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Case Report

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Aplastic Anemia in a Patient With Wilson's Disease

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Abstract

An 8-years-old boy was admitted with jaundice and weakness. Workup for jaundice revealed the diagnosis of Wilson's disease. Patient had pancytopenia and bone marrow biopsy showed hypocellular marrow suggestive of aplastic anemia. This case represents an unusual association of Wilson's disease with aplastic anemia. Treatment with zinc decreased the bilirubin levels but cytopenias persisted.

Keywords: Wilson's disease; Aplastic anaemia; Copper

Introduction

Wilson's disease (hepatolenticular degeneration) is an autosomal recessive defect in cellular transport of copper with prevalence of approximately 1 in 30,000 live births [1]. Clinical manifestations arise because of hepatic and extrahepatic deposition of copper. Tissue copper deposition can occur in various organs, leading to hepatic, neurologic, hematologic, and renal impairment [2, 3]. The hepatic injury is probably caused by excess copper which acts as a pro-oxidant and promotes the attack by free radicals. Treatment is aimed at removing excess copper and preventing its re-accumulation. Acquired aplastic anemia is due to bone marrow failure, and its etiology is unknown in most of the cases. Hemolysis has been reported in patients with Wilson's disease but aplastic anemia is an unreported finding. Our patient presented simultaneously with manifestations of Wilson's disease and aplastic anemia.

Case Report

An 8-years-old boy was admitted with progressively increasing jaundice and weakness for 3 months. There was no history of fever or bleeding from any site. Clinically, he was pale and icteric without any lymphadenopathy and hepatosplenomegaly. His haemogram revealed pancytopenia with haemoglobin 77 g/L, total leukocyte count 1.9×10^9/L, platelet count 20×10^9/L, absolute neutrophil count 0.1×10^9/L and reticulocyte count 0.01%. His total bilirubin was 26.1 mg/dL with conjugated bilirubin of 23.1 mg/dL and alanine aminotransferase, aspartate aminotransferase, alkaline phosphatase and gamma glutamyl transpeptidase were 1362/902/117/46 IU/L respectively. Investigations were negative for viral hepatitis including hepatitis A, E, B and C. Serology for parvovirus-B19, cytomegalovirus, varicella zoster and leptospira were negative. Serum ceruloplasmin levels were reduced, 2.5 mg/dL (normal 18 - 50 mg/dL) and 24-hours urinary copper levels were raised, 120 µg/24 hrs (normal 20 -50 µg/24 hrs). Slit lamp examination of the eye revealed

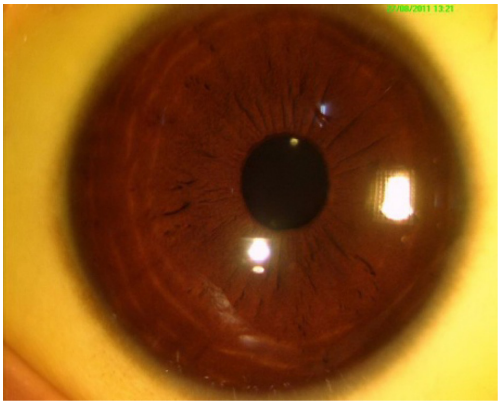

Figure 1. KF ring in a patient with Wilson's disease.

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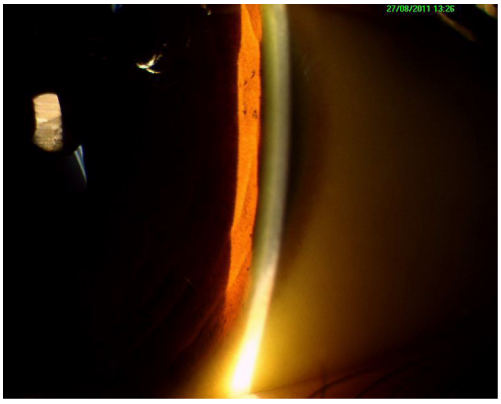

Figure 2. Slit lamp examination of eye showing KF ring.

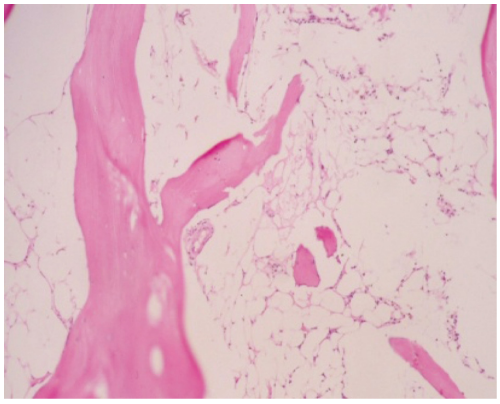

Figure 3. Bone marrow biopsy of the patient showing hypocellular marrow (40 ×).

the presence of Kayser-Fleischer rings (Fig. 1, 2), which are brownish rings that represent fine pigmented granular deposits of copper in Descemet's membrane in the cornea. Bone marrow biopsy showed cellularity of less than 5% (Fig. 3). Chromosomal breakage study did not show increased chromosomal fragility with mitomycin-C. He was diagnosed as a case of Wilson's disease with very severe aplastic anemia and was treated with zinc sulphate 50 mg twice daily along with supportive treatment for cytopenias.

Discussion

Wilson's disease is an autosomal recessive disorder resulting in defective cellular copper transport [1]. Clinical manifestations arise as hepatic and extrahepatic copper deposition progresses. They are rare before age 6 and almost always present before the age of 30 years. A very low serum ceruloplasmin level (< 5 mg/dL) provides strong evidence for the diagnosis of Wilson's disease [2, 3]. The earliest lesion in Wilson's disease occurs in the liver, the site of initial copper accumulation. Kayser-Fleischer rings are characteristic feature of Wilson's disease. They are usually detected by slit-lamp examination but may be clinically visible in some cases. KF rings are seen in 50-60% of patients who present with hepatic involvement. About 5 to 10% of patients with Wilson's disease can have haemolytic anemia [3, 4].

Copper deficiency and treatment with penicillamine, a copper chelator, used in the treatment of Wilson's disease has been reported to cause cytopenias including aplastic anemia [5, 6], but aplastic anemia, per se in Wilson's disease is an unreported finding. Aplastic anemia is characterized by diminished or absent hematopoietic precursors in the bone marrow, often due to injury to the pluripotent stem cell. Management of our case was challenging as this was probably the first reported case of Wilson's disease presenting as aplastic anemia. He was not given penicillamine because he had cytopenias, and treatment with zinc sulphate resulted in reduction in bilirubin to 6mg/dl, without any improvement in the cytopenias. He developed febrile neutropenia and died of pneumonia before any definite management of aplastic anemia could be done.

Conflict of Interest

The authors declare no conflicts of interest.

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