

# An Unusual case of Hemolytic Anemia

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## ABSTRACT

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Incidence of drug induced hemolysis is 12 to 18% of hemolytic anemia. Immune mediated and non immune mediated mechanisms are postulated for drug induced hemolytic anemia. We report a case of penicillin G induced hemolysis in a patient with RHD MS/MR who was on penicillin prophylaxis, who presented with anemia and jaundice.

**Keywords:** Drug Induced Hemolytic Anemia, Immune Mediated & Non-Immune Mediated Mechanisms, Penicillin G Induced Hemolysis

\*See End Note for complete author details

## INTRODUCTION

Hemolytic anemia forms a major reason for recurrent jaundice with anemia. Manifestation depends on the etiology of the hemolysis. Broadly congenital and acquired causes are possible. Among the acquired auto-immune, both idiopathic and symptomatic like SLE, lymphoproliferative disease.<sup>1</sup> Another important cause for acquired hemolytic anemia is drug induced; again both immune mediated and non immune mediated mechanisms are present.<sup>2</sup> Here we report a case of Penicillin G induced immune mediated hemolytic anemia which is a very rare case.

## CASE REPORT

A 35 years old female patient with RHD MS/MR was referred here for evaluation of recurrent jaundice. She is a known case of RHD MS/MR and was on Penicillin prophylaxis, oral Penicillin G. Jaundice started 2 years ago with recurrence. No itching, no discoloration of urine, no history of biliary colic.

Examination revealed icterus, mild pallor. No other general examination findings. Vitals normal, CVS examination revealed evidence of MS/MR, no CHF. No hepatosplenomegaly. Other systems were within normal limits.

Investigations- Total and differential leucocyte count: normal, ESR: 15mm/hr, Hb: 11gm%, Peripheral blood smear: normocytic normochromic RBC, no normoblasts or schistocytes, reticulocyte count: 3%, LFT S.

Bilirubin 4.5mg (4mg indirect and 0.5mg direct) SGOT and SGPT: normal, S.protein: normal, Coombs test: DCT positive ICT negative.

Considering immune hemolysis, she was investigated for the possibility of drug induced immune hemolysis. Since she was on regular oral Penicillin G, the test was directed on this basis. Penicillin adsorbed RBCs were treated with patients' serum which showed hemolysis. RBCs untreated with Penicillin G did not have hemolysis with patient's serum.

This confirmed the diagnosis of Penicillin induced Immune mediated hemolysis. On discontinuing penicillin prophylaxis features of hemolysis disappeared. Hb rose to 13gm%, reticulocyte count: 1.5%. Finally the diagnosis of Penicillin induced Immune mediated hemolysis was made

## DISCUSSION

B lactum antibiotics Penicillin and Cephalosporins are known to produce immune mediated hemolysis.<sup>5</sup> Drugs can produce hemolysis by immune mediated and non immune mediated mechanisms.<sup>6</sup>

### *Immune mediated mechanisms<sup>4</sup>*

- Revealing the masked antigen in RBCs, producing coombs positive hemolysis by  $\alpha$  methyl dopa
- Drug combining with RBC form new antigen thus antibody production and hemolysis – Penicillin type
- Immune complex, Innocent bystander type: Drug

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with antibody forming immune complex falls on RBC, producing hemolysis with complement activation.

#### *Non immune mediated mechanisms<sup>3</sup>*

1. G6PD deficiency and other enzymopathy: hemolysis by drugs like Primaquine
2. Oxidation mechanism: Denatured Hb and RBC cell membrane producing Meth-hemoglobin and hemolysis ; Drugs like Dapsone
3. Non oxidative mechanisms: Proteins getting attached non immunologically to the RBC membrane; Drugs like Cephalothin, Cisplatin leading on to hemolysis.

## END NOTE

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**Conflict of Interest:** None declared

**Editor's Remarks:** An unusual cause for hemolytic anemia which needs to be remembered while dealing with unusual features. This is a very rare case.

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