INTERNATIONAL JOURNAL OF PRACTICAL NURSING
RECEIVED ON 21.07.2016, **ACCEPTED ON** 10.08.2016

VOLUME 4 NUMBER 3 SEPTEMBER - DECEMBER 2016
DOI: http://dx.doi.org/10.21088/ijpn.2347.7083.4316.5

REVIEW ARTICLE

Maternal Mirror Syndrome

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Abstract

Water retention in a pregnant woman can mirror fetal hydropic changes. This clinical presentation has been named "mirror syndrome." Awareness of the syndrome is important due to the associated fetal and maternal risks. Mirror Syndrome is a preeclamptic -like disease characterized by fetal or placental hydrops, maternal anemia, edema, hypertension, liver dysfunction, and poor fetal outcome. It is called Mirror Syndrome because the maternal pathology mirrors that of the fetus. This is a rare condition whose etiology is not known. Mirror syndrome can lead to significant maternal and fetal complications.

Keywords: Mirror Syndrome; Preeclampsia; Ascites; Hydrops.

Introduction

Mirror syndrome or triple edema syndrome is a rare and dangerous disorder affecting pregnant women.

It describes unusual association of fetal and placental hydrops with maternal edema. It was first described in 1882 by John William Ballantyne. Awareness of the syndrome is important due to associated fetal and maternal risks. Maternal mirror syndrome occurs when a pregnant woman has excessive accumulation of fluid in two or more fetal compartments.

The mother suffers the same symptoms as the sick fetus. The syndrome is dangerous for both the expectant mother and her fetus. There have been cases in which the fetus died. The mother must receive urgent treatment from medical professionals which could include an emergency Cesearean section.

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Definition

Mirror syndrome or triple oedema or Ballantyne syndrome is a rare disorder affecting pregnant women. It describes the unusual association of fetal and placental hydrops with maternal preeclampsia. The name "mirror syndrome" refers to the similarity between maternal oedema and fetal hydrops.

Causes

Mirror Syndrome is usually caused by fetal hydrops, which is the collection of fluid in the fetus. The fluid can build up beneath the skin, in the stomach, around the lungs, or around the heart.

Fetal Hydrops may be Caused by:

- Heart problems
- Metabolic disorders
- Anemia
- Infections
- Genetic syndromes

The etiology may be any of the variety of obstetric problems.

- Immunological disorders
- Rh-isoimmunization
- Fetal infections
- Metabolic disorders, and
- Fetal malformations.
- Ballantyne syndrome can result from the maternal reaction to a fetus that has hemoglobin Bart's disease due to inherited double thalassemia trait from both parents.
- Twin-to-twin transfusion syndrome is another possible cause of hydrops. The fluid buildup will likely be seen and diagnosed during an ultrasound.
- These problems with the fetus can lead to the preeclampsia symptoms in the mother. She may also experience fluid build up in the lungs.

Pathogenesis

The etiopathogenetic mechanism of Ballantyne syndrome remains unknown.

The pathogenesis of mirror syndrome has not been elucidated, although a placental origin seems likely. Placental ischemia is presumed to be central to the development of preeclampsia, and in mirror syndrome, it may develop secondary to the edema characteristic of the disease. Placental ischemia is thought to initiate the cascade mediated by antiangiogenic factors which may lead to the sequelae of both disorders. Further research into elevations of serum markers of placental dysfunction is needed to better elucidate the underlying etiology of mirror syndrome

Signs and Symptoms

Ballantyne syndrome has several characteristics:

- Edema, always a key feature
- Albuminuria of the mother, usually mild
- Preeclampsia, unusual
- High blood pressure
- Excessive weight gain over a short time
- The fetal symptoms are related to fluid retention, including ascites and polyhydramnios. Fetal hydrops suggests the presence of an important and probably fatal fetal pathology.
- It can be associated with twin-to-twin transfusion syndrome.
- One sign that signals mirror syndrome is hemodilution, which is found during a blood test. Hemodilution is when there is more plasma in the blood and a lower amount of red blood cells. It is usually caused by an increase of fluid.

Diagnosis

Although the exact etiopathogenetic mechanism of Ballantyne syndrome remains unknown, several authors have reported raised uric acid levels, anemia, and low hematocrit without hemolysis.

Differential Diagnosis

The problem of distinguishing (or not) between Ballantyne syndrome and preeclampsia is reflected in the diversity of terminology used and in the debate that surrounds the subject. It seems much more likely that an etiology of severe fetal hydrops may cause Ballantyne syndrome when the fetal status greatly worsens and that the syndrome is only a manifestation of the extreme severity of the fetus-placental pathology. Platelet count, aspartate transaminase, alanine transaminase, and haptoglobin are usually unaffected and may be used to distinguish mirror syndrome from HELLP syndrome

Treatment

In most cases Ballantyne syndrome causes fetal or neonatal death and in contrast, maternal involvement is limited at the most to preeclampsia.

Having highly experienced clinical staff available who can recognize and manage complex or rare conditions offers hope for treatment.

If the cause of fetal hydrops is known and can be treated in the womb, the symptoms may clear up for mom and baby for the remainder of the pregnancy. In many cases, as with preeclampsia, immediate delivery is recommended to protect the mother's health. Symptoms in the mother will disappear within a few days.

After delivery, neonatal intensive care unit (NICU) staff will work to determine the cause of hydrops and treat the infant whenever possible.

Case Reviews

Vidaeff AC, Pschirrer ER, Mastrobattista

JM, Gilstrap LC, Ramin SM in their case report concluded that along with 19 reviewed in the literature, reiterate the features of mirror syndrome and provide an opportunity to dispel some of the misconceptions in the literature. The condition is frequently mistaken for preeclampsia, although distinguishing characteristics can be identified. Mirror syndrome is a manifestation of extremely severe fetal hydrops. When the specific cause of fetal hydrops cannot be identified and corrected, immediate delivery is necessary in order to avoid fetal death and maternal complications.

Sheryl Banner, Dawn Crossan (2013) described, "Mirror Syndrome In Pregnancy: "Two Patients-One Disease" Concluded First described in 1892 by John W. Ballantyne, Mirror Syndrome is a preeclamptic - like disease characterized by fetal or placental hydrops, maternal anemia, edema, hypertension, liver dysfunction, and poor fetal outcome. It is called Mirror Syndrome because the maternal pathology mirrors that of the fetus. This is a rare condition whose etiology is not known. Fewer than 25 cases were reported in the literature prior to 2007 (Braun, T et al). Some of the potentially critical maternal sequelae of Mirror Syndrome include pulmonary edema, ARDS, pericardial effusions and renal failure. Careful evaluation is needed to differentiate between preeclampsia and Mirror Syndrome, because the maternal morbidity may be more extensive.

Kate E. Oliver, Kimberly W. Hickey, and Scott M. Petersen (2012) in their case report, "Spontaneous Resolution of Mirror Syndrome following Demise of Hydropic Twin" stated Maternal mirror syndrome is a rare consequence of fetal hydrops. By convention, delivery is recommended in pregnancies complicated by mirror syndrome due to grave fetal prognosis. We describe a case of a dichorionic, diamniotic twin gestation complicated by hydrops fetalis of twin B. The patient declined selective feticide. Two weeks later, intrauterine fetal demise of fetus B was diagnosed and complete resolution of mirror syndrome followed. Unaddressed, mirror syndrome can lead to significant maternal and fetal complications.

Thorsten Braun et.al (2010) in their study, "Mirror Syndrome: A Systematic Review

of Fetal Associated Conditions, Maternal Presentation and Perinatal Outcome" found that Among 151 publications a total of 56 reported cases satisfying all inclusion criteria were identified. Mirror syndrome was associated with rhesus isoimmunization (29%), twin-twin transfusion syndrome (18%), viral infection (16%) and fetal malformations, fetal or placental tumors (37.5%). Gestational age at diagnosis ranged from 22.5 to 27.8 weeks of gestation. Maternal key signs were edema (80–100%), hypertension (57–78%) and proteinuria (20–56%). The overall rate of intrauterine death was 56%. Severe maternal complications including pulmonary edema occurred in 21.4%. Maternal symptoms disappeared 4.8–13.5 days after delivery.

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