Correspondence

Coagulation disturbances and fulminant liver failure

Sir,

In this study of one child with fulminant hepatic failure,¹ time consuming and difficult assays have been used to show simultaneously features of intravascular coagulation, fibrinolysis and impaired production of factors promoting and inhibiting coagulation and fibrinolysis. The authors are to be congratulated on the thoroughness of the study, which suggests that the regenerative capacity of hepatocytes may be influenced by thrombotic occlusion of the intrahepatic microcirculation.

Their conclusion that the patient's recovery was due to the haemostatic balance they maintained during the first 15 days in hospital and their more general assertion that the prognosis for fulminant hepatic failure may be improved by these measures, can hardly be sustained on the basis of a single case report, albeit backed by five consecutive adult patients with fulminant hepatic necrosis (as yet unreported) treated consecutively in a related unit.

It should be noted that death from fulminant hepatic failure when treated in a more conventional fashion is not invariable in patients whose prothrombin activity is as high as 14%. Furthermore the patient's recovery coincided with remission of renal failure which was perhaps the most striking feature of his illness and may well have contributed to his coma. Leptospirosis does not seem to have been excluded as a cause for the boy's illness, although it could explain many of the features.

My main concern about the conclusion, however, relates to the steps necessary to maintain haemostatic balance. This included the infusion of antithrombin III plasminogen, fresh frozen plasma, and prothrombin concentrates. No details are given on the preparation of these but since they are likely to be plasma derived, do they not carry a risk of causing non-A, non-B hepatitis, type A hepatitis, or acquired immune deficiency syndrome?

I am surprised that this article was published in the *Archives* with the above title and conclusion.

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Dr Burghard and co-workers comment:

Concerning the aetiology of fulminant hepatic failure in our patient, exhaustive bacteriological and virological studies were performed, and leptospirosis, among other infections, was excluded.

Improvement of renal function was related to hepatic function returning to normal and complete correction of coagulation disturbance. It is unlikely that renal failure was

the most striking feature of the patient's clinical condition, or that it contributed much to the coma for two reasons: the boy became comatose while renal function was only moderately decreased, and good metabolic and fluid balance were achieved throughout the whole period when haemodialysis was necessary.

No set guidelines are presently available for the treatment of the coagulation disturbances that occur in fulminant hepatic failure, and no controlled trial based on our treatment approach has been performed so far. A prospective investigation is difficult in respect of the small number of cases seen at any centre, and the ethical problems are evident, especially in paediatric patients. The same is true for many other procedures used in the treatment of fulminant hepatic failure on a merely empirical basis. Our conclusions are based on the successful treatment of seven consecutive patients over a 10 year period, and have been published elsewhere.² The mortality rate from fulminant hepatic failure with more conservative treatment before this time was 100%. Nevertheless, we would agree with Dr Mowat that more studies are required to determine the exact role of the proposed treatment.

The risk of serum hepatitis or even acquired immune deficiency syndrome is important when the large amounts of plasma derivatives—especially fresh frozen plasma—are considered. Similar to other aggressive treatment regimens, indications must be weighed against the increased risk of potential complications. Based on the experiences reported, however, it is our opinion that further use is justified.

References

- ¹ Burghard R, Leititis JU, Rossi R, Egbring R, Brandis M. Treatment of severe coagulation disturbances as a condition of improved prognosis in fulminant liver failure. *Arch Dis Child* 1985;**60**:167–70.
- ² Egbring R, Seitz R, Gottesbü-cen H, Burghard R, Fuchs G, Lerch L. Substitutionstherapie mit Plasmaderivaten (Antithrombin III, PPSB, FFP, F VIII, Plasminogen und Kryopräzipitat) bei schweren erworbenen Störungen der Hämostase infolge akuter Leberinsuffizienz und Sepsis. In: Köstering H, ed. *Antithrombin III, Grundlagen, Diagnostik, klinische Bedeutung und Therapie*. New York: Schattauer Verlag Stuttgart, 1984:135–62.

Formula milks for the older infant

Sir,

I would like to comment on the recent appearance of a milk formula called Progress from Wyeth Laboratories which is being marketed as a follow on formula suitable for infants from 4 to 6 months onwards. The promotional literature quotes two references, a Department of Health and Social Security (DHSS) report¹ and a report from the