HAEMATOLOGICAL PROBLEMS IN RENAL FAILURE

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SUMMARY.

The present study reports haematological problems in 33 unselected patients, 21 males and 12 females, admitted to the Kenyatta National Hospital (KNH) with renal failure due to a variety of disorders. Routine haematological tests were done in the 33 patients, bone marrow for cellularity in 15 and for iron status in 17. Tests for haemostasis performed on these patients included platelet counts, bleeding time, prothrombin time, thrombin time and partial thromboplastin time. Fibrinolytic activity was assessed by euglobulin lysis time and fibrin degradation products (FDP). Platelet aggregation was not done on those 33 patients on account of technical difficulties in the beginning but was studied later on ten other patients with comparable degree of renal failure and symptomatology. All patients had serum creatinine concentration above 3 mg/dl and were investigated on admission before hospital therapy was instituted.

All patients had mild to severe anaemia with a mean haemoglobin of 8.8 g/dl. Normocytic normochronic anaemia occurred in the majority of cases (78.8 per cent). There was an inverse correlation between the haemoglobin level and the blood urea concentration ($r = -0.47$). The bone marrow cellularity was normal or slightly hypercellular. The erythroid series was normal or slightly hypercellular and occasionally hypocellular. Erythropoiesis was normal. The myeloid series was normal or hypercellular with normal leucopoiesis. Megakaryocytic series were normal with normal thrombocytopoiesis. Plasma cells and reticulum cells are often increased in number but were often normal morphologically. The significance of plasmacytosis in uraemia is discussed. Stainable iron in the bone marrow was normal in some and reduced or absent in others. About 30 per cent of cases showed normocytic normochromic anaemia while there was no stainable iron in their marrow. The significance of this pre-clinical state of iron deficiency in connection with management is discussed. Reticulocyte count was normal or slightly raised and showed no correlation with the level of haemoglobin ($r = 0.04$) or the level of blood urea ($r = 0.18$). The peripheral blood film showed red cell fragments,

"burr" cells and polychromasia. In some cases the white blood series showed polymorphnuclear hypersegmentation and toxic granulation in the cytoplasm. These features were more marked in severe uraemia with or without malignant hypertension. Despite nutritional and helminthic infestations known to contribute to anaemia in general in the tropics, the anaemia of renal failure seen in our environment correlates well with what has been reported elsewhere.

Eleven out of 33 patients had bleeding tendency. Bleeding time was prolonged in 56 per cent of cases. There was no significant correlation between the bleeding time and the degree of uraemia ($r = 0.40$). All the patients, except two, with clinical bleeding had prolonged bleeding time. Four patients had thrombocytopaenia (platelet counts below 100,000 cu.mm). There was no significant correlation between platelet counts and blood urea levels ($r = -0.30$), all cases with thrombocytopaenia and borderline platelet counts (100,000 to 150,000 per cu.mm) had blood urea levels above 300 mg/dl. Platelet aggregation was impaired in all ten patients and inversely related to the blood urea level. Prothrombin time was prolonged in 20 per cent of cases, three with intravascular coagulation defects but in the other the cause was probably due to hepatic dysfunction. Thrombin time was prolonged in three patients, all with intravascular coagulopathy. Two cases showed prolonged partial thromboplastin time as well as other evidence of intravascular coagulopathy. Partial thromboplastin time was shortened in two cases and its significance is discussed. Fibrinolytic activity was depressed in all cases. Thirteen out of 17 cases (76.5 per cent) had raised FDP in their blood. The significance of the involvement of coagulation and fibrinolytic systems in renal disease is discussed. It has been shown in this study, like in previous ones by other workers, that some patients with demonstrable haemostatic abnormalities bleed while others do not ; this latter group constitutes potential bleeders. The practical application of this observation in the management of uraemic bleeding is discussed.

This study has shown that the pattern and incidence of the haemotological problems which occur in our patients with renal failure, regardless of aetiology, do not differ in essence from those shown in similar studies published outside Africa.