VIRAL HEPATITIS B INDUCED HAEMOLYTIC ANAEMIA IN A PATIENT WITH NORMAL GLUCOSE 6 PHOSPHATE DEHYDROGENASE — A CASE REPORT

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INTRODUCTION

A mild to moderate degree of haemolysis has been reported in patients with viral hepatitis. Pitcher and Williams (1) in their study on jaundice noted that a reticulocyte count of more than 2% was present at some time during the course of the survival study of red cells in 24 of 37 patients. Occasionally, however, severe haemolysis with haemoglobinuria occurs, and in these patients co-existing erythrocyte glucose-6-phosphate dehydrogenase (G-6-PD) deficiency has frequently been found (2). It has been suggested that viral hepatitis per se provoked the severe haemolysis in the enzyme deficient patients.

Chan and Todd (2) found that 14 of 20 G-6-PD normal patients and 17 of 18 G-6-PD deficient patients with viral hepatitis had clinical evidence of haemolysis during the course of their illness. Of the G-6-PD deficient patients 8 had haemoglobin levels below 9 mg/dl, whereas in none of the G-6-PD normal patients was the haemoglobin level below this level. We report here a patient with Hepatitis B viral infection with severe haemolysis, with a fall of haemoglobin to 5.9 gm/dl, who responded adequately to prednisolone therapy.

CASE REPORT

Y C, a 27 year old Chinese lady, in the 23rd week of her first pregnancy, was admitted to our department, with the presenting symptoms of passing tea-coloured urine of one week's duration. She noticed the yellowness of her sclera on the day of admission. There was also associated feeling of lethargy and loss of appetite.

She last saw a general practitioner five days prior to admission for a mild cough and was prescribed chlorpheniramine/paracetamol diphenhydramine/ dextromethophan, and iron/vitamin tablets.

The significant clinical examinations were that she was jaundiced. Her liver was enlarged to 4 cm below the costal margin. It was slightly tender to palpation, but the spleen was not palpable. She had a haemoglobin level of 8.1 gm/dl, a reticulocyte count of 13.0%. The red cells were normocytic with some evidence of hypochromia. Her liver function study on admission showed a total protein of 5.8 gm/dl, albumin 3.5 gm/dl, bilirubin 21 mgm/dl, alk phosphatase 131 U/L, SGPT 862 U/L, and SGOT 721 U/L.

Hbs Ag by RPHA was positive with a titre of 1/256. G-6-PD was present, direct coombs was negative and LE cell, Anti-nuclear factor were also negative. Her blood group was AB, Rh +ve, with no atypical blood group antibodies detected.

She was observed over the next two days when her haemoglobin was noticed to fall to 7.2 gm/dl with a reticulocyte response of 10.8%. She was transfused with one unit of packed cells. However, she continued to haemolyse and her haemoglobin again fell to 6.8 gm/dl over the next two days, the reticulocyte response was 6.5%.

Clinically, her state of jaundice was noticed to have increased on her 7th hospital day. She was given two units of packed cells and commenced on prednisolone 15 mgm tid. Her haemoglobin level continued to fall to 5.9 gm/dl on the 9th hospital day with a correspondingly marked reticulocyte response of 24.9%. She was given another two units of packed cells. Inspite of the severity of haemolysis, no evidence of hepatic insufficiency was noticed throughout the period of observation.

Even at this low level of anaemia (5.9 gm/dl), her jaundice was noticed to be lightening. Her serum bilirubin fell on the 10th hospital day to 9.8 mgm/dl, SGPT 536 U/L, SGOT 235 U/L and the alk phosphatase 121 U/L.

She continued to show symptomatic improvement. Her haemoglobin began to rise, although very slowly, to reach a level of 11.5 gm/dl on the 24th day of hospitalisation. Her liver function test had also returned to normal at this stage and she was discharged.

She continued uneventfully with her recovery and her pregnancy, and at term delivered a healthy 3 kgm baby girl. Her Hbs Ag was also not detected at this time.

DISCUSSION

A mild to moderately severe haemolysis occurs in G-6-PD normal subjects suffering from viral hepatitis. Our patient illustrates the degree of severity of haemolysis that can occur, with her haemoglobin falling as low as 5.9 gm/dl. Chan and Todd, however, did not find a haemoglobin level of less than 9 gm/dl in their patients with normal G-6-PD.

51 Cr-labelled red cells have been used to show shortened red cell survival time in infectious hepatitis. Chan and Todd found that red cell survival varied from 16 to 19 days (normal 24 – 33 days) but the mechanism for red cell destruction has not been elucidated. Among the possible mechanisms are sequestration of red cells by the spleen or other organs, the action of autoimmune antibodies, or direct physical or chemical damages to the red cell by a plasma factor (2).

Cross transfusion studies have demonstrated shortening of the survival of normal transfused erythrocytes and also patients' red cells transfused into normal subjects. This shortened survival suggests that there must be an acquired and apparently irreversible intrinsic red cell defect, and that this factor alone is capable of producing a similar degree of shortening of the red cell life in a normal circulation. The combination of these findings suggest that the extracorpuscular mechanism present may be a plasma factor and that it is this factor which is responsible for the irreversible damage to the red cell (2).

Dacie (3) has described a typical autoimmune haemolytic anaemia of the warm antibody type in cases of liver disease. The presence of such antibodies could well lead to increased cell destruction in the spleen. However, autoantibodies have not been demonstrated in the great majority of cases. Pitcher and Williams, found the absence of excessive red cell destruction in the spleen and almost complete absence of the effect of steroid therapy on either the survival curve or the haematological picture (1). In our patient, however, there was apparent response to steroid therapy, with the cessation of the fall of the haemoglobin levels and a rise of reticulocyte response to 24.9%.

Jonderko (4) has reported the low levels of red cell glutathione (GSH) with return to normal on clinical and biochemical recovery in 50 patients with hepatitis. In our patient unfortunately, GSH level was not determined. However, she had taken paracetamol during the early phase of her illness, incurring an additional oxidative stress which could have been responsible for the lowering of her GSH levels and the severity of the haemolysis (2).

The mechanism of haemolysis in viral hepatitis has not been determined, as both plasma factors and an intrinsic defect in GSH metabolism may contribute to red cell destruction. 51 Cr-labelled red cell and cross transfusion studies indicate plasma factors. However, low levels of red cell reduced glutathione have also been shown in patients with viral hepatitis. Further, oxidative stress on the glutathione levels, incurred by medications, could be an additional cause for the severity of the haemolysis.

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