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Neonatal Outcomes in Pregnant Women Complicated with Immune Thrombocytopenic Purpura

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Abstract

Background: Maternal antibodies that interact with both maternal and fetal platelets cause autoimmune thrombocytopenia. This happens in autoimmune diseases of the mother, such as immune thrombocytopenia purpura (ITP).
Objective: The aim of the study was to evaluate the treatment and prognosis of newborns whose mothers had ITP.
Methods: A multi center prospective study was carried out at the Duhok Obstetrics and Gynaecology Teaching Hospital and Kurdistan Private Hospital in Iraqi Kurdistan between November 2016 and November 2022. The requirements for inclusion were all expectant mothers with verified ITP diagnoses. Every newborn was monitored in the neonatal intensive care unit and had their thrombocytopenia assessed on their first day of life. Maternal age, parity, diagnosis time, history of previous splenectomy, platelet count at delivery and in the early stages of pregnancy, propensity for bleeding throughout pregnancy, treatment for ITP, and method of delivery based on obstetric circumstances were all noted. the baby's gender, gestational age at delivery, the neonatal platelet count at birth, haemorrhage, and thrombocytopenia therapy. Nominal variable statistics were expressed.
Results: 25 neonates delivered by pregnant mothers with ITP during the trial period were all included in the analysis. The ITP patients' mothers were between 23 and 33 years old. There were 14 (56%) multigravida cases and 11 (44%) primigravida cases. Prior to three years of pregnancy, just one (4%) instance had a history of splenectomy. The mother's platelet count at delivery was less than 50 × 109/L in 7 (28%) cases. Thirteen (52%), utilised corticosteroids. Ten (40%) of the deliveries were caesarean sections. Two (8%) cases had gestational ages between 33 and 36.6 weeks, whereas 23 (92% of cases) had gestational ages between 37 and 38 weeks. In 12 (48%) cases, the birth weight ranged from 1200 to 2500 kg, whereas in the other cases, it was between 250 and 3300) kg in 13(52%) cases the new-born baby's gender was male. Twelve (48%) of the newborns had thrombocytopenia. Just three cases (about 25%) needed medical attention.
Conclusion: Pregnancy counselling is necessary for a woman with a history of ITP in order to maximise her platelet count. While serious bleeding is uncommon in neonates with maternal ITP. Corticosteroids are an effective therapeutic option for both the mother and the new-born.

Keywords: Immune Thrombocytopenia Purpura; Corticosteroid; Neonatal Thrombocytopenia

Abbreviations: SLE: Systemic Lupus Erythematosus; ITP: Immune Thrombocytopenia Purpura; IVIG: Intravenous Immune Globulin.

Introduction

Aplatelet count of less than 150,000/microL is considered neonatal thrombocytopenia. Nevertheless, platelet counts below the established normal range can occur in healthy preterm and term babies [1-3]. There are two main categories of reasons for new-born thrombocytopenia: those resulting from either decreased or enhanced platelet production. Increased platelet breakdown is the most common cause of neonatal thrombocytopenia. About 50 to 75 percent of new-borns have a known aetiology of thrombocytopenia, according to case reports [4,5]. Thrombocytopenia, a condition caused by an underlying immunologic process known as autoimmune thrombocytopenia, is one of the factors contributing to increased platelet destruction in neonates, especially in the early neonatal period and notably in otherwise healthy babies. Maternal antibodies cross the placenta and in induce this [6].

Autoimmune thrombocytopenia is mediated by maternal antibodies that react with both maternal and foetal platelets. This happens in cases of systemic lupus erythematosus (SLE) and immune thrombocytopenia purpura (ITP), two autoimmune diseases that affect mothers. Maternal thrombocytopenia and the mother's medical history typically indicate the diagnosis. After a splenectomy, the affected mothers platelet counts could be normal if there is enough compensatory thrombopoiesis. ITP is only diagnosed when all other potential causes of thrombocytopenia have been ruled out. Consequently, gestational thrombocytopenia and ITP cannot be differentiated in a pregnant woman with mild thrombocytopenia (platelet count of 100,000 to 150,000/microL). In these patients, the diagnosis of GT is far more likely than that of ITP since the frequency of GT is 100 times higher during pregnancy than the frequency of ITP.

Neonatal thrombocytopenia can be the presenting indication of an autoimmune condition hence mothers of new-borns with unexplained thrombocytopenia should be checked for the illness [7].

Babies who are affected usually have no other health issues. Bruising, bleeding, and petechiae are among the clinical symptoms that are consistent with moderate to severe thrombocytopenia. Ninety percent of new-borns with ITP have platelet counts that are either normal or safe (>50,000/microL) [8]. Infants delivered to moms with ITP frequently experience a significant drop in platelet counts in the first few days following delivery. Between two and five days of age is when the nadir usually happens [9].

When breastfed infants of ITP mothers were older than four months, persistent neonatal thrombocytopenia was noted. When breastfeeding was stopped, thrombocytopenia appeared to be resolved. This condition appears to be caused by the transmission of antiplatelet antibodies of the immunoglobulin A (IgA) type in the milk of affected mothers [10]. The degree of thrombocytopenia, the infant's clinical state, and the risk of bleeding all influence postnatal care. Infants with clinical bleeding or very severe thrombocytopenia receive a platelet transfusion. However, as autoantibodies typically react with all donor platelets, including the mother's, transfusions might not be as successful as in new-borns with thrombocytopenia from other causes.

Infants with severe thrombocytopenia should receive intravenous immune globulin (IVIG) at a dose of 1 g/kg (repeated if required), as this usually results in a prompt response. Long-term monitoring is necessary for neonatal thrombocytopenia caused by maternal ITP, which can linger for weeks or months. A second IVIG dosage may occasionally be needed four to six weeks following delivery. Some clinicians use a brief course of oral prednisone (2 mg/kg per day) or methylprednisolone (1 mg/kg per day) for five days if thrombocytopenia is severe and persists following IVIG therapy; however, the effectiveness of this treatment has not been shown [11,12].

Patients and Methods

Between November 2016 and November 2022, a multicenter prospective study was carried out at the Duhok Obstetrics and Gynaecology Teaching Hospital and the Kurdistan Private Hospital in Iraqi Kurdistan. The Duhok Obstetrics and Gynaecology Teaching Hospital's Committee for Scientific Research gave its approval for this work. All participants provided written informed consent, which was collected. There were twenty-five pregnant women with ITP in the study.

All expectant mothers with verified ITP diagnoses from internists or hematopathologists met the inclusion criteria. The standard criteria used to define maternal ITP were as follows: no other known causes of thrombocytopenia, such as gestational thrombocytopenia, viral infections, sepsis, (HELLP) syndrome, drug-induced thrombocytopenia, and autoimmune disorders like systemic lupus erythematosus; normal or increased megakaryocytes at bone marrow examination; and absence of other known causes of thrombocytopenia. The research did not include any multiple gestations. The study also included mothers who had a splenectomy for thrombocytopenia and whose platelet counts returned to normal following the procedure.

All new-borns were monitored in the neonatal intensive care unit and assessed for thrombocytopenia on their first day of life. Venous blood samples were taken. A platelet count of more than 150 × 109/L was considered normal. Platelet counts in new-borns between 100 × 109/L and 150 × 109/L are indicative of "mild thrombocytopenia," 50 × 109/L and 100 × 109/L of "moderate thrombocytopenia," and less than 50 × 109/L of "severe thrombocytopenia." Cranial ultrasonography was used to seek for intracranial bleeding. Maternal age, parity, diagnosis date, history of previous splenectomy, platelet count at delivery and in the early stages of pregnancy, propensity to bleed during pregnancy, treatment for intrauterine growth platelets (ITP), and method of delivery based on obstetric conditions were all noted. Gestational age at delivery, neonatal birth weight, gender of the baby, neonatal platelet count at birth, haemorrhage ,therapy for thrombocytopenia and incidence of intracranial (ICH). Statistical analysis for nominal variables, data were gathered, tabulated, and descriptive statistics were presented as numbers and percentages (%).

Results

Twenty-five pregnant women with ITP gave birth to 25 neonates between November 2016 and November 2022; these babies were included in the study. (Table 1) summarises the baseline features of ITP pregnant women. The ITP patients' mothers ranged in age from 23 to 33 years old. There were 14 (56%) multigravida cases and 11 (44%) primigravida cases.

Maternal Characteristics	Values
Maternal age (years)	(23-33)
Parity	
Primigravida Multigravida	11(44%) 14(56%)
Diagnosis of ITP	
Before pregnancy During pregnancy	19(76%) 6(24%)
Splenectomy	1(4%)
Thrombocytopenia	
Severe Moderate Mild	7(28%) 10(40%) 8(32%)
Petechiae	5(20%)
Treatment type	
Corticosteroids platelet transfusion	13 (52%) 1 (4%)
Mode of delivery	
Vaginal delivery Caesarean delivery	10 (40%) 15 (60%)
PPH	0(0%)
Maternal death	0(0%)

Table1: The baseline features of ITP pregnant women (n = 25). Numbers representing nominal variables (percent)

ITP was discovered prior to pregnancy in 19 instances (76%) and during the pregnancy in 6 cases (24%). Out of all the cases, only one (4%) had a history of splenectomy before three years of pregnancy. Maternal platelet counts at delivery were less than 50 × 109/L in 7 (28% of cases), 149–49 × 109/L in 10 (40%) cases, and more than 150 × 109/L in 8 (32%). Only 5(20%) of the individuals exhibited a tendency to bleed during pregnancy in the form of petechiae, and they were all diagnosed with ITP prior to becoming pregnant.

Thirteen cases (52%) took corticosteroids to boost the platelet count, and just one instance (4%) needed platelet transfusions during delivery. In 10(40%) of the instances, a caesarean birth occurred, and in 15(60%) of the cases,

a vaginal delivery. There were no documented incidents of maternal deaths or postpartum haemorrhages. (Table 2) summarises the new-born features and outcomes for pregnant women who underwent ITP. Twenty-five new-borns were born.

Neonatal characteristics	Values
Gestational age	
(33-36.7)weeks	2 (8%)
(37-38)weeks	23 (92%)
Birth weight	
(1200-2500) kg	12 (48%)
(2501-3300) kg	13 (52%)
Gender	
Male	16(64%)
Female	9(36%)
Thrombocytopenia	12(48 %)
Severe	1(8 %)
Moderate	3(25 %)
Mild	8(66 %)
Petechiae	2(16 %)
ICH	(%0)0
Treatment	
Platelet transfusion	1(8 %)
Corticosteroids	3(25 %)

Table 2: The new-born features and outcomes for pregnant women who had ITP (n = 25). Numbers representing nominal variables (percent)

In two cases (8%) the gestational age was between 33 and 36.6) weeks, but in 23 cases (92%), it was between 37 and 38 weeks. In 12 (48%) cases, the birth weight fell between 1200 and 2500 kg, whereas in 13 (52%) cases, it fell between 2501-3300 kg. In 16 (64%) cases, the newborn baby's gender was male, and in 9 (36%) cases, it was female.

On the first day following birth, thrombocytopenia was found in 12 (48%) of the newborns; however, no thrombocytopenia was seen during the follow-up. Eight cases (66%) had mild thrombocytopenia (100×109/L–150×109/L), three cases (25%) had moderate thrombocytopenia (50×109/L–100×109/L), and only one (8%) case had severe thrombocytopenia (less than 50 ×109/L). Petechiae were present in just two cases (16%), and no cases of neonatal (ICH) were found.

If a new-born exhibited significant thrombocytopenia or bleeding tendencies, therapy was decided upon. Methylprednisolone treatment at a dose of 1 mg/kg/day was necessary in just 3 cases (25%) and platelet transfusion was necessary in 1 case (8%). In all other cases, thrombocytopenia cleared on its own without the need for further treatment.

Discussion

An obstetrician, clinical haematologist, anaesthetist, and neonatologist must work as a multidisciplinary team to treat ITP during pregnancy; the course of treatment is contingent upon the patient's risk of bleeding. To ensure a safe platelet count during birth, pregnancy planning is necessary [13]. According to our data, 48% of new-borns had thrombocytopenia, with mild, moderate, and severe cases occurring in 66%, 25%, and 8% of cases, respectively. In a single study There were sixty-seven new-borns in all; 50.7% of them had thrombocytopenia, and 29.9% of them had severe thrombocytopenia (less than 50 × 10(9) /l) [9]. According to a different study, 3.7% of new-borns born to moms with ITP experienced cerebral haemorrhage and 18.5% of them had severe thrombocytopenia [14].

52% of the new-borns in this research had thrombocytopenia treated. According to one study, neonatal thrombocytopenia was treated in 33% of new-borns [15]. Only two of the neonates in our study experienced petechiae-related bleeding, and none of them experienced serious bleeding; earlier research [16,17] has revealed comparable results. The rate of caesarean delivery in our study was 60%, which was greater than the study's findings [18]. Because the manner of birth was solely based on obstetric concerns, it has been demonstrated that the incidence of neonatal cerebral bleeding were identical in both vaginal and caesarean deliveries [19]. No instances in our analysis had ICH, which is consistent with another study [20]. According to reports, the risk of ICH is unrelated to the delivery method and is solely dependent on obstetrical indications [21,22]. While one study revealed a higher prevalence of premature birth in pregnancies with ITP [23] our investigation identified no risk of preterm delivery in pregnancies with ITP. Our study's tiny sample size was one of its limitations.

Conclusion

Pregnancy counselling is necessary for a woman with a history of ITP in order to maximise her platelet count. While serious bleeding is uncommon in neonates with maternal ITP, follow-up care is crucial since medication may be necessary to prevent severe haemorrhage. Corticosteroids are an effective therapeutic option for both the mother and the new-born.

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