



The Sonographic Prenatal Diagnosis of Congenital Defects of the Anterior Abdominal Wall Based on our Own Study of Twin Pregnancies – Gastroschisis

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Abstract. The authors present gastroschisis which occurred in a surviving fetus after the co-twin demise in a monochorionic pregnancy. They analyze the problems of prenatal ultrasound diagnosis of gastroschisis stressing the adequate planning of delivery with necessary additional diagnostic and therapeutic efforts.

Key words: Gastroschisis, Twin pregnancy, Ultrasonographic prenatal diagnosis

MATERIAL AND METHOD

The study was performed at the Obstetrics and Gynecology Department of the Kutno Regional Hospital using a B & K Medical System 3535 sonograph with a convex 3.5 MHz probe.

In 1985 – 1994 there were 27,743 deliveries in all. In that time there were only two cases of gastroschisis. Both of them occurred in surviving fetuses after the co-twin demise in the early second trimester (13th and 15th week) of a monochorionic twin gestation. Thus, in our material the prevalence of this malformation was 1:13,872 all deliveries.

The cases of gastroschisis were diagnosed prenatally by ultrasound in the beginning of the second half of gestation (21st and 22nd week).

DISCUSSION

A probable etiological factor of gastroschisis is the occlusion of an umbilical vein, mostly the right one. This results in segmental necrosis of tissue and, consequently, in a defect within the fetal abdominal wall [6, 15, 17, 21]. A defect in the abdominal integu-

ment caused by ischemia is the place through which the intestinal loops, and sometimes also the liver, translocate outside the abdominal cavity and “float” in the amniotic fluid without being protected by anything [12, 15, 21]. They remain uncovered also during delivery.

Unlike omphalocele [13], gastroschisis is in most cases an isolated defect since, in this group of fetuses, its coexistence with other malformations and chromosomal anomalies is rare and does not exceed 5% [15]. What occurs here more often are preterm births and intrauterine fetal hypotrophy [6, 15, 18, 19].

In the ultrasonographic examination (USG) the characteristic diagnostic feature of gastroschisis is the picture of a pathological formation outside the anterolateral part of the fetal abdominal integument. This tumour contains the intestinal loops and, sometimes, also the liver “floating” freely in the amniotic fluid [21]. The anomaly does not involve the umbilical insertion [5, 21]. In most cases no other malformations are found. The earliest period of gastroschisis recognized ultrasonographically was the 10th week of gestational age [5]. A major defect of the abdominal integument was then described as “lateral rugosity of its wall” [5].

When it is examined ultrasonographically, congenital gastroschisis must not be mistaken for congenital hernia of the umbilical cord (Table 1). It is particularly important to differentiate these two conditions, since in the case of omphalocele the percentage of other malformations is very high, and this indicates the necessity to perform not only further detailed USG examinations of a fetus, but cytogenetic tests as well. Once the hernial sac breaks in omphalocele, a USG examination is unable to differentiate this condition from gastroschisis.

In recent years, mortality and morbidity rates of infants born with congenital gastroschisis have decreased considerably to 7% and 9% respectively [15]. The prognosis for newborns largely depends on:

1. gestational age at delivery;
2. degree of intestinal damage;
3. extent of abdominal integument defect;
4. presence of other malformations;
5. quality of intranatal and postnatal care.

Table 1 - Ultrasonographic differential diagnosis of anterior abdominal wall malformations

Differentiating factors	Omphalocele	Gastroschisis
Umbilical insertion	at the tumour apex	beside the tumour, on the abdominal integument
Translocated abdominal organs	protected by the hernial sac wall	exposed, float freely in the amniotic fluid
Tumour appearance	smooth outline	rough outline
Other concomitant malformations	very often	very rare

In 1988 Bond et al. [3] observed that gastroschisis fetuses with inflated intestinal loops of thickened walls seen in a USG image suggested intestinal obstruction and, consequently, the prognosis for such infants worsened. Our limited experience proves that the ultrasonographic assessment of the intestinal wall thickness can be diagnostically erroneous. On the other hand it is much easier to notice and measure the degree the small intestine is inflated.

It is still discussed what is the influence of the delivery term and mode on the prognosis for infants with this malformation. The literature [1, 4, 7, 8, 10, 11, 14, 16] suggests that the decisions to terminate a pregnancy should be taken considering first of all the evaluation of the fetal lung maturity and wellbeing – NCST, OCT – and not only the ultrasonographically pictured signs of intestinal atresia, inflated loops and thickened walls. Since intestinal obstructions can develop also in a later period of pregnancy [11], it is advisable to undergo USG examinations more often (2 times a week), especially after the 28th week of gestation. Since there are more and more infants born after that time who survive, signs of intestinal obstruction in an ultrasonographic examination may be the indication to terminate a pregnancy before its due time.

Recent reports suggest that the elective cesarean section performed before the womb starts to contract does not decrease the mortality and morbidity rates of newborns [4, 9, 10, 16]. In the case of pregnancies with gastroschisis, it is acceptable for a child to be born through natural passages. It is extremely important, though, that gastroschisis fetuses, like those with omphalocele, be born in centres with direct access to a pediatric surgery ward.

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