Fetal volvulus of the small intestine

Among the products of conception arriving in a pathology laboratory in any hospital are fetuses of varying gestations. Necropsies carried out on such fetuses, whether macerated or not, have resulted in the discovery of a variety of abnormalities and quirks of nature which have made the exercise worthwhile and which have been of occasional clinical importance. In the past five years, four fetuses were found to have volvulus affecting the small intestine. This observation does not seem to have been recorded previously and poses interesting possibilities as to the pathogenesis of the condition and its association with premature delivery.

Case reports

CASE 1
The mother aged 29, gravida 6 para 4 (G,P,) had had two normal pregnancies and deliveries before 1976, when a cone biopsy for CIN III was performed. She had two further normal pregnancies in 1977 and 1979 followed by a miscarriage in 1982 when 20 weeks pregnant. A fresh female fetus (fig 1) was delivered with a foot length of 30 mm. The mother had one further abortion and a hysterectomy in 1984.

CASE 2
An Asian (27 years old, G,P,) mother miscarried in 1984 in the 22nd week of pregnancy. There had been a threatened miscarriage at 19 weeks and the fetal heart was recorded as disappearing two hours before delivery. The male fetus had a foot length of 30 mm (fig 2). The mother subsequently had a normal term delivery in 1985.

CASE 3
A 24 year old mother (G,P,) had two normal confinements in 1978 and 1984 and an abortion in 1982. In 1985 she miscarried at 22 weeks a fresh male fetus with a foot length of 37 mm (figs 3 and 4). Sterilisation and a cone biopsy for CIN III were performed in 1986.

CASE 4
After an abortion the 26 year old mother (G,P,) had given birth to a normal infant in 1986. In 1987 at 22 weeks there was a miscarriage of a fresh male fetus with a foot length of 32 mm (figs 5 and 6).

There was no suggestion of any interference with pregnancy and all the abortions seemed to be spontaneous. The necropsy findings in all were remarkably similar with at least one complete 360° twist occurring in central to lower small bowel and in no case was the ileocaecal valve involved. Although the distended loops were ischaemic, they...
cavity with a subcapsular haematoma in the fetus of case 3. The bowel above the volvulus was not overtly distended and the distal small and large bowel were collapsed. In case 1 the placenta was received fragmented, having been evacuated after delivery and it showed pronounced chorioamnionitis. In case 4 there was a mild degree of chorioamnionitis but in the other two cases placentas and membranes were normal. The pancreas together with other internal organs was examined histologically in the fetuses of cases 2 and 4 and these showed normal appearances.

Two issues are posed by these intrauterine abdominal catastrophes—namely, the cause of the volvulus and the reason for the premature labour.

No congenital abnormality of the bowel was shown although the possibility of an abnormal mesentery could be a factor. I am not aware of any way of measuring such a condition, especially as the distended loops of the volvulus would themselves change the mesentery after the event. It is more likely that in these fetuses the arrival of meconium, which is being formed in increasing amounts during intrauterine growth, for some reason acts as a bolus in a dependent loop or loops of ileum and peristalsis completes volvulus formation. The fact that all the fetuses were between 20 and 22 weeks would, I suggest, support this hypothesis. There was no suggestion in any of the family pedigrees that volvulus could have been an unusual presentation of meconioseidosid and in two cases the pancreas was normal.

It is perhaps important that, although there was gross evidence of ischaemia, none of the cases had actual infarction of the bowel. It would seem logical to assume that the development of a volvulus would affect the fetus in a similar manner to that some stimulus in life after birth and that the “pain” and haemodynamic consequences following distension and stasis of a segment of bowel would stimulate the fetal adrenal glands. Although the role of the fetus in the initiation of labour is still contentious, it is thought that the adrenal may precipitate the train of events that induces labour. All the fetuses were “fresh” and in one case the fetal heart had been recorded up to two hours before delivery. My intuition leads me to believe that the cause (volvulus) had led to the effect (miscarriage).

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Increased isolation of anaerobes at low cost

Few would disagree that the isolation rate of anaerobes from clinical specimens can be increased by using selective media or prolonged incubation. Selective anaerobic media are used by many laboratories but prolonged incubation of plates beyond two days is usually reserved for those specimens in which slow growing anaerobes are suspected—a major pathogen in a subphrenic abscess. The procedure is not usually thought to be cost effective for routine specimens.

Over four months 1558 routine pus swabs were plated on to routine and selective media and incubated anaerobically for five days. The selective media used were Wilkins-Chalgren anaerobe agar (Oxoid) with 5% horse blood supplemented with Gram negative anaerobe additive (Oxoid) or with non-sporing anaerobe supplement (Oxoid) and 0-1% v/v Tween 80. Specimens were surface spread on to half plates, and a 5 µg metronidazole disc placed at the interface of the inocula and the plates incubated anaerobically at 37°C for 48 hours. After examination for a zone around the metronidazole disc to indicate the presence of anaerobes all plates were re-incubated for a further three days.

Anaerobes were isolated from 158 specimens (10-1%) after 48 hours and a further 98 (6-3%) after further incubation for a total of five days.

The sites from which anaerobes were isolated only after prolonged incubation fell within the following broad categories: ulcers/skin (n = 60 or 61%), postoperative specimens (n = 12 or 12%), “orthopaedic” specimens (n = 9 or 9%), ear swabs (n = 9 or 9%), abscess material (n = 6 or 6%), swabs from gangrenous area (n = 2 or 2%). These results show that prolonged anaerobic incubation of pus specimens increases the isolation rate of anaerobes.

I recognise that metronidazole resistant anaerobes would not be detected by the suggested method. Placing a 50 µg gentamicin disc at the surface of the interface spreads would overcome this problem but is more time consuming, as all organisms growing up to the disc need further investigation. Clostridia will fail to grow on the suggested media but it was felt that it would be unrealistic to introduce further selective or non-selective media as blood agar was used routinely. It was noted that Bacteroides ureolyticus, which is reported to be inhibited by selective agents present in the supplements, was occasionally isolated on the selective media.