# Successful treatment of thrombotic thrombocytopenic purpura during pregnancy: A case report

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## Abstract

A 28 years' pregnant woman with 24 weeks' gestational age referred with petechiae and purpura from previous day without any trauma. She had an occipital headache from last night. Overt petechial and purpuric lesions were seen in the mouth and skin. There was neither hepatosplenomegaly nor lymphadenopathy. She was conscious and oriented. The patient was febrile, anemic and thrombocytopenic with stable vital signs. All liver enzymes were elevated. Coagulation profile was normal. WBCs were normal. RBCs were reduced, and she had polychromatosis. Overt shistocytosis was seen. Platelets were significantly decreased. The first diagnosis was TTP. All necessary laboratory tests were done to rule out the secondary rheumatologic causes of TTP; which all were normal. Coombs tests were negative. ADAMTS 13 Ab was elevated. Fetal ultrasonography was normal.
Treatment started with plasmapheresis and corticosteroid. After treatment, platelets count begins elevated, and LDH decreased. The patient discharged with a good general condition and normal lab tests. She continued her pregnancy until term, and born a normal infant without any complication. She did not have a recurrence of TTP until September 2014.

**Keywords:** TTP, Pregnancy, Treatment

## Introduction

Thrombotic thrombocytopenic purpura (TTP) is a rare, acute, and life-threatening disease (1). TTP is a multiple organ disorder characterized by microangiopathic hemolytic anemia, thrombocytopenia, neurological symptoms and renal involvement (2, 3) caused from ADAMTS13 deficiency (1).
The presentation age of acute TTP is the third and fourth decades. Fifty percent of all acute episodes of TTP are in women of childbearing age (1, 4).
Pregnancy is one of the most important precipitating events for acute episodes of TTP. The reasons are an association of pregnancy with increasing of procoagulant factors, decreasing fibrinolytic activity, loss of endothelial cell thrombomodulin and decreasing the activity of ADAMTS13 (2, 3). ADAMTS13 is a protease enzyme that involved in the cleavage of Von Willebrand factor. All of these abnormalities become progressively severe in the late stages pregnancy (1-3).

## Case report

A 28-year-old woman with 24 weeks' gestational age pregnancy referred to Al-Zahra hospital, Isfahan, Iran at September 2013 with whole body petechiae and



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purpura from previous day without any trauma. She had an occipital headache from last night.

In history, she did not have a headache or purpura. She did a laparoscopic surgery for ovarian cystectomy without complication last year.

In physical examination, overt petechial and purpuric lesions were seen in the mucosa of mouth and skin especially in lower extremities. There was neither hepatosplenomegaly nor lymphadenopathy. She was conscious and oriented. Previous laboratory data in pregnancy was normal. The patient was febrile (T=37.7), anemic (Hb=8.6) and thrombocytopenic (Plt=4000) with stable vital signs. All liver enzymes (Bil=1.5, AST=62, ALT=42, ALP=183, LDH=1630) were elevated. Coagulation profile was normal. In urine analysis, hematuria was seen. ESR was elevated (100). Creatinine was normal. In peripheral blood smear, WBCs was normal. RBCs were reduced, and she had polychromatosis. Overt shistocytosis (more than %10) were seen. Platelets were significantly decreased also.

With these findings, the first diagnosis was TTP (thrombotic thrombocytopenic purpura). HELLP (hemolysis, elevated liver enzymes, and low platelets) syndrome was in the differential diagnosis. Lupus anticoagulant antibody (LAC ab), anti-thrombin III, anti-cardiolipin antibody (AC ab), ANA, Anti-ds DNA, ANCA, Anti b2Gp1, C3, C4, and CH50 were done to rule out the secondary rheumatologic causes of TTP; which all were normal. Direct and indirect Coombs tests were negative. ADAMTS 13 Ab (288) was elevated. The fetal ultrasonography was normal.

Treatment started with plasmapheresis (2.5 lit/day) with FFP replacement, and corticosteroid (prednisolone 20 mg/TDS). Before plasmapheresis, she received packed cell and calcium gluconate. After three days from beginning of treatment, platelets counts begin elevated, and LDH decreased. Plasmapheresis continued for two days later, then one other day for three times. Prednisolone tapered and interrupted also. The patient discharged with folic acid and ASA (80 mg/day) and followed with CBC count and LDH every two weeks with a good general condition. Laboratory data became normal (Hb=11.8, Plt=202000, LDH=289) .

She continued her pregnancy until term (38 weeks). She did NVD and born a well male infant with 3100 gr weight without any complication. She did not have a recurrence of TTP until September 2014. A few cases of TTP in pregnancy were recovered from this disease, so we report this successful treatment as a case report.

## Discussion

The major of TTP cases occur at time of delivery or immediately postpartum. It is associated with a considerable risk to maternal and fetus without treatment. Diagnosis of this problem is too hard during pregnancy because the symptoms mimic of preeclampsia, HELLP, eclampsia or any other coagulopathy. Fetal death is occurred secondary to placental infarction, and maternal death occurs from thrombocytopenia, acute renal failure, or disseminated intravascular coagulation (DIC) (1, 5).

Plasma exchange is the main treatment for TTP. When this disease occurs in the late of pregnancy, and the fetus has gained enough maturity, pregnancy could be terminated for an aggressive treatment. But when it occurs early in pregnancy as in our case, therapeutic abortion is considered by many clinicians, because the risk of repeated TTP episodes is very high. With using of plasma exchange could maintain a remission of TTP and a full term delivery. However, if plasma exchange fails to induce remission, a therapeutic abortion could be considered. The response of TTP to terminate the pregnancy is unknown. Although we had a successful treatment with this patient and her pregnancy outcome, there was always



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risk of future episodes of TTP. Based on the British Committee for Standards in Hematology guidelines, plasma exchange should be used in pregnant women with TTP disorder as for non-pregnant patients (6).

Delivery is administrated only for TTP patients who do not have response to treatment with therapeutic plasma exchange (TPE). Plasma exchange must be continued even after platelet count normalization, and resolution of hemolysis must be documented. McMinn et al. have showed that the plasma volume increases in pregnancy does not affect the response of TTP to TPE, and TPE does not affect the outcome of pregnancy (7, 8).

ADAMTS13 deficiency is not a general finding; and its measurement is not recommended commonly for diagnoses of TTP. TTP may respond to TPE even in the ADAMTS13 deficiency. Intravenous immunoglobulins (IVIG) and glucocorticoids like methylprednisolone and oral prednisolone could be used in the treatment of TTP also.

The risk of TTP recurrence in subsequent pregnancies will remain an important problem. We advise that if these women managed by a unit of obstetricians, hematologists, and nephrologists in hospitals where TPE is available a successful treatment and a good outcome could be expected.

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