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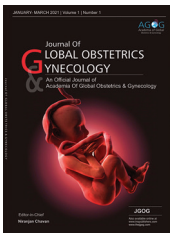
Case Report



When Nutritional Deficiency Mimics Systemic Illness: A Rare Case of Vitamin B12-Induced Pancytopenia in Late Pregnancy

Monika*, Niranjan N. Chavan, Deepali Kapote, Deeksha Nanda

Department of Obstetrics and Gynecology, Lokmanya Tilak Municipal Medical College and General Hospital, Mumbai, Maharashtra, India

ABSTRACT

Aim: To highlight the importance of considering nutritional deficiencies as a differential in pancytopenia during pregnancy and the role of early diagnosis with multidisciplinary intervention in achieving favorable maternal and fetal outcomes. **Background:** Vitamin B12 deficiency is a common yet underdiagnosed cause of anemia in pregnancy. However, its progression to pancytopenia in the third trimester is rare and may mimic systemic or infectious illness. Left untreated, it poses significant risks to both mother and fetus, including growth restriction, pre-term birth, and postpartum complications. **Case Description:** A 24-year-old primigravida at 36.2 weeks presented with bicytopenia, bilateral pedal edema, and serous skin rashes. Investigations revealed severe Vitamin B12 deficiency with elevated reticulocyte count and iron overload suggestive of ineffective erythropoiesis. Infectious and autoimmune causes were ruled out. She was treated with transfusions, B12 supplementation, and supportive care. Hematologic parameters improved, and she delivered a healthy baby at 38 weeks. Postpartum recovery was uneventful. **Conclusion:** This case underscores the importance of considering Vitamin B12 deficiency in the differential diagnosis of pancytopenia in pregnancy. Timely diagnosis and coordinated multidisciplinary care can prevent complications and ensure positive maternal-fetal outcomes.

Keywords: Late pregnancy complications, Multidisciplinary management, Nutritional anemia, Pancytopenia in pregnancy, Vitamin B12 deficiency

INTRODUCTION

Cytopenias during pregnancy present a diagnostic dilemma due to the physiological changes of gestation and the broad spectrum of potential causes. While anemia is common, the occurrence of bicytopenia or pancytopenia is rare and can mimic life-threatening conditions such as HELLP syndrome, aplastic anemia, and hematologic malignancies.[1,2] However, nutritional deficiencies, particularly of vitamin B12, remain a significant but often overlooked cause.

Vitamin B12 deficiency leads to defective DNA synthesis and ineffective erythropoiesis, manifesting as megaloblastic anemia, and in severe cases, leukopenia and thrombocytopenia.[3] The increased physiological demands of pregnancy can unmask latent deficiency, especially in individuals with poor nutritional intake or malabsorption. Several published reports highlight the importance of considering B12 deficiency in pregnant women presenting with cytopenias and systemic symptoms.[4]

Corresponding Author:
Dr. Monika, Department of Obstetrics and Gynecology, Lokmanya Tilak Municipal Medical College and General Hospital, Mumbai, Maharashtra, India.
E-mail: monikad20011997@gmail.com

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CASE PRESENTATION

A 24-year-old primigravida at 36.2 weeks of gestation was referred from a peripheral hospital with a pink slip due to bicytopenia, bilateral pedal edema [Figure 1] and serous discharging skin rashes persisting for 1 week. She denied any history of fever, abdominal pain, per vaginal leaking or bleeding, and had no prior history of hypertensive disorders in pregnancy. On evaluation, her complete blood count (CBC) showed severe anemia (Hemoglobin [Hb] 5.8 g/dL), leukopenia (White blood cell [WBC] 3,250/mm^3), and thrombocytopenia (platelet count 45,000/mm^3). Bleeding and clotting times were mildly prolonged. Routine antenatal

Figure 1: Bilateral pedal oedema with serous lesions of Prurigo cutis

Figure 2: Healed prurigo cutis with resolution of bilateral pedal edema

investigations were within normal limits. Further evaluation included anemia and infection profiles, serum Vitamin B12 levels, blood, urine, and high vaginal swab cultures, and autoimmune markers.

Obstetric ultrasound with Doppler revealed a single live intrauterine pregnancy of 36.4 weeks with adequate amniotic fluid and an estimated fetal weight of 2.2 kg. Bilateral lower limb venous Doppler and abdominal ultrasound were normal. Dermatology consultation diagnosed prurigo cutis, and the patient was started on topical mometasone 0.1% cream and 2% fusidic acid cream at bedtime, along with tablet chlorpheniramine maleate twice daily. Magnesium sulfate dressings were applied for bilateral pedal edema.

Serum Vitamin B12 was found to be severely deficient (<100 pg/mL), with a markedly elevated immature reticulocyte fraction (24.1%), suggestive of bone marrow regeneration. Iron studies indicated high iron levels with transferrin saturation of 98%, pointing toward ineffective erythropoiesis rather than iron deficiency. Antibodies to intrinsic factor and parietal cells were negative. Autoimmune and infectious screening, including antinuclear antibodies, Leptospira, dengue, and cultures, were negative. Indirect Coombs test was positive and direct Coombs test was negative. The patient received two packed red cell transfusions, intravenous antibiotics, injectable Eldervit (3 cc in 100 mL NS for 5 days), followed by Vitamin B12 supplementation using the Vitcofol regimen. Two doses of injectable betamethasone (12 mg) were administered 24 h apart for fetal lung maturity.

Gradual improvement was noted in hematologic parameters, with CBC improving to Hb 8.7 g/dL, WBC 5,000/mm^3, and platelets 1.06 lakh/mm^3, and the bilateral pedal edema resolved [Figure 2]. At 38 weeks, the patient went into spontaneous labor and delivered a healthy female baby weighing 2.338 kg. The postpartum period was uneventful, and at discharge, her hemogram had further improved to Hb 9.4 g/dL, WBC 5,900/mm^3, and platelets 2.26 lakh/mm^3 after medical fitness clearance.

DISCUSSION

Pancytopenia in pregnancy is a rare but serious finding that warrants prompt investigation. Common etiologies include aplastic anemia, infections, autoimmune disorders, and hematologic malignancies. However, nutritional deficiencies, particularly Vitamin B12 and folate, remain often overlooked.[1,2]

Vitamin B12 plays a crucial role in deoxyribonucleic acid synthesis and erythropoiesis. Deficiency leads to ineffective hematopoiesis, resulting in megaloblastic anemia and in rare cases, pancytopenia.[3] Pregnancy increases the requirement for B12, and inadequate dietary intake or malabsorption can precipitate clinical deficiency. In this case, the patient presented with hematological abnormalities mimicking systemic illness, accompanied by dermatological signs, such as prurigo and serous rash – a possible consequence of nutritional deficiency-related skin changes.

The elevated reticulocyte count following treatment confirmed marrow responsiveness. Iron overload markers and normal Hb electrophoresis further ruled out other causes. The timely diagnosis and initiation of Vitamin B12 supplementation reversed the hematological picture and ensured a safe delivery and postpartum course.[1,4]

Early recognition and intervention are essential, as prolonged deficiency can lead to irreversible neurological sequelae in the neonate and complications in the mother. This case underlines the need for vigilance and routine screening for B12 deficiency in pregnant women presenting with unexplained cytopenia.

CONCLUSION

This case emphasizes that severe Vitamin B12 deficiency can masquerade as a systemic illness in pregnancy, leading to

pancytopenia and dermatological manifestations. Prompt diagnosis and appropriate supplementation can result in complete recovery and favorable maternal and fetal outcomes. Clinicians should maintain a high index of suspicion for nutritional deficiencies when evaluating pancytopenia in late pregnancy, especially in settings where dietary insufficiencies are common.

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