been awarded, and 11 more are announced for the academic year 1959-60.

TWINNING RATE IN EUROPE DURING THE WAR

BY

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It is known that undernutrition causes a decrease in the litter size in many mammals (Hammond, 1952; Lack, 1954). The purpose of this paper is to determine whether there was a decrease in the twinning rate in man in those countries which suffered from undernutrition during the German occupation during the last war.

Data on twinning rates are reported here for Denmark, France, Holland, Norway, and Sweden. There was little or no undernutrition in Denmark, which was leniently treated by the Germans (Fridericia, 1947), or in Sweden, which remained neutral (Abramson, 1947). There was, on the other hand, considerable undernutrition in France (Trémolières, 1947), Holland (Jansen, 1947), and Norway (Hansen, 1947). There is also considerable evidence of regional variation in the amount of malnutrition in France; in particular, the north-west (Brittany and Normandy) is believed to have suffered little (Chevallier and Moine, 1945; Trémolières, 1947); data for this region of France are given separately.

Methods.—Data on twin maternities by sex, and on total maternities by maternal age, were taken from the annual reports on vital statistics of the countries concerned. Monozygotic and dizygotic twin maternities have been calculated by Weinberg's method (1909), which assumes that dizygotic twins are equally likely to be of the same or of different sexes; monozygotic twins must of course be of the same sex. If, therefore, *L* like-sexed and *U* unlike-sexed twin maternities are observed, the number of dizygotic twin maternities is taken as $2U$ and the number of monozygotic twin maternities as $L-U$. The sex of twins is not available for Denmark, and so this method cannot be applied. All rates are expressed as twin maternities per 1,000 maternities, and have been standardized for maternal age by the indirect method of standardization (see Hill, 1955). The standard twinning rates used are those for France by maternal age reported by Bulmer (1958).

Results

The monozygotic and dizygotic twinning rates for the five-year periods before, during, and after the war are shown in Fig. 1. The wartime quinquennium is taken as 1941-5. The post-war quinquennium is 1946-50. The pre-war quinquennium is 1936-40 in all countries except France, where it is 1934-40, excluding 1937 and 1938, for which years data are not available.

The total twinning rate is smaller during the war than either before or afterwards in France, Holland, and Norway. The fall is largest in Norway and smallest in France, but in all three countries it is significant at the 0.1% level. In Denmark, Sweden, and North-West France the twinning rate seems to be falling over the period considered, but this decrease is not accentuated during the war.

It can also be seen that the fall in France, Holland, and Norway is entirely due to a fall in the dizygotic