Mirror Syndrome (Ballantyne Syndrome). Report a Clinical Case

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ABSTRACT:
Introduction: Mirror syndrome, or Ballantyne syndrome, first described in 1892, is a rare disorder associated with high maternal and fetal morbidity and mortality. It is characterized by symptoms and signs frequently associated with preeclampsia, resulting in a low diagnosis rate. Its etiology is multifactorial; there is no single specific cause. Treatment must be early and timely due to the high rates of maternal and fetal morbidity and mortality. Objective: To describe a clinical case of mirror syndrome, updating the available information on its clinical presentation. Results: We present the case of an 18-year-old patient with a 34-week pregnancy, highlighting the clinical, imaging, and laboratory findings associated with Ballantyne syndrome. Conclusions: Ballantyne syndrome is a rare,

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multifactorial condition that must be differentiated from preeclampsia and HELLP syndrome. Early management is essential to avoid serious maternal complications.

Keywords: mirror syndrome, fetal death, placenta

INTRODUCTION

Ballantyne syndrome, triple edema or mirror syndrome was first described in 1892 by John W. Ballantyne. Maternal symptoms are very similar to those of preeclampsia, including edema, weight gain, hypertension, elevated liver enzymes, anemia, headache, and visual disturbances which have clinical overlap with preeclampsia (1)(2,3,4)

Previously it was believed that this syndrome was a consequence of an Rh isoimmunization, however, it is now known that its etiology is multiple, among the main ones can be mentioned structural fetal anomalies, viral infections such as parvovirus B19, fetal arrhythmias, among others. It is postulated that the placenta produces toxic agents that cause fluid retention, accompanied by persistent hyperactivity of the syncytiotrophoblast which raises the levels of human chorionic gonadotropin and plasma renin, leading to fluid retention. In addition, the hydropic placenta produces elevated levels of sFIT1 (soluble tyrosine kinase 1) in conjunction with a decrease in angiogenic factors such as free placental growth factor and vascular endothelial growth factor. (5)(2,6,7)

This syndrome can occur during the second and third trimesters of pregnancy, complicating approximately 0.02% of all pregnancies, causes very high perinatal morbidity and resolves with premature delivery or fetal death. To date, very few cases have been reported worldwide, so its diagnosis becomes a real challenge due to the lack of specific diagnostic criteria in the literature. For the reasons mentioned above, the present research arises with the aim of describing a clinical case of mirror syndrome by updating the available information on its clinical presentation.(2,8)(9)

RESULTS

Presentation of the clinical case

An 18-year-old female patient, G0P0A0C0 pregnant at 34 weeks of gestation due to the date of last menstruation who presents edema of the lower limbs and decreased perception of fetal movements, on the day of her admission she went to the hospital emergency room and there was evidence of blood pressure 144/113 mmHg, heart rate 93, positive proteinuria. On physical examination, edema of the lower limbs that leaves a pitting +++/+++ in addition to hyperreflexia in both limbs is striking.

Ultrasound evaluation revealed ascites in the maternal abdominal cavity with absence of movement and heartbeat (Fig. 1); laboratory tests showed hemoglobin 16.9; hematocrit 56.9, urea 44.58, creatinine 0.98, uric acid 6.98, aspartate aminotransferase 211.74, alanine aminotransferase 292.07, LDH 357.67, proteins 3112.28, proteinuria creatinuria index 4.35, TP 10.1, TTP 26.4, albumin 1.67. The patient was reassessed every 20 minutes and in approximately 2 hours there was evidence of blood pressure 146/99, heart rate 115, respiratory rate 27, positive proteinuria, so that due to the fact that her clinical picture did not improve, it was decided to terminate the pregnancy by discharge.

During the transoperative period, there was approximately 1400 ml of ascitic fluid in the abdominal and pelvic cavity of 1400 ml, dense meconium fluid in small quantities, a male newborn without vital signs, macerated weighing

2000 g (fig 2.), in addition to bleeding of approximately 400 cc during the procedure.

Evaluation by ICU was requested, who decided to admit him by imaging compatible with pericardial effusion in ultrasound and right pleural effusion in tomography, he was admitted to the ICU with vital signs, blood pressure 110/74, heart rate 120, respiratory rate 23 and positive proteinuria, in addition to metabolic acidosis, hyperlactatemia and elevated transaminases. In the ICU, antibiotic therapy is handled with piperacillin plus tazobactam 4.5 grams intravenously, due to chorioamnionitis, in addition to antihypertensive management for adequate control of blood pressure figures, it is managed with nifedipine 20 milligrams orally every 6 hours and carvedilol 6.25 milligrams orally every 12 hours. In the ICU, the patient again developed ascites, in addition to dehiscence. In addition, the hydroelectrolyte and protein imbalance was corrected, obtaining favorable results, so it was decided to discharge from the hospital after 14 days of hospitalization with follow-up by gynecology and rheumatology. Vital signs at discharge were blood pressure 116/70, heart rate 72, and respiratory rate 16.

Figure 1 Ascites in the maternal abdominal cavity

Figure 2 Macerated newborn with signs of maceration and edema in limbs

DISCUSSION

Ballantyne syndrome has an incidence that is difficult to determine due to the few reported cases. The etiology is multifactorial, including factors such as chromosomal abnormalities, infections, fetal arrhythmias, and structural abnormalities (aneurysm of the vein of Galen, sacrococcygeal teratoma), although the cause is unknown, it is believed that the edematous placenta plays a determining role in the appearance of maternal edema, mediated by circulating angiogenic factor. This syndrome occurs in women with nonspecific signs and symptoms such as peripheral edema, weight gain, dyspnea, hypertension, headache and visual disturbances. It is based on the association of three signs that can mimic severe preeclampsia: hydrops fetalis of immune or non-immune origin, placental edema and maternal edema with hemodilution that can lead to preeclampsia, generalized edema and rapid weight gain are common symptoms found in 89.3% of reported cases. Fetal hydrops is an essential component of the syndrome, it is classified into immune and non-immune, the former representing about 10% of cases and is associated with the presence of maternal antibodies directed against fetal erythrocyte antigens. Our study describes an 18-year-old woman who presented edema of the lower limbs and decreased perception of fetal movements, accompanied by blood pressure 144/113 mmHg, which led to a diagnosis of preeclampsia. In addition, paraclinics revealed alterations in the liver profile which led to a diagnosis of incomplete Hellp syndrome. Ultrasound findings revealed abnormalities such as ascites in the maternal abdominal cavity with absence of fetal movements, absence of heartbeat, and oligohydramnios. (10) (1)(8,11,12)(13)

At diagnosis, the average gestational age ranges from 16 to 34 weeks. In our case, the diagnosis was made at 34 weeks. Unlike preeclampsia, hemodilution is almost always seen in Ballantyne syndrome. At the paraclinical level, Ballantyne syndrome usually presents with maternal hemodilution characterized by low hematocrit and hypoalbuminemia. Our patient during her first day of hospitalization had a hematocrit of 56.9%, which suggested preeclampsia, which occurs with hemoconcentration, however, in 24 hours hemodilution occurred with a hematocrit of 39.7%. On the other hand, he also had hypoalbuminemia (Albumin 1.67). (8)(10)(5)

In Ballantyne syndrome, the prognosis for the fetus and the mother is critical, so management requires immediate medical attention with early and specific interventions, based on the identified etiology of hydrops fetalis, to avoid complications such as organ failure or eclamptic crises. In our case, it was decided to terminate the pregnancy due to the poor fetal prognosis and the risks to maternal health, resulting in a newborn without vital signs, macerated, male sex weighing 2000 grams, presence of ascitic fluid in the abdominal and pelvic cavity of 1400 ml, and presence of dense meconium fluid in small quantities. In addition, the liver was examined, which has macroscopically normal characteristics. (14,15)

In the study by Han et al., it was shown that maternal morbidity was high (85.7%), with postpartum hemorrhage occurring in 50% of patients, in addition to two-thirds of the patients in the study required transfusion of blood products and almost half were admitted to the ICU due to acute maternal heart failure, pulmonary edema or disseminated intravascular coagulation. Our patient presented with chorioamnionitis, so accompanied by her poor control of blood pressure figures, it was decided to admit her to the ICU. He received antibiotic treatment with piperacillin plus tazobactam 4.5 grams every 6 hours, and antihypertensive therapy for the management of blood pressure. (14)

CONCLUSIONS

Ballantyne syndrome is multifactorial and there is no specific cause, in the maternal-fetal binomial, the placenta produces toxic agents, together with the hyperactivity of the syncytiotrophoblast, elevates human chorionic gonadotropin and plasma renin, with fluid retention.

Mirror syndrome is classified as a rare pathology, combining clinical findings of preeclampsia with

severe fetal anomalies. For its diagnosis, it is essential to differentiate it from preeclampsia and HELLP syndrome.

The presence of hemodilution and hypoalbuminemia is essential for its diagnosis, however, sometimes it does not usually present at the beginning, as happened in the present case.

Management is with early and specific interventions, with the termination of pregnancy being the accepted one to avoid serious maternal complications such as organ failure, eclamptic crises, postpartum hemorrhage or disseminated intravascular coagulation, in the Intensive Care Unit (ICU).

Conflict of interest

The authors declare that they have no conflict of interest related to the study.

Informed consent

The patient signed the informed consent

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