Association of Hb-D Trait with Nephrotic Syndrome: A Fact or Coincidence?

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Nephrotic Syndrome is one of the commonest renal problems encountered in paediatric age group. Eighty to 85% of the cases are of the idiopathic variety. A very small percentage of the secondary causes of nephrotic syndrome is contributed by hemoglobinopathies[1,2]. Among hemoglobinopathies sickle cell, anemia is well documented cause of nephrotic syndrome[1]. The doubly heterozygons state of Hb-S with Hb-C. Hb-O and Hb-D have been mentioned to act like mild sickle cell anemia[2] and thus may give rise to renal involvement. We report a patient with simultaneous occurrence of Hb-D trait and nephrotic syndrome.

Case Report

Ten years old, previously well, male child, resident of Balochistan presented with acute onset of fever, haematuria and generalized oedema. On examination he had generalized oedema with ascites, periorbital oedema, pedal oedema, scrotal oedema and oedema of abdominal wall, mild anaemia, splenomegaly of 2 cm and high blood pressure ranging from 130/90mmHg - 180/110mmHg. During his stay in the hospital, he had a fit when his B.P. increased to 180/1 10mmHg. The provisional diagnosis of nephrotic syndrome was confirmed by following investigations:
Twenty-four hours urinary albumin - 5980mg/24 hours/1400ml; Serum albumin 2.3 gm/dl; blood urea 92 mg/dI; serum creatinine 1.3 mg/dl. The urine showed RBC count of 30-35/HPF; WBC 10-12/HPF; specific gravity l.020.There were no casts in urine; Hb 10 gm/dl and reticulocyte count was 6%. Considering the ethnic origin of the child from Balochistan, sickle cell syndrome was considered to be the cause of nephrotic syndrome but the sickling test was negative. Hb electrophoresis done at routine alkaline PH revealed Hb S/D. Subsequent electrophoresis at acid medium showed Hb-A 60.9%, Hb-D 37.4%, Hb-A2 -1.8% (Figure),

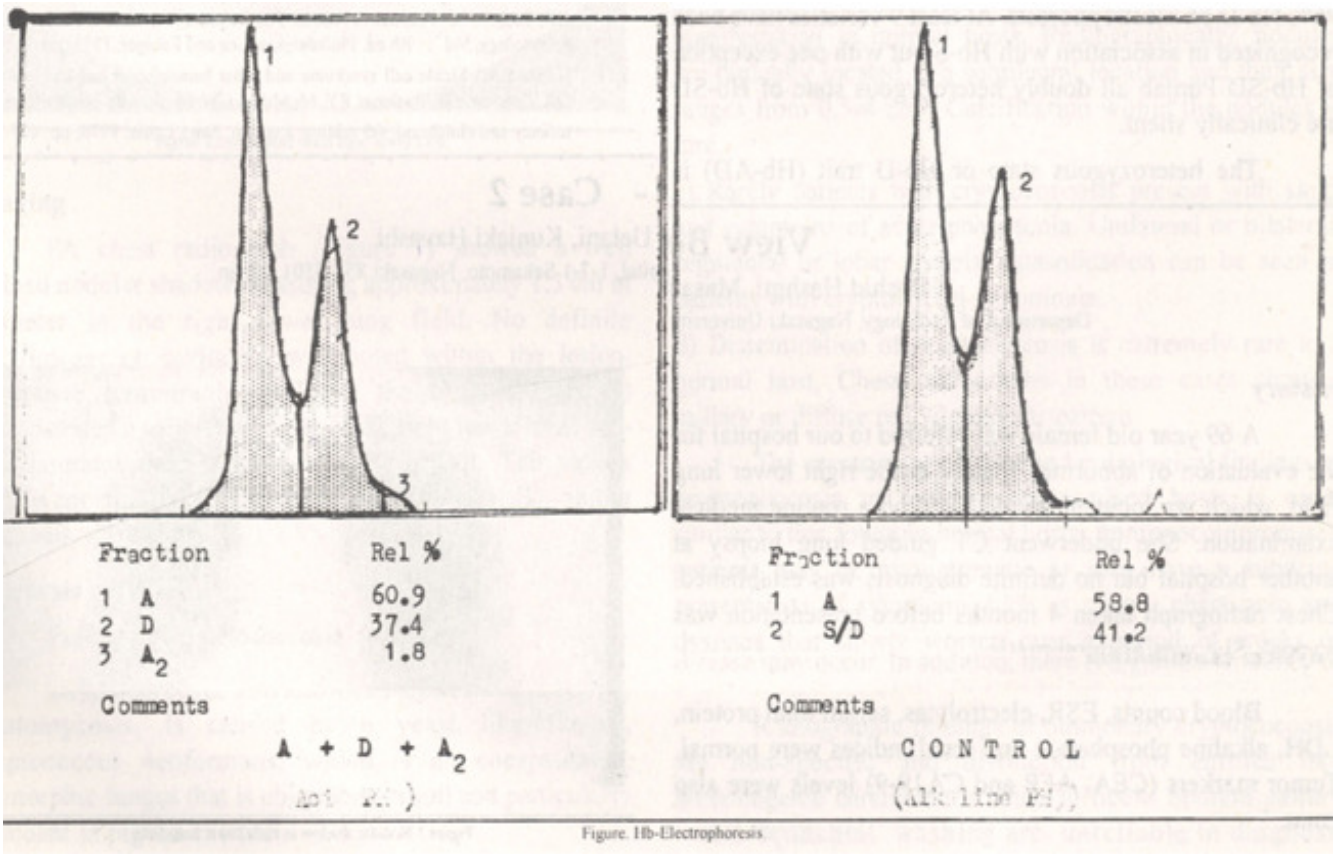

Figure. Hb-Electrophoresis

the picture being consistent with Hb-D trait.

The renal histopathology revealed mesangial proliferation on light microscopy while iron staining of the renal tissue was negative. The patient was put on corticosteroid in a dose of 60/mg/m2/24 hours in accordance with the ISKDC protocol and also on tab. Inderal (Propranolol) 1 mg/kg/24 hours for hypertension. He responded well to treatment and has not relapsed during the 15 months of follow-up. Also his renal function tests and blood pressure have returned to normal and remaining so while he is off antihypertensive treatment. On the other hand his spleen has increased in size from 2.5cm to 3.5 cm over a period of one year, though he is maintaining his Hb at 9 gm/dl - 10 gm/dl and did not require blood transfusion during the period of his follow-up.

Discussion

In Hb-D the letter designation 'D' is applied to a number of variants having an electrophoretic mobility similar to that of Mb-S at an alkaline Ph of 8.6. It is distinguished from Hb-S by its normal solubility, its failure to produce sickling and an electrophoretic mobility on agar gel at an acid Ph that differs from that of Hb-S[3].

The Hb-D disease (Hb-DD) is characterized by mild hemolytic anaema and mild to moderate splenomegaly, with 95% Hb-D on electrophoresis. At least 9 varieties have been recognized in association with Mb-S but with one exception of Hb-SD Punjab all doubly heterozygous state of Hb-SD are clinically silent.

The heterozygous state or Hb-D trait (Hb-AD) is associated with no clinical hematologic abnormality. A single report of hematuria Grion in 1967 has been considered significance[2].

Our patient was proven to have Hb-D trait as well as nephrotic syndrome but we have been unable to link the two conditions together mainly because of the scarcity of the data available on Hb-D. The nephropathy in sickle cell anaemia have been attributed to vascular thrombotic events and

accumulation of non-haem iron in the mesangial cells secondary to sickling of the cells in the renal environment[2]. Vascular occlusion giving rise to membranoproliferative type of glomerulonephritis. The RBC's in Hb-D syndrome do not sickle and thus cannot give rise to the same pathological mechanism as the Hb-S. However, accumulating evidence points to autologous immune complexes as the primary pathogenic mediator in Hb-S nephropathy[2]. The same may be considered to be the factor in Hb-D disease. Whether the occurrence of the two conditions in our child is a co-incidence or there is an actual association remains to be seen.

References

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