

Premature Rupture of Membranes: Associated with Twin Pregnancy

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ARTICLE INFO

Received: 📅 August 14, 2021

Published: 📅 August 31, 2021

Citation: Dagoberto Benítez Díaz, William Andrés Jaramillo Cabrera, Vanessa de Jesús Burgos Doria, Fabio Enrique Pacheco Londoño, Tatiana Betancur Pérez, et al., Premature Rupture of Membranes: Associated with Twin Pregnancy. Biomed J Sci & Tech Res 38(3)-2021. BJSTR. MS.ID.006161.

SUMMARY

This systematic review was carried out in order to find new evidence demonstrating the relationship between premature rupture of amniotic membranes during the development of twin pregnancies. Among the main elements that we can rescue, is that this complication that appears in the gestation process is strongly linked to some elements that make it particularly important and that brings with it the appearance of threats of preterm births or neonatal sepsis among its main complications.

Keywords: Premature rupture of membranes; Ovarian membranes; Twin pregnancy complications

Introduction

The routine control of a pregnant woman is increasingly important in the fields of obstetric gynecology. The main function of prenatal controls is to prevent women from suffering alterations during this period by identifying the risk factors associated with the development of pathological conditions and modifying them, if possible, if they are not modifiable, they allow taking precautionary measures during their condition. Premature rupture of membranes (PROM) is one of the most common complications in pregnant

women, mainly during the third trimester; affecting 3-4% of all pregnant women. At the public health level, it is classified as a gynecological-obstetric emergency, which is why it is important to provide a comprehensive approach aimed at reducing the maternal-fetal mortality rate and avoiding preterm delivery. PROM is defined as the spontaneous disruption of the ovular membranes, after 21 weeks of the gestation period, up to one hour before the onset of labor. When it occurs before 37 weeks of gestational age, it is known as Preterm Premature Rupture of Membranes (pPRM).

The amniotic or ovular membranes appear in a strict maternal-fetal relationship from 14-15 weeks and are the only barrier that exists in the third trimester between the external environment and the product, they have very important and particular functions such as protecting and containing amniotic fluid at adequate levels so that the pregnancy remains viable, in the case of a rupture the amniotic fluid begins to come out, causing oligohydramnios which in many cases can end in the termination of pregnancy, it also plays an important role in the electrolyte transport and exchange and decreases bacterial growth. Twin gestation is a condition constantly observed in our population, the recognition of recent evidence that relates twin gestation and the appearance of PROM allows the development of prevention strategies and necessary measures to prolong the gestation period and avoid preterm delivery.

Materials and Methods

A bibliographic search was carried out that spanned from 2017 to 2021 in the databases PubMed, Elsevier, scielo, Update, Medline, national and international libraries. We use the following descriptors: premature rupture of membranes, premature delivery, twin pregnancy, premature labor. The data obtained oscillate between 16 and 60 records after the use of the different keywords. The search for articles was carried out in Spanish and English, it was limited by year of publication and studies between 2017 and 2021 were used. The main exclusion criteria were articles that had more than 5 years of publication.

Results

The cause of premature rupture of membranes at the limit of fetal viability (after 24 weeks of gestational age) is varied, having as risk factors cervical incompetence, the use of cerclage, tobacco consumption, history of preterm delivery and / or rupture of membranes in previous pregnancies, decreased body mass index, low socioeconomic status, presence of bleeding in the second and third trimesters, nutritional deficiencies, uterine over-attendance due to polyhydramnios or twin pregnancy. Localized infections in external components such as the cervix, or internal intrauterine structures can cause loss of continuity of the ovular membranes [1]. Twin pregnancy, defined as the gestation of two fetuses within the uterus, is associated with a higher probability of maternal-fetal complications, a 3-fold higher risk of pre-eclampsia, preterm delivery, premature detachment of the placenta, pyelonephritis, postpartum hemorrhage, and premature rupture of membranes [2].

The cause of this obstetric-gynecological condition is unknown, but it is associated with multiple pathologies causing 25-30% of premature births, which is why it is considered the main cause of prematurity and maternal mortality. Over the years, findings have been mentioned in areas of rupture that show extremely altered

points of morphology: collagen II deficiency, edema with deposits of fibrinoid material, thinning of the trophoblastic and decidual layers and the development of contractions due to the presence of deposits of prostaglandins E2 and F2, product of decidual cells and the presence of bacteria [3].

This prelude to a neonatal emergency brings severe consequences and complications such as: chorioamnionitis, neonatal sepsis due to colonization of microorganisms in the amniotic fluid, prematurity and even fetal death. It is characterized by having an affinity for women at the extremes of childbearing age, a prevalence in women with comorbidities and a significant history of abortions (spontaneous or induced), and high levels of morbidity and mortality due to prematurity in multiple or twin pregnancies [4]. The relationship between twin pregnancy and PROM has not been demonstrated, however it is related to an estimated incidence of 5-8% according to the WHO. Representing the premature rupture of membranes 3% in Newborns as a result of twin pregnancies and 12% of perinatal deaths [5].

As the incidence of twin pregnancy increases, there are numerous complications associated with perinatal morbidity and mortality. One of the factors that could possibly affect and impact the most is obesity; the elevated body mass index typical of twin pregnant women was associated with a higher risk of premature rupture of the membranes, associated with uterine over-attendance; myometrial distention increases myometrial contractility, releases prostaglandins, and positively regulates oxytocin receptors, which are involved in the cascade of events that have been identified in the development of PROM [6]. Through this thematic review, it was shown that premature rupture of membranes has a very significant incidence during the development of a twin pregnancy and implies a significant cause of perinatal morbidity and mortality. In order to cope with this problem, it is important to know the risk factors that predispose to this disease, as well as the possible complications that can develop depending on the management. The diagnosis is fundamentally clinical, which is why it is of the utmost importance to carry out an adequate clinical history that allows the patient's symptoms and signs to be concisely established and, depending on the case, complementary diagnostic tests can be added to help clarify the clinical picture if there are doubts [4-6].

Discussion

Over the past 25 years, the rates and numbers of twin and higher-order births in the United States have increased at an unprecedented rate [7]. As the incidence of twin pregnancy increases, it is also observed that both maternal and perinatal complications increase, associated with perinatal morbidity and mortality [8]. Currently, recent evidence is recognized that relates this obstetric circumstance with the appearance of premature

rupture of membranes, so determining its association in our environment allows us to develop prevention strategies and adopt necessary measures with those pregnant women with a greater probability of developing rupture of the membranes. membranes with a reduction in the risk that this implies for the mother-fetus binomial.

Markus L et al. in Tanzania in 2013 who recognized the association between twin gestation and the risk of developing premature rupture of membranes, in a retrospective cohort study observing that the frequency of premature rupture of membranes was 11% in the exposed group. twin gestation and only 4% in the single gestation group ($p < 0.05$) [9]. The study by Vogel J, et al in Brazil in 2014 who identified the association between twin gestation and the risk of developing premature rupture of membranes in 279,425 pregnancies, observing that the frequency of premature rupture of membranes was 9% in the exposed group and 3% in the unexposed group: ($p < 0.05$) [10]. Finally, it is worth highlighting what was found by Chiwanga E et al. in Tanzania in 2014 who recognized the influence of twin gestation regarding the appearance of obstetric morbidity, in a prospective cohort study in 1644 pregnancies, observing that the frequency of premature rupture of membranes was 4% in the exposed group and 1% in the non-expects group, (OR = 5.6; 95% CI: 4.2-7.4) [11].

Conclusion

In twin pregnant women, the timely diagnosis of PROM is based on the constitution of a thorough medical history, physical examination with speculum, nitrazine test, crystallographic study and tests based on the determination of biomarkers. The recognition of social, economic, anatomophysiological and environmental risk factors, allow the adequate therapeutic approach. However, it is important to take into account the characteristics of each pregnant woman individually since, based on this, it will be decided on the schemes already established for the management of PROM and prolongation of pregnancy or timely termination of the pregnancy if none is viable. of the approaches.

Currently in Colombia two types of management are used for premature rupture of membranes: an active management that consists of the induction of labor and expectant management that consists of hospitalization for surveillance for a period of time the risk of infection, detachment of the placenta, understanding of the umbilical cord, check fetal well-being and labor. The early approach with antibiotics, corticosteroids, and magnesium sulfate continues to be the cornerstone in twin pregnancies in which pregnancy prolongation is feasible. At the moment, there is still a great need

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Competing Interests

There was no competing interest among the authors.

References

1. Monge Acuña T (2017) Ruptura prematura de membrana. Revista Médica Sinergia 2: 3-6.
2. Meller D, Carducci D, Ceriani D (2018) Ruptura prematura de membranas en nacimientos de pretermino. Revista Argent Pediatr 116: 575-581.
3. Alfredo ovalle S (2007) Y cols rev chil obstet ginecol 72.
4. Loeb LJ, Kecia Gaither K, Woo KS, Mason TC (2006) Outcomes in Gestations between. South Med J 99(7): 709-712.
5. Ramos-Urbe W (2020) Factores maternos de riesgo asociados a ruptura prematura de membranas. Rev méd panacea 9(1): 36-42.
6. Kibel M, Barrett J, Tward C, Pittini A, Kahn M, et al. (2017) The natural history of preterm premature rupture of membranes in twin pregnancies. J Matern Fetal Neonatal Med. 3 de agosto de 30(15): 1829-1835.
7. Cunningham G, Mc Donald P, Gant N (2011) Williams Obstetricia 23a edición. Editorial: McGraw-Hill. Año PP. 859-885.
8. Dodd J, Crowther C (2012) Specialized antenatal clinics for women with a multiple pregnancy for improving maternal and infant outcomes. Cochrane Database Syst Rev 8: 23-28.
9. Markus L (2013) Maternal and perinatal outcome among multiple pregnancies delivering at Bugando Medical Centre and Sekou Toure Regional Hospital in Mwanza, Tanzania Tesis. Tanzania.
10. Vogel J, Torloni M, Seuc A, Betrán A, Widmer M (2013) Maternal and perinatal outcomes of twin pregnancy in 23 low-and middle-income countries. PLoS One 8(8): 70-75.
11. Chiwanga E, Massenga G, Mlay P, Obure J, Mahande M (2014) Maternal outcome in multiple versus singleton pregnancies in Northern Tanzania: a registry-based case control study. Asian Pacific Journal of Reproduction 3(1): 46-52.

ISSN: 2574-1241

DOI: 10.26717/BJSTR.2021.38.006161

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