Atypical presentation of fetal inguino-scrotal hernia at 21 weeks of gestation: a case report

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A 29-year-old woman, II gravida 0 para, was referred at "Artemisia Medical Centre in Rome", at 21 weeks' of spontaneous gestation due to an enlarged solid mass appearing in the right side of the scrotum. Her past medical and familial history were both unremarkable. Previous sonographic examinations did not showed any evident fetal malformation. The scan revealed a male fetus later confirmed by a normal karyotyping with a 3.3 x 3.0 cm right scrotal solid-mass characterized by a complex echogenicity (Figure 1). The mass was predominantly solid with scattered small echo-free/cystic components. Neither peristalsis nor blood flow were detected inside the mass. The right testis was not identified while the left testis could be seen, displaced peripherally, to lie wedged between the mass and the wall of the scrotum. There were no other sonographically evident abnormalities among the other organs.

At 23 weeks of gestation, another ultrasound scan was performed and the scrotal mass showed no increase in size with the same sonographic features seen 2 weeks prior but with the presence of peristalsis. On the basis of these collective findings and after a multidisciplinary consultation, a suspected right inguino-scrotal hernia was supposed: no sonographic signs of an associated bowel obstruction, ascites or intra-abdominal mass lesion were found. However the following weeks the mass remained stable and at 36 weeks' gestation, its measurements were 4,1 x 4,7 x 4,8 cm. Color Doppler assessment did not demonstrate blood flow. Peristaltic movements of the bowel were also present. The amniotic fluid volume was normal throughout gestation.

The woman had an uncomplicated caesarean section delivery at 37 weeks' gestation because of a non reassuring fetal-heart tracing. The male neonate was 3300 g, with Apgar scores of 7 and 10 (at 1 and 5 min respectively). Postnatal examination confirmed a right-sided but very easily reducible inguino-scrotal hernia and the neonate underwent surgical repair of it (Figure 2). Postoperative recovery was uneventful and the infant was discharged after 7 days.

Fetal Inguino-Scrotal Hernia (FISH) is a rare condition when isolated, reported in the fetal period in 10-20/1000 live births with a high incidence in low birth weight and preterm babies with 60% located on the right side of the scrotum, 25% on the left side; 15% are

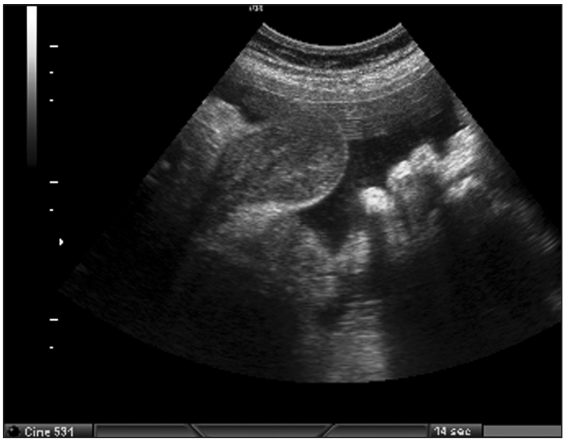

Figure 1

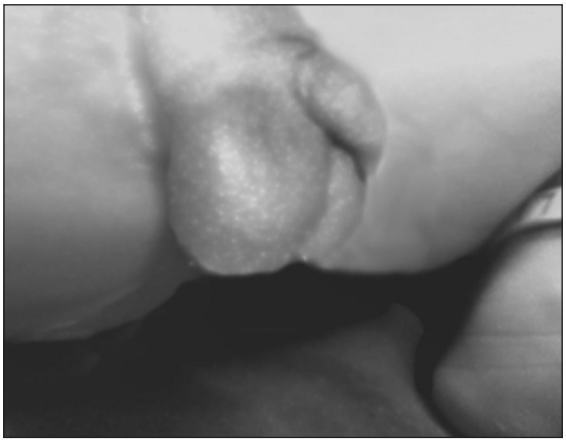

Figure 2

bilateral and sometimes it can also be associated with congenital heart disease, meningomyelocele, malrotation of gut (1, 2).

Although relatively common in the neonate and children, at present day are described only 7 cases of FISH in the literature appeared later in pregnancy, usually in the third trimester (1-7). We first report a case of FISH present at 21 weeks' gestation, diagnosed at 23 weeks' gestation and confirmed in the neonatal period.

Unlike to any others mammals, in human inguinal canal closes after testicular descent and it appears to be the result of controlled loss of the epithelium of the processus vaginalis and failure on this process predisposes the individual to inguinal hernia; the more intense migration of the testes through the inguinal canal occurred between 21 and 25 weeks after conception but only 9.45% were in the scrotum at 22 weeks (8).

The natural history of FISH is usually aided by congenital and structural factors, such as vigorous crying, prematurity, chronic lung disease, ascites, and bowel pathology that act to increase the intra-abdominal pressure forcing some bowel loops through the inguinal canal into the scrotum to form the hernia (3). Ultrasound, as several cases described, is the main technique to perform a prenatal diagnosis of this disorder that is based on few sonographic features like peristaltic movement of herniated bowel and an absent blood flow (2). Nevertheless these features could not be always found easily (9); indeed in our case peristalsis was absent in the first scan and seen after 2 weeks probably due to an early onset in pregnancy.

The differential diagnosis of scrotal masses in fetal life includes hydrocele, testicular torsion, tumors, meconium peritonitis and hernias but usually these findings occur late in pregnancy (1-7, 10). Hydrocele is the most common but easily detectable scrotal mass during routine prenatal scanning (10); excluding hydrocele, the other diagnoses of scrotal masses are rare and not easy to make. Among the solid lesions of the scrotum, another less common scrotal mass that can be detected by ultrasound, is the sacrococcygeal tumor. This benign tumor is usually large, with a characteristic complex echo structure, and extends into the scrotum (5). It may be purely cystic, complex and, usually, highly vascularised on color Doppler examination but without peristaltic movements. The treatment for the FISH is surgical repair because it does not resolve spontaneously. The intervention should be carried out electively shortly after the confirmed post-natal diagnosis due to the risk of incarceration (25%) or testicular atrophy with good results and a 2% complication rate.

The pathogenetic theory of FISH suggest the key role of congenital and structural factors that act to increase the intra-abdominal pressure forcing some bowel loops through the inguinal canal into the scrotum (3). Probably in our case the herniation of the bowel began within 20 weeks' gestation, when the inguinal canal is still open (8) but the low abdominal pressure related to the small abdominal organs is still not sufficient to develop the hernia. Therefore in our case, the early onset of FISH, seems suggest that there are also other pathogenetic mechanisms on the basis of the develop of this disorder, that are unknown to date.

In conclusion, we first report a case of fetal inguinoscrotal hernia present at the time of structural ultrasound examination (22 weeks' gestation) and subsequently confirmed at 23 weeks' gestation in a fetus with sonographic findings of a solid mass with bowel herniation.

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