Acute Hepatitis and Erythropoiesis in Chronically Haemodialyzed Patients

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Viral hepatitis

Inadequate erythropoiesis, possibly owing to inadequate erythro-poietin production [1], seems to be the most important mechanism of anaemia associated with chronic renal failure; other factors, such as haemolysis, blood loss and deficiency states, may be contributive, especially in patients undergoing chronic haemodialysis [2]. However, the pathogenesis of anaemia remains uncertain. Anaemia has been described in viral hepatitis, attributed to transient bone marrow suppression [3]. As hepatitis is frequent among chronically haemodialyzed patients, we have retrospectively analyzed the charts of the patients who contracted viral B hepatitis in our Centre. We would like to report the erythropoietic stimulatory effect of acute hepatitis we have observed.

Case Reports

30 patients (22 males, 8 females) contacted hepatitis whilst undergoing treatment with regular haemodialysis for an average 13 months; only 1 was anephric. Before hepatitis, haemoglobin was 6.6 ± 0.2 g/100 ml (mean $\pm$ SD) haematocrit $20.5 \pm 0.7\%$, serum iron 10.56 ± 0.56 $\mu\text{mol}\cdot\text{l}^{-1}$ and aminotransferase in the normal range. The onset of hepatitis was always associated with the appearance of HBs antigen. Figure 1 indicates the changes induced by hepatitis, from 3 months before its onset to 1 year thereafter. During this survey, dialysis therapy remained unchanged except for the patient's nutritional status. Blood transfusion and iron therapy were suppressed or avoided. Androgen therapy was never prescribed. Haemoglobin increased significantly ($p < 0.001$) to 7.9 ± 0.3 g/100 ml and hema-tocrit to $23.6 \pm 0.8\%$ ($p < 0.001$) 3 months after the onset of hepatitis, whilst the maximal hepatic cytolysis, indicated by the increase in serum iron and aminotransferase appeared earlier, i.e. after 1 month. We were unable to correlate any clinical feature or routine biological parameter of hepatic cytolysis with the maximal increase in haemoglobin encountered. The increase of haemoglobin remained significant for 12 months after the onset of hepatitis. The occurrence of chronic hepatitis in 6 patients resulted in the sustained increase found in aminotransferase and haemoglobin concentration.

Fig. 1. Biological changes induced by viral hepatitis vs. time. Hepatitis occurred at time 0 and was associated with the appearance of HBs antigen.

Comment

We have never observed and increased anaemia following viral hepatitis in uraemic patients undergoing chronic haemodialysis. On the contrary, a significant stimulation of erythropoiesis has been

documented. Such an effect was described previously [4]. Whether this phenomenon is directly related to the viral infection or whether it is secondary to hepatic cytolysis remains to be demonstrated. An increase in plasma concentration of iron, vitamin B12, and folic acid induced by cytolysis could improve erythropoiesis. It has also been

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recently documented [5] that hepatic cytolysis induced an increase in plasma erythropoietin activity in the anephric state. However, therapy with these different factors in uraemia is generally insufficient to increase the blood red cell count in the absence of a clear-cut deficiency. Particularly, the administration of erythropoietin over a short period of time failed to produce any clinical improvement [6]. Alternatively, hepatotrophic factors [7] resulting from liver necrosis after either viral or toxic cytolysis [8] could also act on the bone marrow and stimulate erythropoiesis.

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