PAROXYSMAL NOCTURNAL HAEMOGLOBINURIA IN A SOUTH AFRICAN BANTU PATIENT

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Paroxysmal nocturnal haemoglobinuria (PNH) is a rare disease, and we are not aware of any description of proved cases in the Bantu. The clinical manifestations are not always typical, and the disease should be included in the differential diagnosis of patients with haemoglobinuria or apparent haematuria. In this paper we record the findings in a Bantu patient in whom the diagnostic criteria of PNH were fulfilled.

These criteria are: increased rate of haemolysis (as shown essentially by the demonstration of diminished red-cell life-span), haemosiderinuria, and haemolysis of red cells in acidified serum. Certain other features contribute to the diagnosis. The red cells haemolyse when incubated in serum containing high-titre cold antibodies, and haemolysis in acidified serum is enhanced by the addition of thrombin. Clotted blood from patients with PNH haemolyses rapidly when incubated at 37°C. PNH red cells are often deficient in the enzyme acetylcholinesterase. All these features have been demonstrated in the present case.

METHODS

The standard haematologic methods used in this investigation were those described by Dacie.1

Ham's acid-serum test: $\frac{\chi^2}{\chi^2}$ volume of a 50% suspension of washed red cells was added to normal compatible serum acidified by the addition of $\chi^2$ volume of 0:2-N-HCl. The mixture was incubated at 37°C. for 2 hours, and the amount of haemolysis in the supernatant read quantitatively. Controls included normal red cells, unacidified serum, and inactivated serum.

The Crosby test was performed as originally described,2 and the amount of haemolysis read quantitatively. Controls were set up with normal red cells.

Haemolysis by high-titre cold antibodies: 0·25 ml. volumes of a 10% suspension of test and control red cells were added to 0·25 ml. of a 1 in 25 dilution in normal serum of the serum containing high-titre cold antibodies. The mixture was left at room temperature for 2 hours, and the amount of haemolysis read quantitatively.

Heat-resistance test: Blood from the patient and controls was allowed to clot at 37°C. for 2 hours, and the amount of haemolysis in the serum was measured quantitatively.

Red-cell acetylcholinesterase was measured by the method of Michel.3

Neutrophil alkaline-phosphatase activity: Fresh blood smears were stained by the Golomb technique.

Red-cell survival was measured with radioactive chromium, as described by Mollison and Veall.4 The half chromium time was estimated, and the mean cell life calculated after correction for elution (T½ elution 64 days).

Laboratory Findings

Blood count. On admission the haemoglobin value was 7·5 G. per 100 ml., packed-cell volume 25% and mean corpuscular haemoglobin concentration 30%, with reticulocytes 16%. Leucocytes were 2,300 per c.mm. with neutrophils 23%, monocytes 5%, lymphocytes 65%, eosinophils 0% and basophils 1%. The urine was negative. Schumm's test was performed as originally described, 2 $\chi^2$ of a 1 in 25 dilution in normal serum of the serum. Controls were set up with normal red cells.

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Further Investigations

The patient's blood group was O, Rh positive. The direct Coombs test was negative and abnormal antibodies were not detected. Cold agglutinins were present to a titre of 1 : 32. The direct and indirect Donath-Landsteiner tests were negative. Schumm's test was positive. Electrophoresis of the haemoglobin in veronal buffer (pH 8·6) showed a single component with the mobility of haemoglobin A, and sickling could not be demonstrated. Heinz bodies were not present. The osmotic fragility of the red cells was within normal limits. The V.D.R.L. test was negative.

The quantitative Ham's acid-serum test was positive, 23% haemolysis of patient's cells occurring in acidified normal serum. Haemolysis did not occur in unacidified or inactivated serum. Haemolysis by high-titre cold antibodies was 31%, there being no haemolysis of control cells. The Crosby test was positive, with a 50% increment in the amount of haemolysis in acidified serum with added thrombin, as compared with acidified serum without thrombin. Haemolysis of clotted blood left at 37°C. for 2 hours (heat-resistance test) was 12-5% with no haemolysis of control blood. Red-cell acetylcholinesterase was 0·22 LI pH per hour (normal range 0·65-0·95 LI pH per hour). Alkaline-phosphatase activity could not be demonstrated in the patient's neutrophils, but was present in control smears.

A red-cell survival study (Fig. 1) showed a half chromium time (T½ 64Cr) of 8 days (normal 30 ± 2 days) with mean cell life 28 days
described was a study; Prof. J. V. R. L. (RAO.)
cyst (Case 3). Ingestion of urine passed at intervals of urine.

Alkaline-phytase activity could not be demonstrated in the neutrophils, lack of this activity having been described in PNH by Begg and Valentine. There was very marked haemoagglutinuria, confirmed by chemical analysis.

PNH would be expected to occur in the Bantu, for the disease is well described in the American Negro. Crosby referred to Negro patients, and 3 of the 6 patients described by Hartman and Audito were Negroes.

SUMMARY

A case of paroxysmal nocturnal haemoglobinuria in a Bantu female is described.

We wish to thank the Director, South African Institute for Medical Research, for facilities to carry out this study; Prof. J. V. Dacie for supplying the serum containing high-titre cold antibodies; Dr. V. H. Wilson for his help; Mr. D. Hart and Miss V. Brandt for technical assistance; and the Superintendent, Baragwanath Hospital, for permission to publish the case.

REFERENCES


THE GASTRIC FUNDUS

ITS PRESENTATION AS A 'MASS' BELOW THE LEFT DOME OF THE DIAPHRAGM


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The empty fundus of the stomach may sometimes produce a rounded shadow which is seen to lie below the left dome of the diaphragm in the plain radiograph of the abdomen.

Although this feature is probably well known, I am prompted to draw attention to it, having encountered instances in which the shadow has been misinterpreted and considered to be a cyst or tumour. Three illustrative cases are presented, as examples:

Case 1

(W. V. B.). Male, aged 40 years. A pyelogram taken during the investigation of his hypertension (Fig. 1) showed a 'mass' above the left kidney. The question of cyst or tumour was raised. However, barium in the gastric fundus confirmed the true nature of the shadow (Fig. 2).

Case 2

(J. P.). Female, aged 23 years, with Cushing's disease. A rounded shadow is visible above the left kidney in the pyelogram (Fig. 3). Presacral air insufflation revealed no adrenal tumour, though bilaterally pronounced in the early morning specimens. The blood picture showed a haemolytic anaemia with reticulocytosis, intravascular haemolysis, and mild hyperbilirubinaemia, and the red-cell life-span was markedly diminished. There was leucopenia with persistent neutropenia, and thrombocytopenia, typical features of PNH. The various haemolytic tests were strongly positive. The red cells were deficient in the enzyme acetylhlemesterase, and deficiency to this degree is apparently specific for the disease. Alkaline-phytase activity could not be demonstrated in the neutrophils, lack of this activity having been described in PNH by Begg and Valentine. There was very marked haemoagglutinuria, confirmed by chemical analysis.

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