tion of the specimen.² Furthermore, the patient's symptoms developed only after betamethasone was withdrawn. They subsided with further betamethasone and the removal of 30 ml CSF.

This case may not be unique. Surgical gloves carry a large quantity of starch powder, and we suggest that neurosurgeons adopt the precaution of washing off this powder³ before undertaking any surgical procedure.

We wish to thank Mr B H Cummins and Dr D B Brownell for their advice, Mr B H Cummins for permission to report the case, and all those who have provided secretarial and technical help.

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Tubo-ovarian actinomycosis and the IUCD

Actinomycotic infection is not common in the UK, about 40 cases being reported annually,¹ and infection of the female genital tract is rare. The route of such infection was formerly thought to be by extension from established ileocaecal disease² but more recently it has been suggested the presence of an IUCD may have a causal role.³ We present a case of tubo-ovarian actinomycosis in association with an IUCD.

Case report

A 37-year-old woman, para 2 + 0, was admitted to hospital in December 1976 with a 7-day history of increasingly severe lower abdominal pain and anorexia. She had had a profuse offensive vaginal discharge for two months. She had no history of amenorrhoea and an IUCD had been fitted three years previously. She was pale and ill-looking, but afebrile. Relevant clinical findings were confined to the abdomen and pelvis. She had generalised abdominal tenderness and guarding, maximal in the iliac fossae. Rebound tenderness was present and bowel sounds were absent. A limited pelvic examination was possible and disclosed a foul vaginal discharge and a healthy cervix. There was appreciable cervical excitation pain and acute adnexal tenderness. The uterus appeared normal in size. The haemoglobin was 12.6 g/dl, the WBC $11.1 \times 10^9/l$, and the blood film normal. The result of urine analysis and x-ray films of the chest and abdomen were normal. A

presumptive diagnosis of ruptured pelvic abscess was made and emergency laparotomy carried out. On opening the peritoneum, 200 ml of foul smelling green pus were found free in the abdominal cavity. No sulphur granules were observed in the pus. Both tubes and ovaries were implicated in large infected masses, to which large and small bowel were adherent. The bowel was freed by blunt dissection and bilateral salpingo-oophorectomy was carried out. Hysterectomy was not carried out. After thorough peritoneal toilet and instillation of 200 ml Noxyflex, a large corrugated drain was inserted into the pouch of Douglas and the abdomen closed. The IUCD, a Saf-T-Coil, was removed.

On pathological examination, the ovaries and fallopian tubes contained multiple abscesses filled with green pus. Microscopically, continuing inflammation was present, with abscess formation centring on colonies of actinomyces, the typical sulphur granules being clearly seen (see fig). Cultures from high vaginal swabs and the IUCD were sterile but *Actinomyces israelii* was grown in glucose-agar shakes, after four weeks' incubation of abdominal pus samples.

The patient made a satisfactory postoperative recovery. Initial antibiotic cover with gentamicin and lincomycin was changed to parenteral benzylpenicillin when the histological diagnosis was made. A search was made for possible cervicofacial or thoracic sites of actinomyces infection with negative results, and the patient was discharged home on a three-month course of oral phenoxymethylpenicillin. She has remained well.

Comment

Actinomycotic disease of the ovaries and fallopian tubes may be caused by direct extension from bowel, by lymphatic or vascular routes, or by direct ascension of the genital tract. In our patient the short clinical history of illness or absence of obvious bowel disease is thought to indicate that the IUCD may well have been the causative factor.

The possible association between tubo-ovarian actinomycosis and the IUCD was first suggested 50 years ago,⁴ and metallic devices have been particularly incriminated, possibly as they provide a focus for infection together with a chemical reducing action favourable for an opportunistic anaerobe such as *A. israelii*. Nevertheless, the IUCD need not be metallic, as is shown in this case. We hope that actinomyces will remain a rare cause of genital infection, but the continuing popularity of the IUCD as an alternative to oral contraception and the increasing use of copper devices mean that actinomycotic infection should be considered in IUCD wearers who present with clinical evidence of pelvic inflammation.

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Right-sided diaphragmatic hernia: neonatal presentation associated with an unusual physical sign

Diaphragmatic hernia is a well-recognised cause of respiratory difficulty soon after birth. Recently, however, attention has been drawn to the fact that right-sided diaphragmatic hernia (RDH) often presents later and atypically.^{1,2} In these two cases of RDH an unusual physical sign was present, which may help in diagnosis.

Case 1

A 32-week, 1980 g girl developed clinical and radiological features of idiopathic respiratory distress syndrome one hour after an uneventful birth.

Right ovary. Colony of actinomyces with surrounding inflammatory response. Sulphur granule. (Methenamine silver.)

Management included face-mask continuous positive airway pressure (CPAP) with a good response. At 24 hours, however, she became pale and inactive and blood culture was positive for group B haemolytic streptococcus. Rapid improvement followed penicillin treatment, and CPAP was discontinued after 72 hours. Progress was good until day 10 when she again became pale and inactive with increasing respiratory distress. Clinical signs and chest radiography suggested right pleural effusion, but aspiration failed to confirm the presence of fluid. On day 12 apnoea necessitated mechanical ventilation. Chest signs were unchanged but the abdominal findings were remarkable. The liver was not palpable in the right hypochondrium, which felt strikingly "empty." It was, however, easily felt more medially as a mass extending to the level of the umbilicus. A well-defined edge passed beneath both costal margins at the lateral border of the rectus muscle. Chest radiography (see figure) confirmed the medial displacement of the liver and showed radiolucent areas in the right lower thorax. At the time loculated pyopneumothorax was considered the likely diagnosis. On a Bennett ventilator and antibiotics improvement was steady, with resolution of the radiolucent areas on chest radiography and the abdominal signs. But on day 18 she collapsed again. The physical sign was again noted of an empty right hypochondrium with the liver palpable only in the epigastrium. Radiography showed a loop of bowel, lateral to the liver, extending in the right hemithorax up to the level of the third dorsal vertebra. She failed to respond to increased ventilator pressures and 100%-inspired oxygen and died three hours later.

Chest radiograph on day 12 showing radiolucent areas on right with mediastinal and hepatic shift to left.

Necropsy showed that there was herniation of a loop of small bowel and the right lobe of the liver through a large central defect in the right diaphragm. A well-marked fibrous constriction was present around the right lobe of the liver. No obvious ascites, pleural effusion, hernial sac, or lung hypoplasia were found. There was extensive bronchopneumonia in the left lung.

Case 2

A 3660 g boy delivered by forceps for fetal distress at term had respiratory difficulty from birth. The liver was not palpable in the right hypochondrium which felt empty, but in the midline it extended down to the level of the umbilicus, with its edge passing beneath the right costal margin in the mid-clavicular line. Chest radiography showed a RDH. The baby died shortly after transfer to the regional centre, where emergency thoracotomy showed small-bowel and right liver-lobe herniation through a large central diaphragmatic defect.

Discussion

The diagnosis of RDH is often difficult. The first case particularly illustrates many of the lesser-known but reported features. Chest radiography may initially be normal.¹ The radiological changes may not only mimic inflammatory chest disease and pleural effusion but can also be intermittent.² The liver at first prevents herniation through

a large right-sided defect until changes occur in the relative intra-abdominal and thoracic pressures.³

It is in the context of these diagnostic difficulties that we report the unusual clinical sign present in both these infants. The finding of a liver extending unusually far below the costal margin in the midline, yet impalpable laterally, was in each case subsequently proved to be due to partial herniation of the right lobe of the liver through the diaphragmatic defect.

We thank Dr R L'E Orme and Dr L Haas for permission to report these cases.

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Small-intestinal obstruction from a Richter's hernia at the site of insertion of a laparoscope

Laparoscopy has become a standard gynaecological technique that is also widely practised by gastroenterologists in Europe, America, and Japan. Only recently in Britain has the procedure been recognised as a valuable technique for replacing or augmenting laparotomy, particularly in managing jaundice¹ and liver disease.² Complications are uncommon, and the Royal College of Obstetricians and Gynaecologists is conducting a national survey into their incidence among its members. I report a case of small-intestinal obstruction as a result of a laparoscopy.

Case history

A 61-year-old Indian woman, who came to Britain 12 years ago, presented to Dr P J Toghill with hepatosplenomegaly and iron deficiency anaemia. Her platelet count and prothrombin time were normal. Since she spoke almost no English and was unable to co-operate enough to allow percutaneous liver biopsy to be undertaken with safety, she was referred for laparoscopic liver biopsy under general anaesthetic, and this was performed on 28 June 1977. After induction of a 4-litre carbon dioxide pneumoperitoneum, an infraumbilical stab incision was used for inserting a 12 mm trocar and an Eder laparoscope.

A grossly enlarged spleen was seen, and the liver appeared normal. Biopsy of the right lobe was carried out under laparoscopic control. She made an uneventful recovery. The liver histology was normal. Six days after laparoscopy she started to vomit copiously. Oral intake was reduced, and she received intravenous fluids but continued to vomit. There was no abdominal pain or tenderness. On the 12th post-laparoscopy day, supine and erect abdominal radiographs showed the features of high small intestinal obstruction.

At laparotomy on the 13th post-laparoscopy day, the upper jejunum, duodenum, and stomach were grossly dilated. The mid-jejunum was tethered to the anterior abdominal wall at the site of the laparoscopy stab incision by a Richter's type hernia, which resulted in kinking of the bowel causing obstruction. Since the jejunum would not reduce easily, the laparoscopic stab incision was re-opened and the hernia reduced. The bowel wall was viable. The spleen was noted to be enlarged and surrounded by many adhesions. The hernial defect was repaired and the incision closed. She made an uneventful recovery from the operation. The cause for her splenomegaly and anaemia remain obscure, however.

Comment

Schiff and Naftolin³ reported two patients with small bowel