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B12 DEFICIENCY MASQUERADING AS TTP

L. THALIATH M.D [1], A. ABU-JAMEA M.D [1], J. EDMUND M.D [1]
1 Division of Hematology and Oncology, Department of Medicine, Marshfield Clinic, Marshfield, WI, USA

Marshfield Clinic Health System

INTRODUCTION

- Idiopathic thrombotic thrombocytopenic purpura (TTP) is a rare hematologic emergency characterized by the development of autoantibodies against ADAMTS13.
- TTP presents with a combination of microangiopathic hemolytic anemia (MAHA), thrombocytopenia, neurological manifestations, kidney damage, and fever.
- Cobalamin plays a vital role in DNA synthesis, normal red blood cell formation, and neurological health.
- Individuals deficient in vitamin B12 may exhibit symptoms resembling TTP, including MAHA, low platelet count, elevated indirect bilirubin levels, and schistocytes.
- Differentiating between these conditions can present both diagnostic and therapeutic difficulties.

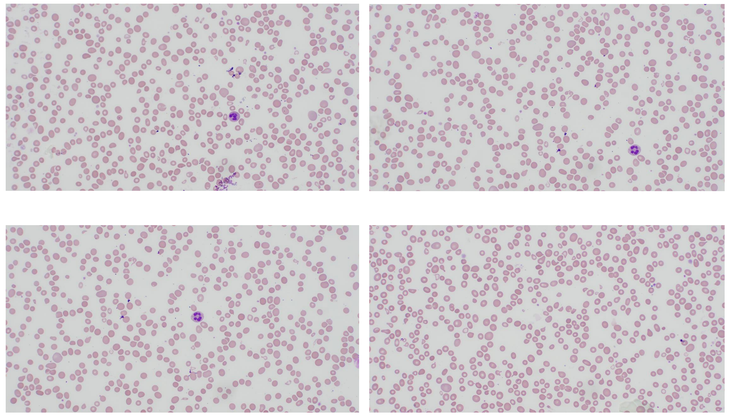
CASE REPORT

- 50-year-old female presented with 2-week history of epigastric pain, fatigue, lightheadedness, and dizziness.
- Labs: low hemoglobin (Hg) 5.2 g/dl, high MCV 116.4 fL, platelets 165 x10^3/uL, elevated total bilirubin of 1.6 mg/dL, low haptoglobin <10 mg/dL, LDH >4000 Unit/L, and corrected reticulocytes index 1.1.
- Blood smear: anisopoikilocytosis, schistocytes, and polychromatophilia.

CASE REPORT CONTINUED

- She received 2 units of PRBCs, improving her Hg to 8.1 g/dl, but it dropped to 6.9 g/dl the next day, requiring another unit.
- Platelets dropped to 74 x10^3/uL.
- As the picture mimicked TTP with anemia, thrombocytopenia and schistocytes, plasmapheresis was initiated.
- Further work-up revealed: low vitamin B12 level <150 pg/mL, ADAMTS13 level was normal at 61%, high MMA 0.66 umol/L, and elevated homocysteine 47.4 umol/L.
- Initiation of Intravenous B12 supplementation resolved the anemia and thrombocytopenia.
- Intrinsic factor antibody was positive, confirming pernicious anemia.
- At follow-up, Hg was 11.3 g/dl, platelets 635 x10^3/uL, and LDH 423 Unit/L.

Peripheral Smear



CONCLUSIONS

- Vitamin B12 deficiency-induced pseudothrombotic microangiopathy shares clinical features with TTP and is often misdiagnosed as TTP, leading to unnecessary treatment.
- In contrast to typical MAHA/TTP, vitamin B12-related pseudo-TTP presents as macrocytic, megaloblastic anemia with reticulocytopenia, elevated levels of homocysteine and methylmalonic acid, low vitamin B12 levels, and high levels of lactate dehydrogenase (LDH) exceeding 2500 IU/L. .
- While TTP requires urgent plasmapheresis, vitamin B12 deficiency is managed with B12 supplementation. Therefore, distinguishing between these two conditions is crucial due to their differing treatment approaches.

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CONTACT INFORMATION

LIZ THALITAH: thaliath.liz@marshfieldclinic.org