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# Induced Labor in Pregnancy Complicated with Myelodysplastic Syndrome:A Case Report

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**Abstract**

Myelodysplastic syndrome is an extremely rare pregnancy complication, the treatment can be very thorny. cross-matched platelets may approve to be an effective drug for those patients who have platelet antibody in their vessel.If the platelet counts to 20×109 /L, vaginal delivery can be tried.

**Induced Labor in Pregnancy Complicated with Myelodysplastic Syndrome:A Case Report**

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**Key words:** Myelodysplastic Syndrome,pregnancy,cross-matched platelets,induce labor

**Key Clinical Message:** Pregnancy may aggravate the condition of Myelodysplastic Syndrome. Cross-matched platelets can be used for those patient who has refractory thrombocytopenia.Vaginal delivery can be tried if the platelet counts to 20×109 /L.

**Abbreviations:** MDS = Myelodysplastic Syndrome,AML = acute myeloid leukemia,U = unit,T= Temperature,P =Pulse rate,R = Respiratory rate,BP =Blood pressure,26+5 weeks =26 weeks and 5 days,S/D = Umbilical Systolic pressure / Diastolic pressure of the fetus

## Introduction

Myelodysplastic syndrome is an extremely rare pregnancy complication, which may cause maternal hemorrhage, infection, Fetal Growth Restriction and so on. Especially with severe anemia and thrombocytopenia, the treatment can be very thorny. There is no unified treatment standard. This article introduces an odinopoeia case in pregnancy-induced myelodysplastic syndrome with refractory thrombocytopenia. The patient's clinical feature showed multiple spontaneous bleeding throughout the body and severe infection, and the platelet count was maintained at 1-2x$10^9$ /L after repeat platelet input. There was no possibility of further pregnancy for hemorrhage and infection. but how to terminate pregnancy was very challenging. we tried to use cross-matched platelets to rapidly promote platelets and perform induce labor.

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## Case Report

The 23-year-old patient was admitted to the hospital for "26+5 weeks of amenorrhea and 5+ hours of epistaxis." During the whole pregnancy, the patient repeatedly had nosebleed and gingival bleed, by oneself alleviate. 10+ years ago, she was diagnosed as "myelodysplastic syndrome" by bone marrow puncture, and repeatedly had blood and platelet transfusions. With long-term oral medication (self-purchased hormones and traditional Chinese medicine), the condition is basically stable. Physical Examination: T 39.7 deg C, P 127 times/min, R 25 times/min, BP 131/64 mmHg. The whole body is filled with scattered petechia and ecchymosis, with bleeding gums and intranasal blood clots. Gynecological Examination: she had no uterine contraction, but we found a small amount of bloody secretion in the vagina. Fetal Color Doppler Ultrasound: intrauterine single live birth (equivalent to 24 weeks of pregnancy) with breech position, single peak in S/D(Umbilical Systolic pressure / Diastolic pressure of the fetus)value. Laboratory Examination: WBC count $3.0x10^9$ /L, N 53.2%, Hb 2.8 g/dL, Plt count $2x10^9$ /L.

After admission, the patient developed subconjunctival hemorrhage, impaired vision, and increased petechia and ecchymosis. The blood culture indicated Klebsiella pneumoniae infection. We gave her Jisaixin Recombinant Human Granulocyte Colony-stimulating Factor Injection, transfused 6 U of erythrocyte suspension without WBC and 4U of apheresis platelet in total within 8 times, and gave her piperacillin and meropenem against infection. Blood routine test: WBC count 0.9 x $10^9$ / L, Hb 4.1g / dL, Plt count 1 x $10^9$ / L. The result of Blood routine indicated that the blood transfusions were not effective. The patient's platelets were extremely reduced, we considering the presence of platelet and red blood cell antibodies in her blood vessels. After multidisciplinary discussion in departments of obstetrics, anesthesiology, hematology, infection department, and department of critical medicine, we transfused again with 1 U of cross-matched platelets, 1.5 U of erythrocyte suspension without WBC, and the reexamination of Blood routine showed Hb was 4.3 g/ dL, and Plt count was $47x10^9$ /L. Rivanol was then injected into the amniotic cavity, and 72 hours later, the labor process started after propess was placed in the vagina. 1U of cross-matched platelets and 1.5 U of erythrocyte suspension without WBC were re-transfused to the patient half an hour before delivery. In order to shorten the labor process, a stillbirth was delivered using breech traction. The fetus was 36 cm in length, weighed 1010 g, and the patient had 300 ml of bleeding. Postpartum review of blood routine test: WBC count $2.5x10^9$ /L, Hb 52 g/L, Plt count $43x10^9$ /L (table). The patient complained of a relatively stable condition in the telephone follow-up 42 days later.

## Discussion

Myelodysplastic syndrome (MDS) is a set of clonal disorders generating from myeloid-oriented stem cells or pluripotent stem cells,the overall incidence is reported in literature as 4/100,000, and the incidence gradually increases with age, with rare cases under 40 years old.[1,2] Its main features include ineffective hematopoiesis, cytogenetic and molecular biological abnormalities, and high-risk transformation into acute myeloid leukemia (AML), which has various clinical manifestations and is difficult to diagnose and treat.[3] Pregnancy complicated with myelodysplastic syndrome is extremely rare, mostly reported in individual cases,[4-6] and is even more difficult to treat. There is no unified norm in diagnosis and treatment at home and abroad.

The effect of pregnancy on myelodysplastic syndrome is still controversial. Siddiqui[7] et al. have reported cases of conversion of myelodysplastic syndrome to AML during pregnancy, while Ikeda[8], Gidiri[9] et al. believe that pregnancy itself does not affect the outcome of myelodysplastic syndrome, and the hematology situation of the patient can also be improved after delivery. Our patient in this case takes the medicine on her own at ordinary times, and her condition is basically stable. However, nosebleed and gingival bleeding occurred repeatedly during her pregnancy, suggesting that the condition might get aggravated. After being discharged, the patient didn't receive further treatment, and her condition was relatively stable in the telephone follow-up 42 days later. Therefore, we speculate on the possibility of pregnancy-induced exacerbation.

The American Society of Hematology recommends that platelets of patients with idiopathic thrombocytopenia maintain at least $50x10^9$ /L before and during delivery[10]. Steensma[11] et al. suggest that patients with

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myelodysplastic syndrome should maintain more than $50x10^9$ /L platelets if taking cesarean section and 20-$30x10^9$ /L platelets if taking vaginal delivery. In this case, our patient's platelet count fluctuated at 1-$2x10^9$ /L, multiple hemorrhages occurred over the body and became increasingly severe, and repeated platelet transfusions were ineffective. If taking vaginal delivery, the induction of labor may last for a long time , the use of induced labor drugs and abdominal pressure during the labor process both may cause visceral and intracranial hemorrhage. What's more, the hemostasis of birth canal bleeding is also difficult to treat. On the contrary, hemostatic difficulty, massive bleeding, pelvic hematoma, subcutaneous hematoma are all likely to appear during the cesarean operation. The patient has severe anemia herself and has extremely low tolerance to blood loss. Our experience is to try to increase her platelet counts to $20x10^9$ /L and hemoglobin concentration to 4 g/dl for induction of labor and attempt vaginal delivery. However, in this case, there may exist anti-blood-cell and anti-platelet antibodies in the patient's body, and conventional transfusion was difficult to improve the situation. There has been literature reported that cross-matched platelets can be used for immune refractory thrombocytopenia[12], and the American Society of Hematology recommends Prednisolone as the first-line drug for pregnancy complicated with myelodysplastic syndrome[10]. Hence, we had the patient take 30mg of Prednisolone orally every day and transfused cross-matched platelets at the same time to rapidly increase her platelets for induction of labor. At the same time, in order to avoid bleeding, patients should be prevented the use of abdominal pressure and given effective labor analgesia during delivery (epidural analgesia can be applied if platelet count is above $50x10^9$ /L[13]).

The oncome of myelodysplastic syndrome is insidious, the clinical manifestations are atypical, and the treatment is intractable. Therefore, early diagnosis is especially important in this syndrome. When there exist unexplained anemia, fever, and bleeding tendency during pregnancy, hematological system diseases should be taken into consideration. Medical staff should firstly test the patient's blood routine and leukocyte differential count, and if necessary, perform a bone marrow puncture to clarify the diagnosis. This case report suggests that pregnant patients with myelodysplastic syndrome should enhance the management during pregnancy to determine whether there is any indication to continue the pregnancy. At the time of delivery, whether to take cesarean section or vaginal delivery, doctors should fully evaluate the possibility of bleeding and prepare adequately.

**Authors' Contributions**

Changsheng Peng and Tao Cui were the responsible doctors of this patient,they designed the study and drafted the manuscript. Qiang Yao was the principal supervisor reviewed and edited the manuscript All the three authors read and approved the final manuscript.

**Competing interests**

The authors declare that they have no competing interests.

**Ethics approval and consent to participate**

This research does not involve human subject trial.Written informed consent for publication of this case study has been obtained from the legally authorized representative of this patient.

**Consent to publish**

Informed consent was obtained from all participants.

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