

DIAGNOSIS OF GASTROSCHISIS IN THE FIRST TRIMESTER OF PREGNANCY - CASE REPORT

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Gastroschisis (gastroshisis) represents evisceration of the abdominal organs, most commonly small bowels, stomach and gonads through the front abdominal wall defect, almost always to the right of the umbilicus (90%) from which it is separated by thin skin bridge. The incidence of this anomaly is 0.5 to 4 per 10.000 liveborn babies. We presented a patient, aged 27 years, who had gastroschisis of the fetus in the 13th week of gestation diagnosed by ultrasound. Ultrasound examination is the method of choice for prenatal detection of fetal anomalies. By differential diagnosis, the possible existence of omphalocele should be eliminated using (2D, 3D) and power Doppler technology which significantly makes the assessment of gynecologist easier during establishment of the final diagnosis. *Acta Medica Medianae 2011;50(4):40-44.*

Key words: prenatal diagnosis; gastroschisis; ultrasonography; fetal anomalies

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Introduction

Gastroschisis represents evisceration of the abdominal organs, most commonly small bowels, stomach and gonads through the front abdominal wall defect, almost always to the right of the umbilicus (90%) from which it is separated by thin skin bridge. Eviscerated intestines are thickened, edematous, sticky, aperistaltic as a consequence of influence of the amniotic fluid on the serosa of intestines (1). The incidence of this anomaly is 0.5 to 4 per 10.000 liveborn babies (2). About 60% of the cases are prematurely born children. This anomaly is more common in male children. Gastroschisis is rare with associated anomalies, although malrotation and malfixation are always present. There are several theories concerning the cause of this anomaly. According to one of them, the interruption in development of omphalomesenteric artery occurs, and according to the other pathological involution of the right umbilical vein, it leads to a weakening of the anterior abdominal wall and consequent protrusion of the intestine through a weakened part. Teratogenic agents for occurrence of this anomaly are smoking and vasoactive medications. Reference is to the aspirin, ibuprofen, alcohol and cocaine abuse and malnutrition. Seasonal occurrence of gastroschisis is associated with teratogenic influence of pesticide and herbicides (2). Ultrasonography is the dominant method in the diagnosis

of this fetal anomaly. Ultrasonographic features of gastroschisis are clear and allow, in most cases, the exact prenatal diagnosis in the first trimester of pregnancy. In the ultrasound examination, the gastroschisis is shown as a mass resembling the cauliflower (small intestines), which floats freely in the amniotic fluid, close to the anterior abdominal wall. Ultrasound examination remains the method of choice in the diagnosis of fetal anomalies, although the application of magnetic resonance imaging (MRI) can provide a more detailed examination of fetus with anomaly of the anterior abdominal wall. The amniotic fluid contains the elevated concentrations of alpha-fetoprotein and acetylcholinesterase (2, 3).

Treatment is strictly operative after a good preoperative preparation.

Case report

The patient I. J., aged 27, worker by vocation, was hospitalized at the Department of Fertility Control in Clinical Center Kragujevac with the diagnosis: Graviditas ml III. Gastroshisis foetii, due to pregnancy termination after the decision of Second Instance Commission of Department of Obstetrics and Gynecology in CC Kragujevac that approved pregnancy termination for medical indications. The Commission was in session at the request of I. J., after the report of the Consilium for Fetal Anomalies of CC Kragujevac reaching the following conclusion Dg Gastroshisis, suggestion: Perform CVS. Ultrasound finding: fetal pelvis leading, BPD 25mm, AC 89mm, 12mm FL, fetal heart rate recorded, normal amniotic fluid, placenta at left lateral side. Gestation week by ultrasonographic findings is 13.5. In front of the anterior abdominal wall the convoluted intestines are observed 20x11mm in size. Stomach is in the abdomen (Figure 1).



Figure 1. Gastroschisis



Figure 2. The fetus and the placenta after abortion



Figure 3. The fetus after abortion

Ultrasound examination was performed on the machine Aloka Pro Sound 3 500, by multi-frequency abdominal sector probe of 3.5 to 5 MHz. Cytogenetic finding after chorionic villi biopsy performed on a date 18. 01. 2011. states: 46, XY, five metaphases were analyzed, by G strip technique. Cytogenetic analysis is done in the Genetic laboratory of Department of Obstetrics and

Gynecology in Kragujevac, protocol number 8-2011.

A thorough informative conversation with the family was performed and once again the options and procedures in the following course of pregnancy observation were presented, the procedure for surgical treatment of the baby after birth was explained and the success of such treatment and the possibility of any possible complications were reported.

The attitude of the family to perform pregnancy termination was explicit after all performed consultation of which there are adequate medical records in the medical history of a patient.

Preparation and procedure for termination of pregnancy:

Laboratory processing of pregnant women:
Blood type: 0 Rh D + (positive).

Hematological analyses: WBC 5.4×10^9 /L, Neutrophil granulocytes 58.1%, 29.8% Lymphocytes, Erythrocytes 3.74×10^{12} /L, Hemoglobin 118 g/L, Hematocrit 0.34 L /L, Thrombocytes 204×10^9 /L.

Biochemical analysis: Glucose 3.8 mmol/L, Urea 2.1 mmol/L, Creatinine $55 \mu\text{mol/L}$, Uric acid $182 \mu\text{mol/L}$, C-reactive protein (CRP) 5.1 mg/L, Fibrinogen 3.6 g/L.

Coagulation status factors: Prothrombin time (PT) - 10.3 sec., International Normalized Ratio (INR) 0.91, Activated partial thromboplastin time (Activated partial thromboplastin time-APTT) 26.0 sec.

Jonogram: Potassium 4.0 mmol/L, Sodium 137 mmol/L, Calcium 2.14 mmol/L, Magnesium 0.88 mmol/L, Iron 19.1 mmol/L.

Alpha-fetoprotein (AFP) 55.74 IU/mL

Urine analysis: Finding is normal.

Laboratory analyses were conducted in Central Biochemical Laboratory of Clinical Center Kragujevac and the Blood Transfusion Centre in Clinical Center Kragujevac. Intracervical misoprostol was applied in two individual doses of 400 mg, at intervals of 12 h. An antibiotic cefuroxime was prescribed at a dosage of 1.5 g/12h intravenously as well as anxiolytic diazepam, tablets of 5 mg per os. It was decided at the Consilium that the induced abortion should continue with prostaglandin E₂ (PGE₂) dinoprostone intracervically in the interval of 12 hours. After 24 hours the patient had an abortion of the male fetus, with a clearly visible evisceration of intestinal loops, which was sent for pathohistological analysis along with the placenta (Figures 2, 3).

Instrumental revision of uterine cavity was carried out and it was continued with the aforementioned intravenous antibiotic therapy with intramuscular application of uterotonic during three days. By control ultrasound examination after two days the following finding was stated: Uterine anteversion/anteflexion (AVF), measures $79 \times 56 \times 45 \text{ mm}$, with emphasized horns. Right horn without content, with decidual reaction of 6mm. The left horn with no content, with decidual reaction to 11mm. Right ovary measures $36 \times 27 \text{ mm}$ with cystic formation that measures $23 \times 25 \text{ mm}$.

The left ovary measures 40x29mm, and it is of cystic structure. Empty pouch of Douglas (Figure 4). By bimanual gynecological examination the following finding is stated: under the speculum vagina is of normal depth, portio vaginalis uteri (PVU) cylindrical, 2.5cm long, the orificium externum uteri is transversally placed, sparse bleeding ex utero. PVU insensitive, mobile, can be inserted with a finger tip. Uterus in the AVF, firm, mobile and in good involution, insensitive, size of women's fist. Adnexa free on both sides with no pathological changes, insensitive to palpation. Pouch of Douglas insensitive.

Pathohistological finding:

810 - Foetus maceratus in utero. Infarctus anaemicus recens in texti stromae placentae Chorioamnionitis chronica, light to moderate degree. Gastroschisis.

The patient was discharged three days after an abortion in good condition.



Figure 4. Ultrasonographic view of the uterus at the patient's discharge from hospital.

Discussion

The significant survival of patients with gastroschisis was noted since the introduction of early diagnosis of this anomaly, best prenatally (4). Good preoperative preparation and appropriate postoperative treatment are also necessary parameters in the final outcome of treatment of these patients (5). Great progress in prenatal medicine was enabled by the rapid development of ultrasonography (6). Ultrasonography improves the prognosis by enabling control during pregnancy, planned delivery by Caesarean section in an appropriate institution and the surgical team ready for the gastroschisis treatment (7,8). Treatment of gastroschisis begins in maternity ward with high umbilical cord ligation and adequate surgical treatment that follows (9). Early diagnosis, good preoperative preparation, adequate anesthesia, gentle handling during surgical intervention, as well as good postoperative care, contribute considerably to better treatment outcomes of

gastroschisis which increases the survival rate above 80% (10,11). We do not have dilemma at any time about the need for additional diagnostic methods such as computed tomography (CT) or magnetic resonance (MR) in order to establish the final diagnosis as used by many perinatologists according to the literature data. (12-14).

By differential diagnosis, a possible omphalocele in the fetus was eliminated. Gastroschisis occurs later, because the hole (abdominal front wall defect) before the 16th week is very small and because the abdominal front wall muscles and peristaltic waves are visible only in 12th i.e. 14th week (15). Omphalocele (omphalocele) is a herniation of abdominal cavity contents into the cord base. This occurs because of lack of fusion of lateral ectomesodermal folds. Small intestines are always the content of the hernia bag, and liver, stomach, spleen, colon, and gonads can be found. It is covered by amnioperitoneal membrane and umbilical cord is located at its top (16). In gastroschisis, intestinal convolutions pass through a small defect (<1cm), which is still localized to the right of the normal umbilical cord insertion, float freely in the amniotic fluid. There is no membrane covering the content as with the omphalocele. With omphaloceles in the syndrome formation, there is a strong genetic component (17). The incidence of this disorder is 1-3 per 5.000 liveborn babies. By careful ultrasonographic evaluation, which is facilitated by (2D, 3D) and power Doppler technology, it is detected that fetal end of the umbilical cord ends on the apex of the mass and that it is covered with membrane (18). In 80% of the cases, the liver and small intestines are in a bag and in 20% of the cases there is only the small intestine. Polyhydramnion is not a rare finding, and in 40% there is an elevated level of alpha-fetoprotein in maternal serum. Searching for the associated anomalies is the mandatory part of the fetal examination due to its frequency (50-70%) (19). The prevalence is 30% in the second trimester, and only 15% at birth, which indicates a high mortality rate during pregnancy. Before the 12th week, omphalocele should be suspected only if the bag is greater than 7mm, irregular and/or inhomogeneous. Several of the above stated sentences represent a brief summary of our attempt to inform the parents in the mentioned case about the possibility of healing their baby. We have not met with approval; on the contrary, they were categorical in insisting that the pregnancy termination should be performed.

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DIJAGNOSTIKA GASTROŠIZE U PRVOM TRIMESTRU TRUDNOĆE - PRIKAZ BOLESNIKA

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Gastrošiza (gastroshisis) predstavlja evisceraciju abdominalnih organa, najčešće tankih creva, želuca i gonada kroz defekt prednjeg trbušnog zida, obično desno od umbilikusa (90%) od koga je odvojen tankim kožnim mostićem. Incidenca ove anomalije je od 0,5-4 u 10.000 živorođenih. Prikazana je bolesnica, stara 27 godina, kod koje je ultrazvučno dijagnostikovana gastrošiza fetusa u 13. nedelji gestacije. Ultrazvučni pregled je metoda izbora u prenatalnoj detekciji fetalnih anomalija. Diferencijalno dijagnostički treba eliminisati eventualno postojanje omfalokele upotrebom (2D, 3D) i power Doppler tehnologija što značajno olakšava procenu ginekologa prilikom postavljanja konačne dijagnoze. *Acta Medica Medianae 2011;50(4):40-44.*

Ključne reči: *prenatalna dijagnostika; gastrošiza; ultrasonografija; fetalne anomalije*