the accumulation of active metabolites; and an interaction between dihydrocodeine and endogenous opiate-like peptides. Levine³ described an increased narcotic effect of codeine phosphate associated with hypocalcaemia in renal failure; our patient, however, remained normocalcaemic. The convulsions might possibly have been due to toxic dihydrocodeine concentrations,⁴ but hypertensive encephalopathy was a more likely explanation in the present case.

In conclusion we urge caution in prescribing dihydrocodeine in conventional dosage to patients with severely impaired renal function.

We are grateful to the poisons unit, New Cross Hospital, London, which measured dihydrocodeine concentrations, and to Dr P A Toseland, Guy's Hospital, for his valuable advice.

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³ Levine DF. Hypocalcaemia increases the narcotic effect of codeine. *Postgrad Med J* 1980;56:736-7.

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Perinatal transmission of hepatitis B in Northern Ireland

Hepatitis B infection may be transmitted from the mother to her newborn infant, so that the infant becomes a carrier. The transmission rate varies from 0 to 6% in Europe and North America¹ to 40% in Taiwan.² e Antigen (HBeAg) is associated with a high risk of transmission,²⁻⁴ and the high prevalence of HBeAg positive carriers among Chinese and Asian racial groups may account for this difference. The Northern Ireland Blood Transfusion Service routinely tests roughly 98% of antenatal samples from the region, and screening for hepatitis B surface antigen (HBsAg) has been included since 1973.

Subjects, methods, and results

We undertook a retrospective study of women positive for HBsAg and their children using radioimmunoassay (Blood Products Laboratory). The number of births during 1973-81 was 244 887 in a total population of 1 541 987, the immigrant population forming only a small proportion. All sera positive for HBsAg were referred to the Regional Virus Laboratory for confirmation and, from 1981, to the West of Scotland Blood Transfusion Service for marker studies (radioimmunoassay; Abbott) of antibody to hepatitis B core (anti-HBc) and HBe antigens. Cord blood tests were not possible until 1981, and a child was considered to be positive only if markers persisted after the age of 9 months. The study included all older children in the family when an antenatal sample was HBsAg positive.

Fifty two HBsAg positive mothers were identified: 34 were white, 16 Oriental, and two African. The table gives the results in children born to 17 of the 34 white mothers. One and possibly two of the white mothers positive for HBeAg had transmitted infection to her child. There was also evidence of transmission in case 3; the woman developed anti-e one year after delivery. HBe studies were not done in case 4 until after the birth of all the children, and the woman may possibly have been an HBeAg carrier during her pregnancies.

Carrier state of families of white mothers positive for HBsAg (children positive for HBsAg are described by their HBe state alone. The two children described as having anti-HBc had no other hepatitis B markers)

Case No	eAg	Anti-e	Transmission
1	+	-	1 child HBeAg positive
2	+	-	1 child anti-HBc only at 9 months
3	-	-	1 child HBeAg positive
4	-	+	2 children HBeAg positive
5	-	+	1 child anti-HBc positive at 3 years
6-17	-	+	1 child immune 2 children no markers No markers among 16 children

Comment

Data from other parts of the UK suggest that, apart from infants of women with acute hepatitis B during the last trimester, newborn white infants are not at risk. All the women studied here had been carriers for several years, and there was no history of acute hepatitis during pregnancy. Our experience indicates that, at least in Northern Ireland, an appreciable number of white children have been infected by their mothers (seven of 25 children studied showed hepatitis B markers).

Reliable tests for HBe markers have become available only recently; we do not, therefore, have records of HBe state at the time of the relevant pregnancies in cases 4 and 5. One of the women positive for anti-HBe had a sister who was also an HBsAg carrier with anti-HBe. Each had two unaffected children, but the mother of the proposita was HBsAg and anti-HBe positive. Possibly the mother may have been a carrier of HBeAg in the past.

Our findings indicate that there is a substantial "high risk" group of white people in some communities, and any discussion of prophylaxis for neonates should not, therefore, exclude them. The presence of e antigen and the absence of all e markers continue to be indicators of a high risk of transmission. All babies born to mothers in either of these categories should be offered prophylaxis. We have initiated a protocol of passive-active immunisation for high risk babies in Northern Ireland and hope to collaborate with regions in Scotland. The protocol includes whites and non-whites.

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Gangrenous caecal volvulus after colonoscopy

Although potentially hazardous, colonoscopy is generally safe with few complications.¹ Perforation and bleeding are the most common complications, but intramural air dissection, retroperitoneal emphysema, splenic injury, asymptomatic serosal tears and mesenteric haematomas, ileus, partial volvulus of the transverse colon, and incarceration of a hernia have also been reported.¹⁻³ We report a case of caecal volvulus after colonoscopy.

Case report

A 71 year old woman was admitted with a history of weight loss, malaise, bleeding per rectum, and intermittent fever. On examination she was feverish and the colon in the left iliac fossa was tender and palpable. Tests for faecal occult blood were positive on three occasions. Barium enema showed numerous diverticula, particularly in the descending and upper sigmoid colon. Barium was noted outwith the colon at the level of the iliac crest, and in the same area there was a suspicion of an intraluminal mass lesion. She was referred for colonoscopy.

After 48 hours of full routine preparation colonoscopy was carried out with an Olympus TCF type 2L2. Fluid faecal residue in the lower colon necessitated frequent aspiration and slow advancement of the instrument, but the splenic flexure was reached without problem. No intraluminal lesion was seen up to this level. Over the next 48 hours she complained of increasingly severe central abdominal colic and abdominal distension developed. She was transferred to the surgical unit. Abdominal examination showed

asymmetrical distension with a tender tympanic mass occupying the right lower quadrant. Bowel sounds were absent. Plain abdominal radiographs showed the features of acute caecal volvulus.

At laparotomy a 180° anticlockwise rotation of the caecum was found with a gangrenous anterior wall. Diverticular disease of the colon was confirmed, and there was a paracolic abscess around the lower descending and upper sigmoid colon. Subtotal colectomy was carried out with a primary end to end ileorectal anastomosis. Uneventful recovery followed until 37 days post-operatively, when a small faecal fistula developed. This closed over the next 14 days, and she was discharged 55 days postoperatively.

Comment

After colonoscopy some patients complain of an uncomfortable feeling within a slightly distended abdomen, probably due to retained air within the colon. This usually subsides within a few hours. When either the distension or the pain continues for longer we believe that plain abdominal radiography is mandatory to exclude perforation, ileus, or, as in this case, obstruction. In this case plain abdominal radiographs were taken after 24 hours; in retrospect these showed features of caecal volvulus together with some gaseous distension of the more distal colon.

Acute caecal volvulus is an uncommon form of intestinal obstruction, and its occurrence after colonoscopy has not been previously reported. Diagnosis of the condition may present considerable difficulty. Only a quarter of patients present with a tympanic mass in the right lower abdominal quadrant; in the remainder the diagnosis is usually apparent from erect and supine abdominal radiographs⁴ but is often missed. Caecal volvulus must therefore be borne in mind, as early treatment may prevent the development of gangrene.

We have little doubt that the aetiology of this patient's caecal volvulus was overinsufflation of air, which is sometimes inevitable when fluid has to be aspirated frequently to maintain a good view. Deflation during withdrawal of the instrument should always be performed but may not be complete in those cases in which only limited colonoscopy has been carried out.

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³ Rees BI, Williams LA. Incarceration of hernia after colonoscopy. *Lancet* 1977;i:371.

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Recurrent thymoma with myasthenia gravis

The association of thymoma and myasthenia gravis is well recognised, the incidence of myasthenia in patients with tumour being about 30%.¹ Excision of the tumour usually results in an improvement in the neurological symptoms and is rarely complicated by recurrence.² We describe a patient with histologically proved thymoma who developed myasthenia gravis. After removal of the tumour her myasthenia improved, but with regrowth of the tumour her neurological symptoms deteriorated.

Case report

The patient presented in 1952, aged 22, with a short history of a productive cough. A chest x-ray film showed a right-sided shadow anteriorly in the superior mediastinum. No intervention was carried out at the patient's

request. In 1962 she presented with a seven-month history of bilateral ptosis and progressive tiredness and weakness of the arms, which were worse at the end of the day. Myasthenia gravis was diagnosed. A chest x-ray film showed little change in the mediastinal shadow. At operation a hard thymic tumour was found, adherent to the great veins. The mass was removed en bloc without damage to the vessels. Histology, which was later reviewed, showed a lymphoepithelioma of the thymus. She recovered satisfactorily and required a lower dose of pyridostigmine. When she was seen in 1975 with an unrelated complaint a chest x-ray film was normal.

In 1981, aged 52, she presented with a 12-month history of proximal myopathy of the shoulder and hip girdles and paraesthesia of both hands. Examination disclosed proximal muscle weakness with hyporeflexia, and electromyographic studies suggested a myopathy. Although this was an atypical picture, a raised titre of anticholinesterase antibody suggested myasthenia gravis. The dose of pyridostigmine was increased, and her symptoms improved. A chest x-ray film again showed a mass in the right side of the anterior mediastinum, and computed tomography confirmed it to be homogenous.

At operation via the previous sternotomy an invasive, partly necrotic tumour was found affecting the walls of the great veins, eroding the back of the manubrium and body of the sternum and extending beneath the aortic arch. Attempts to retract the sternum resulted in rupture of the innominate veins with subsequent massive haemorrhage. The tumour was deemed inoperable and biopsy specimens taken. Her postoperative recovery was stormy, and she required treatment for hypokalaemia and left ventricular failure. She eventually received a full course of radiotherapy to the thymus. Subsequently she had slight proximal muscle weakness, but this was controlled with a reducing dose of prednisolone, which replaced the pyridostigmine.

Histology of the biopsy specimens showed a thymoma with mixed epithelial and lymphocyte elements, numerous mitoses, and small foci of calcification. The appearances were considered to be consistent with malignant change.

Comment

The presence of a thymoma for 10 years before the onset of myasthenic symptoms is unusual. Keynes³ suggested that "silent thymomas" represent an inactive phase. Early thymectomy does not prevent the development of myasthenia, as several cases of neuro-muscular dysfunction have been reported after excision of the tumour.¹

The incidence of recurrence of benign thymoma has been estimated to be 2%.² There are no clinical or histological features, however, that suggest a tendency for recurrence. Previously reported recurrences have been benign, and malignant change has not been described. It might be argued that recurrences are second primary tumours arising in ectopic thymic tissue, as islands of such tissue often occur.⁴ In our case, however, despite a long latent period the area affected closely matched that of the original tumour. In addition, a chest x-ray film taken five years previously had been normal, and the aggressive nature of the recurrence suggests that malignant change occurred.

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Correction

Why patients were lost from follow-up at an urban diabetic clinic

We regret that an error occurred in this paper by I N Scobie and others (15 January, p 189). The haemoglobin A₁ concentrations should have been expressed as % (of total haemoglobin) not as g/dl.