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GESTATIONAL THROMBOCYTOPENIA: CASE REPORT AND APPROACH TO DIAGNOSIS

Haematology

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ABSTRACT

Thrombocytopenia (TCP) is a frequent observation in term obstetric populations. The majority of newly diagnosed instances of TCP are mild, asymptomatic, and discovered during regular prenatal screening. The diagnosis and treatment of thrombocytopenia during pregnancy and postpartum can be difficult due to the numerous potential reasons, some of which are directly related to the pregnancy and others that are not. There are no diagnostic laboratory tests for many of the causes. Management choices may carry the risk of major consequences for both mother and foetus, necessitating prompt delivery decisions, and there may be worries about foetal thrombocytopenia. Gestational thrombocytopenia (GT), preeclampsia,HELLP syndrome, and immune-mediated thrombocytopenia are common causes at term (ITP). Preeclampsia/HELLP syndrome has well-defined symptoms and test findings, whereas the others are asymptomatic and indistinguishable. A 25-year-old woman with new-onset TCP at 40 weeks gestation with 11000/L platelets recovered within 12 hours postnatally. After checking out other reasons of severe new-onset TCP at term, therapy should focus on hemostasis before delivery.

KEYWORDS

INTRODUCTION:

Thrombocytopenia (TCP) is frequent in term pregnant women, with incidence varied by cutoff level. A thorough and arduous workup is frequently required to rule out significant maternal and newborn illnesses. Except for gestational and immunological thrombocytopenia, Almost all thrombocytopenia causes have symptoms, test abnormalities, and pathologic findings. Both are asymptomatic except for bleeding in severe ITP patients. Pregnancy makes differentiation difficult. [2].

Gestational thrombocytopenia (GT), is a self-limiting, benign disease that does not require additional diagnosis or treatment [5-7]. Nearly all occurrences of thrombocytopenia in uncomplicated pregnancies are due to GT. GT can occur in the early trimester, but it's most common at birth.

Pregnancy adds foetal considerations, hemostatic management of invasive operations such as regional anaesthesia and delivery, and experience with pregnancy-related illnesses to the care of TCP.

Many obstetricians manage this problem inconsistently and controversially . In other situations, such as when a woman is in labour and close to giving birth, there is little time for detailed examinations or a sufficient therapeutic response, making urgent yet appropriate management hard.

CASE REPORT:

A 25 year old female, G2P2L1 presented with labor pain to delivery unit. Complete haemogram was taken on admission showed severe thrombocytopenia with platelet count of 11 x 103 /microL. It was confirmed with peripheral blood smear which showed isolated thrombocytopenia, her antenatal platelets counts were 158 x 103 /microL at 12 weeks of gestation. Her past history is negative for any bleeding tendency or medications.

During her last pregnancy patient was noted to have mild thrombocytopenia withbplatelets level of 100 x 103 microL. Patient had full term vaginal delivery and postnatally platelets improved to 169 x 103 microL at day 6.

Clinical examination showed normal blood pressure and normal vitals, no signs of petiche, bruising or bleeding anywhere. Laboratory work up was done to exclude HELLP, DISSEMINATED INTRAVASCUAR COAGULATION, infections , immune status, autoimmune disorders. Liver function test was found to be normal.

Induction of labor was done and on artificial rupture of membrane Patient was found to meconium stained liquor and patient was taken up for lscs under general anasthesia as the patient was in distress and likely fetus was also in distress. 1 pint of sdp was transfused and 16mg of dexamethasone was injected while caesarean section was going on. Lscs was uneventful with around 650ml of loss of blood.

The newborn was shifed to nicu because of meconium aspiration and eventually recovered over next 2 days. Newborn platelets was found to be normal i.e. 162x103 microL.

Patients platelets reached 60 x 103 microL at 6th hour, 80 x 103 microl at 12th hour, 110 x 103 microL at 3rd day and subsequently improved overf next week with normal blood count.

DISCUSSION:

As approved by the International Working Group, the TCP of platelet counts 100 109/L appears to better reflect clinical relevance than quantitative calculations of percentiles in healthy individuals [4].

Using the latter cutoff point, TCP has been observed to impact less than 1% of the obstetric population at term. [5]; here, levels 70 109/L are typically utilised to determine the severity. Pregnancy causes a 10% physiologic drop in mean platelet count. [6], Some healthy term pregnant women acquire mild-to-moderate asymptomatic TCP. Certain medical illnesses are known to create TCP, while for others, pregnancy is their first exposure with the condition. As in our case, this offers a diagnostic and management issue. At term, the most prevalent causes of TCP are GT (75%), hypertension disorders of pregnancy (21%), and autoimmune conditions such as ITP and systemic lupus (4%), whereas other causes are rare and account for only 1% of cases. [7].

There are numerous potential reasons of thrombocytopenia during pregnancy and postpartum, some of which are directly related to the pregnancy and others of which are unrelated. There are no specific diagnostic laboratory tests There may be a risk of major consequences for both mother and foetus with some management methods, which may necessitate immediate decisions regarding delivery, and there may be worries about foetal thrombocytopenia.

platelet counts decline by 15 to 20 percent beginning in the first trimester of uncomplicated pregnancies . Typically, platelet levels fall within the usual range (typically between 150,000 and

450,000/microL). Mild thrombocytopenia (100,000 to 150,000/microL) often results from gestational thrombocytopenia (GT) and does not necessitate further study.

GT is by far the most common cause of thrombocytopenia in pregnancy and is the presumptive diagnosis with a platelet count between 100,000 and 149,000/microL in the absence of other abnormal symptoms.GT is a diagnosis of exclusion; it is a benign physiologic condition for which no assessment or treatment is necessary. GT affects 5 to 10% of pregnancies, but only 1% of these women have a platelet count 100,000/L.

All efforts were directed toward attaining a platelet count appropriate with the hemostatic requirements of caesarean section.

As her platelet count was below the minimum level recommended for a safe caesarean birth [8, 9], platelet transfusion was indeed the best option for urgent and rapid therapy in this situation. Interestingly, the patient's spontaneous recovery was swift and complete, following the delivery.

Even though it is uncommon for GT to appear with such severe thrombocytopenia and there was no thrombocytopenia in the patient outside of pregnancy.

In this instance, thrombocytopenia occurred extremely late in pregnancy, there was no thrombocytopenia in the newborn, and the condition resolved immediately after delivery.

Additional first pregnancy of this patient had a picture of gestational thrombocytopenia with uneventful pregnancy.

Due to these obligated to diagnosis case as GESTATIONAL THROMBOCYTOPENIA.

Clinical features and diagnosis of thrombocytopenic conditions in pregnancy

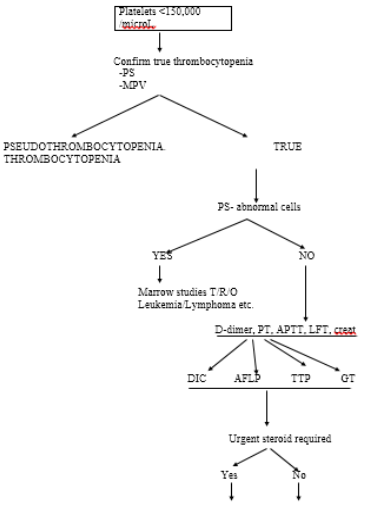
Disorder	Onset during pregnancy	Diagnosis
Pseudothrombocytopenia	Any time	Examine blood smear for platelet clumps, or giant platelets. Repeat platelet count in citrate or heparin anticoagulant. Usually caused by agglutinins dependent upon EDTA, the standard anticoagulant for blood counts.
Gestational thrombocytopenia (GT)	Typically late in gestation, frequency increases as term approaches	Based on five criteria: 1. Mild thrombocytopenia (most 100,000 to 150,000/microL, rarely <80,000/microL) 2. No thrombocytopenia outside of pregnancy 3. Occurs late in gestation 4. No fetal/neonatal thrombocytopenia 5. Postpartum resolution
Immune thrombocytopenia (ITP)	Any time	Presence of isolated thrombocytopenia with no evidence for alternative etiologies. May be indistinguishable from gestational thrombocytopenia if mild and occurs late during pregnancy. Platelet count may improve after delivery.
Preeclampsia with severe features	After 20 weeks gestation	Systolic or diastolic hypertension plus proteinuria
HELLP syndrome (hemolysis, elevated liver function tests, and low platelets)	After 20 weeks gestation	Diagnostic criteria for preeclampsia are present in 85% of cases. Hemolysis: Microangiopathic hemolytic anemia with schistocytes, with other signs of hemolysis: increased serum LDH and indirect bilirubin, decreased haptoglobin Elevated liver function tests (eg, AST, ALT), typically ≥twice normal Low platelets: Platelet count ≤100,000/microL
Thrombotic thrombocytopenic purpura (TTP)	Typically late in gestation, frequency increases as term approaches. May occur after delivery.	Thrombocytopenia and microangiopathic hemolytic anemia without an alternative etiology. May be indistinguishable from severe preeclampsia or HELLP syndrome. Severe neurologic abnormalities and acute renal failure support the diagnosis of TTP. Persistent abnormalities ≥3 days after delivery also support the diagnosis of TTP.
Drug-induced immune thrombocytopenia (DITP) (except heparin)	Any time	Complete history of drug ingestion, including non-prescription drugs and herbal remedies. Focus on drugs taken intermittently or regularly for more than one week. Thrombocytopenia typically resolves in five to seven days after stopping the drug.
Heparin-induced thrombocytopenia (HIT)	Any time	Suspected in patients who have thrombocytopenia (or >50% decrease in platelet count) and who have begun heparin within previous 5 to 10 days. Thrombocytopenia is typically mild, arterial or venous thrombi are commonly present, ELISA assay for heparin-dependent antibodies is sensitive; measurement of heparin-induced platelet serotonin release is more specific.
Antiphospholipid syndrome (APS)	Any time	Requires one clinical and one laboratory criterion: **Clinical:** 1. Adverse pregnancy outcome: ≥3 losses <10 weeks gestation or ≥1 loss ≥10 weeks gestation, <34 week delivery secondary to preeclampsia or placental insufficiency 2. Arterial or venous thrombosis **Laboratory:** Demonstration of the persistent presence of at least one of the following antiphospholipid antibodies: 1. Lupus anticoagulant 2. Anticardiolipin antibody 3. Anti-β2 glycoprotein-I

Refer to UpToDate for additional details of the clinical features.

EDTA: ethylenediaminetetraacetic acid; LDH: lactate dehydrogenase; AST: aspartate aminotransferase; ALT: alanine aminotransferase.

Courtesy of James N George, MD and Eric J Knudtson, MD.

DIAGNOSTIC ALGORITHM:



Marrow studies Monitor

If a pregnant women presents with thrombocytopenia , thorough past medical, obstetrics and family history is assessed. clinical and physical examination is required to rule out pre eclampsia and any signs of bleeding manifestation platelets count level will be the preliminary determinant of the contents of the workup.

Initial cbc is done id thrombocytopenia is present ,peripheral smear and mean platelet value are taken into account and then if thrombocytopenia is confirmed if any abnormal cells are present, bone marrow studies are done to rule out leukemias, lymphomas etc. if normal cells are present do d-dimer ,coagulation profile, lft and rft to rule out DIC,AFLP,TTP and gestational thrombocytopenia.

Gestational thrombocytopenia and ITP have no specific diagnostic tests, hence diagnosis is by exclusion [21]. Primary ITP necessitates the exclusion of immune-related causes of TCP including SLE, APLA, HIT, and viral infections[4]. In women with mild, nonspecific TCP who do not require treatment, it may not be necessary to differentiate between GT and ITP. [17]. With lesser platelet counts it is reasonable to distinguish between these two similar entities. ITP can induce severe neonatal TCP in 9-15% of instances and maternal and neonatal haemorrhage. Its value for prenatal treatment of subsequent pregnancies is another explanation GT indicators, Such variables like pregnancy onset and platelet count levels are imprecise and subject to numerous exceptions.

while neonatal TCP in relation with maternal GT is unclear. In 30% of newly diagnosed cases of ITP, pregnancy-related TCP is ineffective. Similarly, a past history of TCP during pregnancy may be observed in both GT and ITP.

If identified early in mid-pregnancy, GT patients tend to have a progressive fall in counts towards term, as do at least 50% of ITP patients. A history of maternal or newborn TCP with bleeding is predictive of ITP. Postpartum course and protracted follow-up provide the most reliable assessment methods. [11]. GT often occurs in twin pregnancies [11]. For practical reasons, severe new-onset TCP should be treated the same as ITP [13].

Appropriate antenatal surveillance should be done is the following pregnancy.

Treatment:

The platelet count cutoff for a non-bleeding pregnant woman anticipating delivery or a procedure depends on the mode of delivery or the type of procedure.

We adopt following thresholds in the absence of bleeding:

Transfuse if platelet counts are less than or equal to 30,000/microL for vaginal birth.

Transfuse if platelet counts are less than or equal to 50,000/microL for caesarean delivery.

In conditions in which platelets are being destroyed, the increase in platelet count with transfusion will only be temporary, and additional interventions directed at the underlying disorder are also needed:

1.ITP – steroids or IVI Immunoglobulins.
2.TTP – Therapeutic plasma exchange (TPE).
3. CM-TMA – Anti-complement therapy.
4. HIT – Stopping all heparin exposure and switching to a non-heparin anticoagulant (eg, fondaparinux) (eg, fondaparinux).
5. Other drug-induced thrombocytopenias – drug discontinuation.

Frequency of platelet count monitoring — The specific interval is individualised for each patient and adjusted based on platelet count trend.

General guidelines:

Patients with HELLP may need platelet monitoring every four to six hours.

Daily monitoring is appropriate for most hospitalised patients due to maternal illness, but gestational thrombocytopenia (GT) and mild, stable thrombocytopenia due to hyperemesis or asthma may not need daily platelet counts. Depending on patient stability, the frequency may be reduced.

For mild to moderate thrombocytopenia, likely due to GT or ITP, we monitor the platelet count once per trimester or once per month (depending on the absolute platelet count and platelet count trend) and assess the platelet count at 36 to 37 weeks to plan for possible treatment near delivery.

Platelet counts >100,000/microL are managed routinely.

ITP THERAPIES :

The typical durations of these therapy' effects are as follows: [16,17]:

- IVIG – 1 to 3 days for initial response, 2 to 7 days to peak response.
- Dexamethasone – 2 to 14 days for initial response, 4 to 28 days to peak response.
- Prednisone – 4 to 14 days for initial response, 7 to 28 days to peak response.

Evaluation of fetus :

Neonatal testing — Settings in which testing of the neonatal platelet count is prudent include the following:

- Maternal ITP
- Neonatal thrombocytopenia in a previous pregnancy.
- Indications unrelated to maternal platelet count, such as:Bleeding or petechiae/ecchymoses in the infants
- Indications unrelated to maternal platelet count, such as
- Bleeding or petechiae/ecchymoses in the infants
- Trisomy 21, 18, or 13
- Neonatal infections such as cytomegalovirus or rubella.

Conclusion:

We encountered a case of severe thrombocytopenia with platelets of 11000 , Treatment was focused on excluding serious systemic diseases of theombocytopenia and securing homeostatic function required for emergency c section. The patient was given sdp transfusion and a single dose of steroid and c section was done without increased bleeding.

Patient also had a uneventful first pregnancy with mild thrombocytopenia.

The patient was found to be healthy with normal platelet counts post delivery and subsequently after that. Fetus also had normal platelet levels.

Extreme GT has grown more prevalent in our practise, with reported rates ranging from 21.0% to 30.8% of all GT cases [10, 11]; hence, obstetricians must be well-informed and prepared to manage such tough situations.

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