Antenatal Diagnosis of Bowel Atresia

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The gastrointestinal atresias can be diagnosed early in the intrauterine period with the help of ultrasound scanning. The case described below illustrates the typical findings of bowel atresia consistent with the prenatal diagnosis.

Case Report

A 21-year-old primi gravida was referred for ultrasound scanning because of the disparity of the uterine size 36 weeks compared to her period of amenorrhea 32 weeks. There were no other relevant findings in the personal or family history.

Ultrasound scanning showed polyhydramnios and an alive fetus. The placental appearance was normal. Routine biometry showed the gestational age corresponding to her period of amenorrhea except for the large abdominal circumference (330 mm) instead of the expected value of 260-290 mm for this gestational age. The larger abdominal size was due to the presence of sonolucent cystic structures showing ridges *(Fig. 1)*. Since feeble peristaltic activity could be demonstrated by serial scanning the diagnosis of bowel atresia was considered as these structures represented the dilated intestinal loops due to obstruction.

The stomach shadow was of normal volume and appearance *(Fig. 2)*. The urinary bladder and the kidneys were normal. The rest of the intra-abdominal contents were also normal and there was no ascites. The intra-thoracic structures and the cranio-spinal echo features were normal.

This pregnancy ended up with premature delivery at 37 weeks of gestation. The baby underwent immediate laparotomy and the atresia was found to involve the jejunum.

Discussion

The incidence of bowel atresia including stenosis is 1 in 5000 live births(1,2). For the sake of comparison the incidence of esophageal, duodenal, colonic and rectal atresia are 1 in 3000, 1 in 7500, 1 in 66000, 1 in 5000 live births(3). These are considered to be as a consequence of failure of recanalization of primitive solid stage organ(4) or vascular insult during the development of these structures(5,6).

The commonest causes for polyhydramnios are neural tube defects and gastrointestinal atresias followed by other different conditions. Most of these anomalies can be diagnosed by antenatal ultrasound scanning targeting at the organs concerned. Atresias are classified into three different types. The first type shows an intact membranous diagphragm composed of mucosal or submucosal layer. There is no interruption in the muscular layer. In the second type, all three layers are interrupted and the atretic segments are joined by fibrous band, but the mesentery is intact. In the last type, there is complete absence of segment of bowel as well as mesentery.

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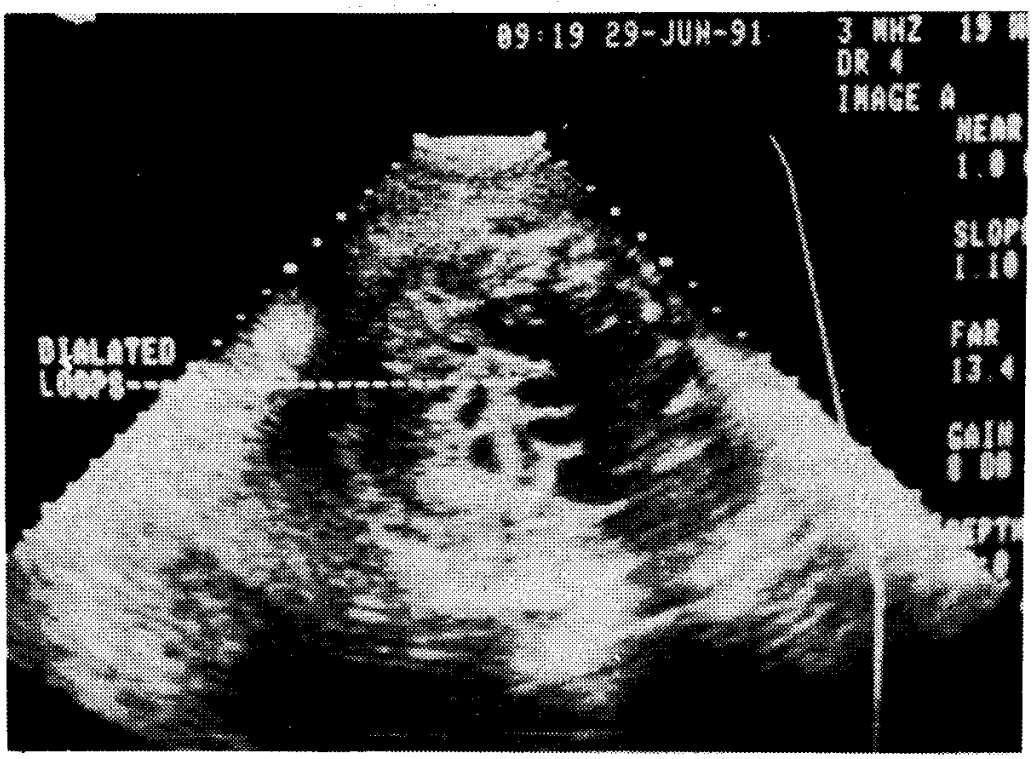

Fig. 1. The transverse section of the abdomen showing the dilated bowel loops with ridges.

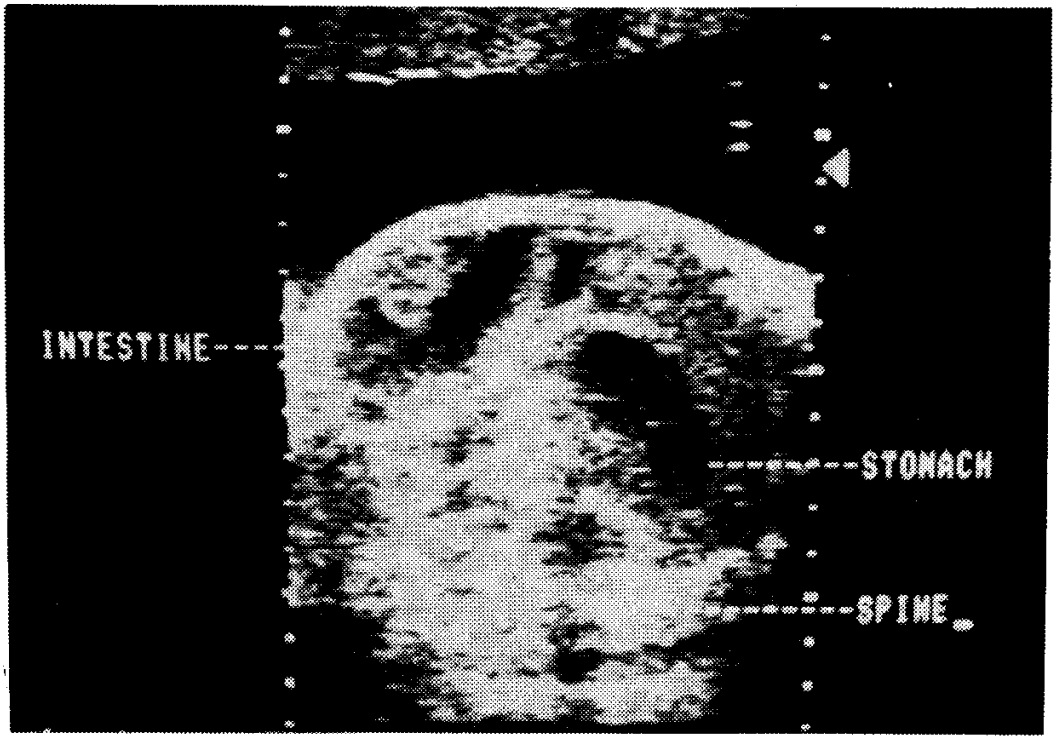

Fig. 2. Another section of the abdomen at a higher level shows the normal gastric shadow and part of the dilated bowel loops.

Of the gastrointestinal atresias the esophageal atresia is characterized by the absent or collapsed stomach shadow on serial scanning. The use of nomograms for expected stomach volume corresponding to the gestational age may be helpful in these cases(7). Small bowel atresias commonly occur in duodenum (40%) followed by ileum (35%) and jejunum (20%). In about 15% of cases, multiple atresias are present. Duodenal atresia is typical by the presence of "double bubble" appearance due to distended stomach and proximal duodenum(8). In case of small bowel atresia, the presence of small bowel loops in the abdomen is described classically as "triple or quadruple bubble" appearance by some authors(9). This is because of the fact that dilated bowel loops appear as multiple sonolucent areas in cross section. In this case there were dilated loops with mucosal ridges occupying the area of small bowel. Colonic shadows were normal.

The distinction between small and large bowel obstruction is impossible with the help of echo features. Because of this reason Hirschsprung's disease also comes in the differential diagnoses. Moreover, care should be taken in identifying normal cases in which the colon shows a "step ladder" pattern during the late third trimester. But polyhydramnios won't be evident here. Very rarely it may be difficult to distinguish hydronephrosis, mesenteric cysts and ovarian cysts. Biochemical analysis of the amniotic fluid contents such as pancreatic lipase, disaccharidase, bilirubin and bile acids may also help in the specific diagnosis(10).

Associated anomalies are rare in the bowel atresia for the fact that these occur after the period of organogenesis. However, other gastrointestinal tract anomalies are common in 45% of these cases(11,12).

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NOTES AND NEWS

SECOND NATIONAL CONGRESS OF INDIAN SOCIETY FOR PRENATAL DIAGNOSIS AND THERAPY

The Second National Congress of Indian Society for Prenatal Diagnosis and Therapy is to be held from *February 19 to 21, 1993* at the All India Institute of Medical Sciences, New Delhi 110 029.

Scientific Programme

Workshop (February 19-20): On Obstetrical Techniques and Laboratory Diagnosis of Fetal Sex, Chromosomal and Biochemical Disorders plus Thalassemia and Muscular Dystrophy.

Congress (February 20-21): Guest lectures by leading International and National experts plus free papers and posters.

Post-Congress Training Course (February 22-25): Genetic Counselling, Biochemical and Molecular Genetic Techniques.

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