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Antenatal Diagnosis of Gastroschisis : About Two Cases

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Abstract: gastroschisis is a parietal abnormality which is part of median coelosomies, and is characterised by evisceration at the right latero-umbilical level of the viscera. Its incidence is in increasing. Environmental factors such as young maternal age, druguse, smoking and low socio-economic class have been invoked to explain the genesis of this parietal anomaly, however no genetic factor is incriminated. Prenatal ultrasound allows the diagnosis to be made. The final prognosis is conditioned by the ischemic digestive lesions objectified at birth for which therapeutic treatment is often limited. We report two cases of gastroschis diagnosed antenatally in patients in labor, and whose postnatal examination confirms the diagnosis.

Keywords:- *Gastroschisis, Omphalocele, Abdominal Wall Defect, Prenatal Diagnosis.*

I. INTRODUCTION

Malformations of the anterior abdominal wall of the fetus are rare. Gastroschisis is a full thickness defect of the anterior abdominal wall of the fetus, which results in extrusion of abdominal viscera (usually intestines) into the amniotic space, without amniotic membrane coverage [2]. Other organs may herniate such as the stomach, colon and exceptionally the genitourinary system and liver. It has an excellent final prognosis [3]. Omphalocele the main differential diagnosis and consists of a medial anterior parietal defect at the base of the umbilical cord with evisceration of membrane-covered abdominal organs [2].

II. OBSERVATION

CASE 1

Mrs. G.S., 19 years old, primigravida, from low-income socioeconomic class, admitted to the maternity for risk of premature delivery at 33 weeks' gestation with premature rupture of the membranes. Ultrasound showed: a mono-fetal pregnancy, with eutrophic biometry, and a right paraumbilical image evoking gastroschisis: with a extra abdominal bowel dilation at 30mm and a thickened bowel wall at 4mm (Fig.1). The patient benefited from tocolysis and antenatal corticosteroid by bethamethasone 12mg, maternal contractions persisted despite of treatment, with delivery of a male newborn, birth weight at 1800g, Apgar 10/10 at 5mn, with gastroschisis(Fig.2). The newborn had immediate surgical management by pediatric surgeons, theexploration of abdominal cavity found a few grelic loops and a short colon,predicting a bad outcome. An intestinal perforation was sutured, with reintroduction of bowel loops and suturing of the wall. The newborn was hospitalized in the neonatal intensive care unit(NICU) and died on the third day after surgery.

CASE 2

Mrs. C.K. is 22 years old, from a rural area with unfavorable socio-economic conditions. , primigravida, with no pathological history, admitted to the maternity hospital at the beginning of labor at 37weeks' gestation, without follow up, the ultrasound examination revealed a mono-fetal pregnancy, with normal quantity of amniotic fluid and eutrophic biometry. It was observed a right parietal paraombilical opening with exteriorization of an oval hyperechogenic image measuring 90x90mm, in direct contact with the amniotic fluid (fig.3).

Vaginal delivery is accepted giving birth to a newborn male Apgar 10/10, weight at 3000g, with the presence of a defect of the abdominal wall to the right of the umbilical cord of about 4cm and exteriorization of the intestinal loops and ascending colon (fig.4).the newborn benefited from a surgery with reintegration of the loops without pressure and closure of the wall. then hospitalized in the NICU for 8 days, with transit emission on the 5th day after surgery and authorization of enteralfeeding on the 7th day (fig.5).the baby is reviewed in several controls, his last consultation was at the age of 2 years with good evolution.

III. DISCUSSION

Current estimates of the prevalence of gastroschisis demonstrate an uptrend, from 3.6 per 10,000 births during 1995–2005 to 4.9 per 10,000 births during 2006–2012 [6]. No genetic cause is incriminated in its genesis. However, several teratogenic environmental factors were evoked [7]. typical family characteristics associated with gastroschisis included young age, low socioeconomic class, and use of various drugs. The use of alcohol, cocaine, tobacco, pseudoephedrine or acetylsalicylic acid with vasoactive effects was recognized as a risk factor in a study comparing 19 children with gastroschisis to 54 controlled children[8].

Physiopathologically, gastroschisis corresponds to an anterior para-umbilical parietal opening, usually on the right, involving all layers of the wall with evisceration of the intestines in direct contact with the amniotic fluid. It is caused by a local growth arrest of the abdominal wall (aplasia, necrosis), at the end of the embryonic period (10-12 SA), probably due to a vascular origin. It is a vascular accident of the right omphalo mesenteric artery which is intended to form the superior mesenteric artery and vascularize the right part of the umbilical ring. These vascular abnormalities cause the formation of a small orifice (2 to 5 cm), most often to the right of a normally inserted cord [4-9].

Maternal serum *a* fetoprotein screening and the availability of obstetric ultrasound, has led to prenatal detection rates for gastroschisis of over 90% in developed countries. as well, the increased use of first trimester nuchal screening for chromosomal abnormalities has allowed the early diagnosis of gastroschisis[2].

Ultrasound showes a paraumbilical abdominal wall defect, to the right of the midline and with herniation of free-floating bowel into the amniotic cavity without a covering amniotic membrane. Several ultrasound signs may suspect digestive lesions (fig.1) such as a thickening of the intestinal wall greater than 4 mm, a bowel dilatation greater than 18 mm, the absence of amniotic fluid between the loops and the uterine wall, the rigid and agglutinated aspect of the loops during fetal movements. If one of these signs is present, an amniofusion with physiological serum can be used to improve the vitality of the loops [5].

The most frequently associated pathology with laparoschisis is vascularintrauterine growth restriction (IUGR). In our case it was normal growth in both cases. Hydramnios is possible when there is a jejunal stenosis, but more frequently it is an oligoamnios that is associated with IUGR. Ultrasound monitoring should be at least monthly, it may become more frequent when growth anomalies appear or when the appearance of the bowels changes [5].

The timing and route of delivery of prenatally diagnosed gastroschisis remains controversial. Some studys considering route of delivery, does not show any outcome benefit of routine cesarean delivery, and so it is generally accepted that vaginal delivery is preferred, unless obstetrical factors (fetal or maternal) dictate otherwise [11,12]. It has been observed that the average gestational age of spontaneous delivery of gastroschisis is less than 37 weeks [14].

In a prospective but limited trial, Moir et al [14] demonstrate the benefit of premature extraction in a population selected on the basis of the appearance of ultrasound signs of digestive lesions. Other authors, on the contrary, show an increase in the duration of parenteral feeding and hospital stay as well as a lower proportion of surgical treatment in one stage for children born prematurely. They recommend a delivery between 37 and 38 weeks using caesarean section only for obstetrical reasons [15,16].

The surgical treatment of gastroschisis consists of a visceral reduction with closure of the abdomen, avoiding an increase in intra-abdominal pressure. It can be performed either immediately after birth with sutures or, in a staggered manner, by placing a prosthetic silo to allow visceral reduction, followed by delayed closure. Early closure of the abdominal wall has several advantages over delayed closure, allowing early enteral feeding, a shorter stay in the NICU, and less risk of postoperative infection [2].

IV. CONCLUSION

Gastroschisis is a fetal malformation, which the incidence is in increasing over the last two decades.Obstetric ultrasound plays a key role in prenatal diagnosis and gastroschisis pregnancy management. Regarding route of delivery, vaginal delivery is recommended, with cesarean generally reserved for the usual obstetrical indications.

CONFLICTS OF INTEREST: The authors do not declare any conflict of interest.

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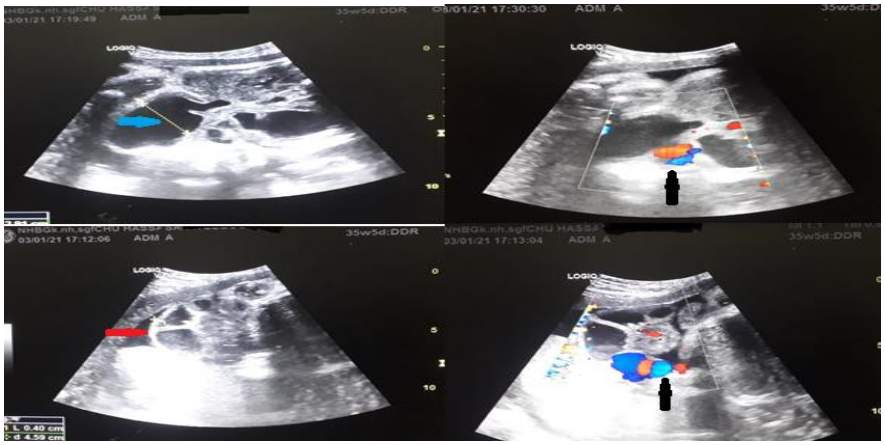

Fig.1: Prenatal ultrasound showing the appearance of gastroshisis: Blue arrow: bowel dilatation at 30mm. Red arrow: thickening of the digestive wall to 4mm. Black arrow: umbilical cord to the left of the gastroschisis image.

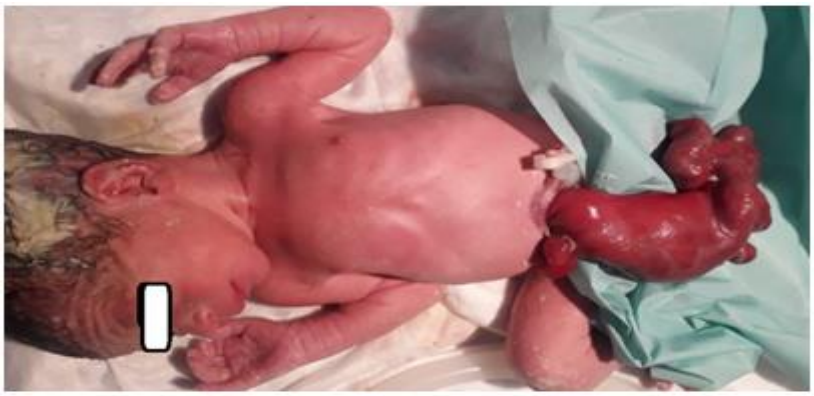

Fig.2 : Neonatal examination confirms the antenatal diagnosis of gastroschisis, a 3 cm defect of the abdominal wall to the right of the insertion of the umbilical cord leaving exteriorised intestinal loops.

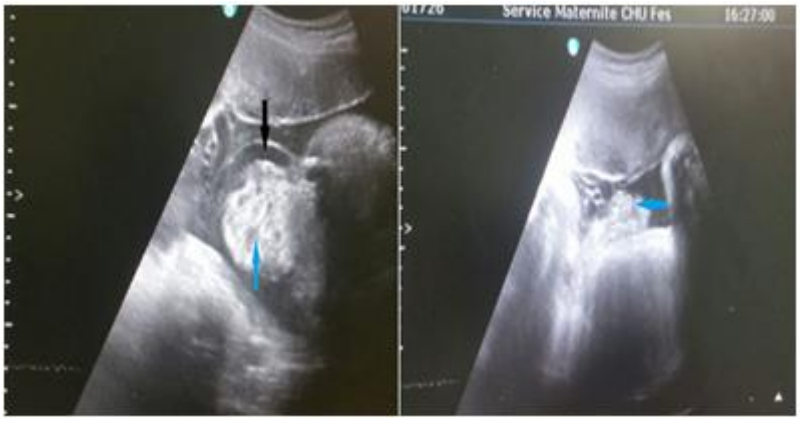

Fig.3: Blue arrow showing oval image floating in the amniotic fluid corresponding to laparoschisis. Black arrow umbilical cord

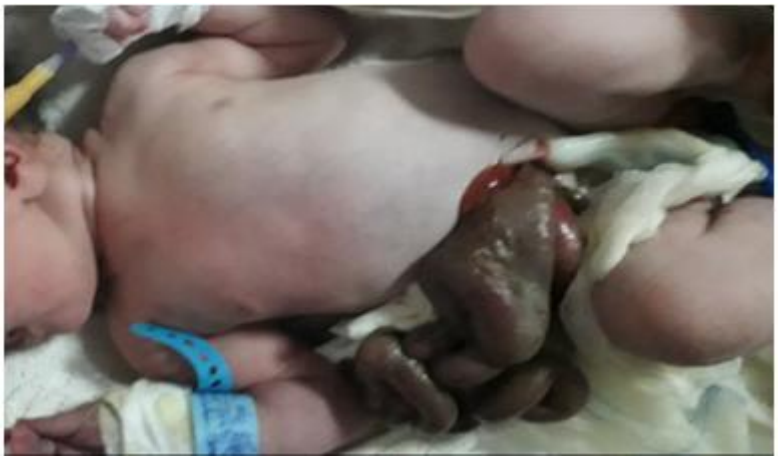

Fig.4 : newborn with gastroschisis confirming antenatal diagnosis.

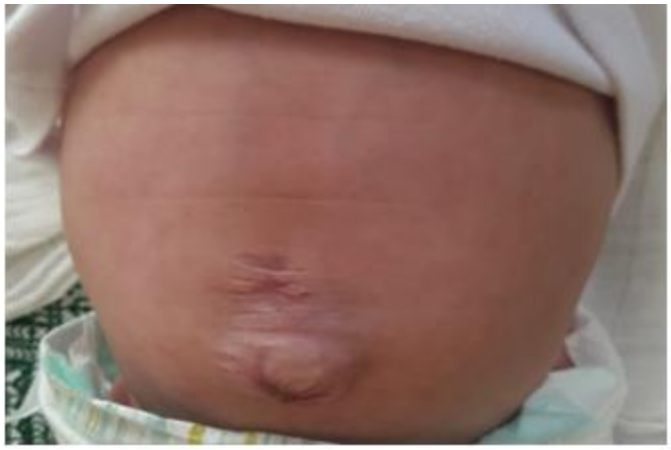

Fig.5: aspect of abdominal closure on day eight after surg