Caso Clínico/Case Report

Diagnóstico pré-natal de hemorragia cerebelosa de etiologia desconhecida: caso clínico

Prenatal diagnosis of cerebellar hemorrhage of unkown cause: a case report.

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ABSTRACT

Case report of a fetus with assimetric cerebellar lobes and a hyperechogenic mass adjacent through a mid-gestation ultrasound diagnosis. There was a suspiction of a clot, microcephaly, intrauterine grow restriction (IUGR) and oligoamnios, without other structural abnormalities. The cerebellar anomaly was not confirmed by fetal magnetic resonance imaging (MRI). No etiology was determinated and the couple decided to interrupt the pregnancy. The post-mortem examination confirmed the ultrasound diagnosis.

Keywords: obstetric ultrasound; fetal cerebellar hemorrhage

CASE REPORT

The *in utero* isolated cerebellar hemorrhage is a rare event being that there are only 13 cases reported in the literature[1]. The MRI has been considered an important tool to enhance fetal ultrasonography, especially when diagnosis is uncertain. However, the value of fetal MRI is controversial as the demonstration that dedicated neurosonography is equal to MRI for the diagnosis of fetal brain anomalies[3].

A 32-years-old caucasian woman, *gravida 2 para 0* (previous first trimester miscarriage), 0 Rh +, was brought to the attention of our Department due to a suspected cerebellar hemorrhage detected during the mid-gestation ultrasound.

In our ultrasound unit during 21+5 week´s gestation, it was detected a 10mm x 5mm hyperechogenic cerebellar mass adjacent to the left cerebellar lobe (fig. 1, fig. 2) and the diagnosis of microcephaly, IUGR and oligoamnios was established. No other malformations were noticed. The umbilical, middle cerebral artery doppler and uterine arteries flow analysis were normal.

At this stage the diagnosis of fetal cerebellar hemorrhage was taken into consideration. Maternal serum screening ruled out seroconversion of toxoplasmosis, cytomegalovirus or rubella. Amniocentesis was performed for fetal karyotype and the result was normal. Fetal echocardiography didn´t show functional or structural abnormalities. Our diagnosis was not confirmed by fetal MRI. One week later in the follow-up

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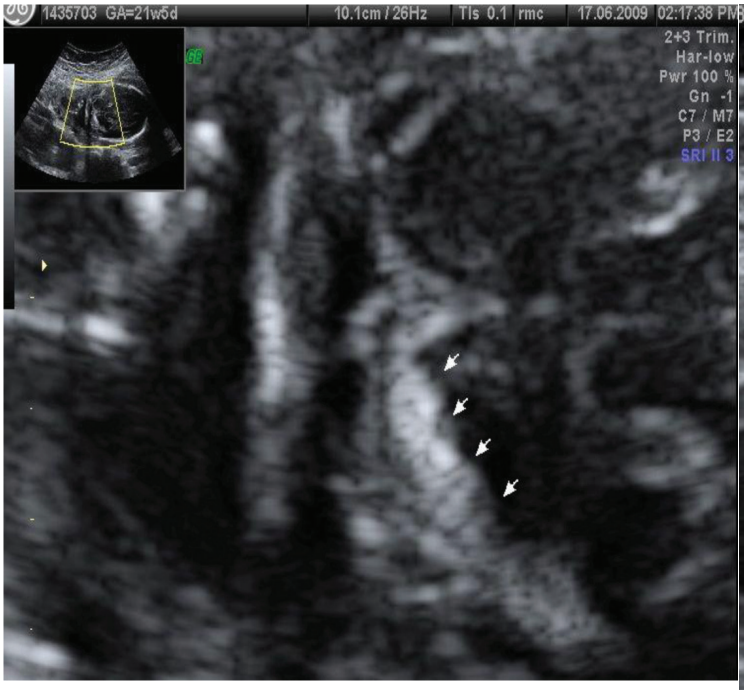

Figura 1

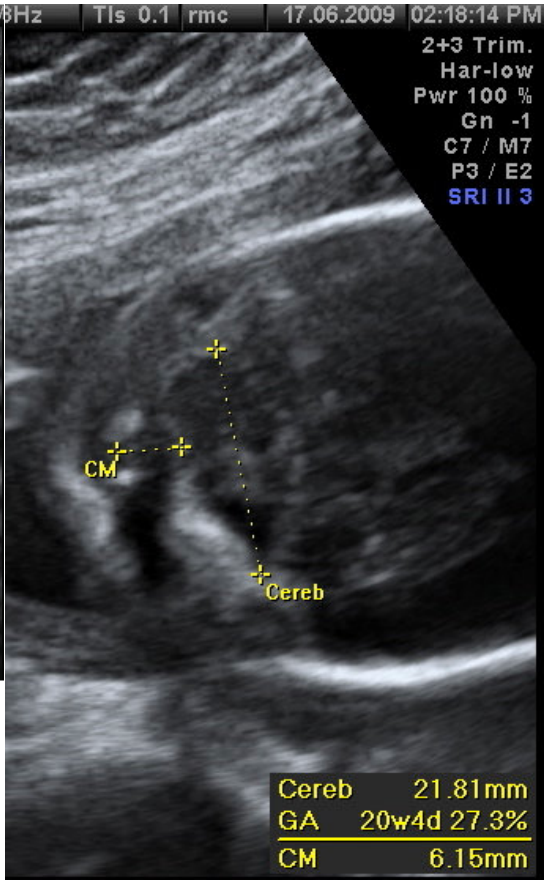

Figura 2

ultrasound, the cerebellar lesion was still detectable. After genetic counseling, and in face of early severe IUGR, the couple decided to terminate the pregnancy, that was performed at 23 +6/7 weeks of gestation. The post-mortem examination confirmed the diagnosis of hemorrhage on the left cerebellar lobe and IUGR. Examination of the placenta revealed villi necrosis and fibrine deposits.

DISCUSSION

The majority of prenatally diagnosed intracranial hemorrhages are located in the supratentorial area[4]. Frequently, bleeding occurs into the subarachoid, subdural or intraventricular spaces, but may also occur within the brain parenchyma. Few cases of prenatal diagnosis of isolated infratentorial hemorrhage, cerebellar parenchyma or subdural space have been reported[5]. In this context, some etiologies have been associated: vascular malformation, neoplasm, congenital infections, alloimmune thrombocytopenia, blood clotting abnormalities and anemic fetus that underwent intrauterine transfusions[1].

Predisposing maternal factors to intracranial fetal hemorrhage are infection, pre-eclampsia, seizures, isoimmune and alloimmune thrombocytopenia, coagulation disorders, drug exposure (warfarin, cholestyramine, aspirin, anticonvulsivants), cocaine abuse, trauma, pancreatitis, placental abruption, fetal vascular anomaly and extreme anemia due to red blood cell alloimunization[6,7,8]. In this case, none of these factors were identified, but an early-onset severe growth restriction was obvious. However, it is unclear the influence of early IUGR as a cause of intracranial hemorrhage[5]. Apparently, acute fluctuations in cerebelar blood flow and arterial blood pressure can occur during asphyxia and can conduct to fetal intracranial hemorrhage, as in neonatal intracranial hemorrhage[9]. Nevertheless, in our case, the umbilical, middle cerebral artery doppler and uterine arteries flow analisys were normal, disclosing as less probable the hypothesis of asphyxia, but cannot exclude an acute event ocurring in early pregnancy.

The sonographic appearance of the cerebellar hemorrhage is variable, but its mostly described as

an hyperchogenic mass within the cerebellum or the entire cerebellar hemisphere[6]. The single cerebellar lesions have other possible diagnoses as tumour-like neuroblastoma or infections *in utero*, very rare when occuring isolated[2]. The ultrasound image of cerebellar hemorrhage can change with time. Recent hemorrhage appearance will be hyperechogenic and later it might turn hypoechogenic. In this case, we found a non-changing appearance hyperechogenic mass on the left cerebellar lobe with no further cerebral malformations.

The use of fetal MRI is controversial. Many centers believe fetal MRI is helpful in evaluation central nervous system, specially posterior fossa lesions[10]. However, Malinger *et al*, showed that dedicated neurosonography is equal to MRI in the diagnosis of fetal brain anomalies. In a 2-year period, they evaluated 42 patients that underwent concomitant neurosonographic and MRI examinations of fetal brain for suspected anomalies. Their results demonstrated a slightly better performance of neurosonography than MRI: sensitivity 96% *vs* 85% and specificity 87% *vs* 80%[3]. In this particular case, the MRI was not a useful tool.

The final diagnosis is established after pathological examination or postnatal follow-up course[2]. The neonate's prognosis comes forth as poor[7], since intracranial hemorrhage carries a high risk for development of hydrocephalus, neurologic delay, cerebral palsy and seizures[11]. However, long-term prognosis is unknow for isolated cerebellar hemorrhage, mainly due to pregnancy terminations soon after the diagnosis[1]. In this case, we had the confirmation of our ultrasound diagnosis without definition of etiology.

This case report demonstrates the importance of an exhaustive evaluation of central nervous system, paying great attention to fossa posterior, since these rare lessions are often of small size and could be unnoticed in the midgestation ultrasound.

REFERENCES

1. M.L Nomura, R. Barini, K.C. Andrade, C. Faro, M. Marins. Prenatal diagnosis of isolated cerebellar hemorrhage associated with maternal septic shock. Prenat. Diagn 2009; 29:169-171
2. R. Sharony, D. Kydron, R Aviram, Y. Beyth, R. Tepper. Prenatal diagnosis of fetal cerebellar lesions: a case report and review of the literature. Prenat Diagn 1999; 19:1077-1080
3. . Malinger, L. Ben-Sira, D. Lev, Z. Ben-Aroya, D. Kydron, T. Lerman-Sagie. Fetal brain imaging: a comparison between magnetic resonance imaging and dedicated neurosonography. Ultrasound Obstet Gynecol 2004; 23:333-340
4. P. Vergani, N. Strobelt, A. Locatelli, G. Paterlini, P. Tagliabue, E. Parravicini, A. Ghidini. Clinical significance of fetal intracranial hemorrhage. Am J Obstet Gynecol 1996; 175:536-543
5. A. Yuksel, C. Batukan. Fetal cerebellar hemorrhage in a severly growrestricted fetus: natural history and differential diagnosis from Dandy-Walker malformation. Ultrasound Obstet Gynecol 2003; 22:178-181
6. G. Gorincour, F. Rypens, C. Lapierre, T. Costa, F. Audibert, Y. Robitaille. Fetal magnetic resonance imaging in the prenatal diagnosis of cerebellar hemorrhage. Ultrasound Obstet Gynecol 2006; 27:78-80
7. J. Ortiz, E. Ostermayer, T. Fischer, B. Kuschel, M. Rudelius, K. Schneider. Severe fetal cytomegalovirus infection associated with cerebellar hemorrhage. Ultrasound Obstet Gynecol 2004; 23:402-406
8. H. Hadi, J. Finley, J. Mallette, D. Strickland. Prenatal diagnosis of cerebellar hemorrhage: Medicolegal implications. Am J Obstet Gynecol. 1994; 170:1392-5
9. Volpe JJ. Neonatal intracranial hemorrhage, N Engl J Med 1981; 304:886-891

O. Glenn, K. Bianco, A. Barkovich, P. Callen, J. Parer. Fetal cerebellar hemorrhage in parvovirus-associated non-imunne hydrops fetalis. J Matern Fetal Neonatal Med. 2007; 20: 769-72

10. DW Bianchi, TM Crombleholme, ME D´Alton. Intracranial hemorrhage. In Fetology: diagnosis and management of the fetal patient, DW Bianchi, TM Crombleholme, ME D´Alton (eds), McGraw-Hill: New York, NY, 2000;147-152