LIVER FUNCTION AFTER REPEATED HALOTHANE AND ENFLURANE ANAESTHESIA

Sir,—We were interested to read the paper by Allen and Downing (1977) on liver function following repeated exposures to halothane or enflurane. It is, however, hardly surprising that they failed to demonstrate abnormalities of liver function after halothane anaesthesia in their patients in whom blood samples were taken for up to only 72 h following anaesthesia. In our study (Wright et al., 1975), to which the authors refer, very few increases in serum transaminase concentration following repeated halothane occurred within 72 h, and mostly the changes occurred during the 2nd week after exposure (table I). The design of their study is therefore in no way comparable to our own, and we would not have expected differences in AST concentrations between their groups during their short follow-up period after anaesthesia.

TABLE I. *Mean and greatest s.g.o.t. concentration (i.u. litre^{-1} (normal < 19)) in patients following repeated halothane and control (non-halothane) anaesthetics (from Wright et al., 1975). (n = no. of entries)*

	s.g.o.t. concentration						
		Days					
	Before anaes.	0–3	4–6	7–9	10–12	13–15	>15
Halothane	8.2	9.9	10.9	18.4	18.5	20.7	21.8
(n = 76)	17	52	69	100	143	440	90
Control	8.7	10.2	8.7	7.9	9.1	8.9	10.2
(n = 76)	18	21	28	18	17	25	19

We should also like to clarify the comments by Drs Allen and Downing on our paper. We did in fact measure s.g.o.t. (a.s.t.), s.g.p.t. (a.l.t.), ornithine carbamoyl transferase (o.c.t.), lactate dedydrogenase, serum bilirubin, total alkaline phosphatase and albumin in both control and halothane groups. In the halothane group there were significant increases in s.g.o.t., s.g.p.t. and o.c.t. concentrations compared with the controls. Data on s.g.p.t. and o.c.t. concentrations were not available for all patients, and hence in our *Lancet* report we confined our analysis to s.g.o.t. concentrations. Changes in the other "liver function tests" were considered less specific for liver cell necrosis, which was the phenomenon being examined. However, none of our patients in the halothane group became icteric clinically, although one showed evidence of hepatitis on liver biopsy.

As far as excluding other causes of abnormal liver function are concerned, we did mention that patients with abnormal liver function before operation were excluded from the analysis. In addition, none of the patients was HBsAg-positive, and the two groups were comparable as regards concomitant drug therapy and previous blood transfusions.

Finally, we are not quite clear what is meant by "a comparison with other anaesthetic agents was not made". Both our study and that of Dr Trowell and colleagues (1975) were conducted as prospective randomly controlled trials.

We feel that Drs Allen and Downing have misinterpreted the literature in their paper. In addition, any study which subjects patients to repeated halothane exposures within a short period must, in the light of previous reports, give cause for some concern.

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Sir,—We are grateful to Professor Wright and his colleagues for their comments on our paper entitled "A prospective study of hepatocellular function after repeated exposures to halothane or enflurane in women undergoing radium therapy for cervical cancer" (Allen and Downing, 1977), and for clarifying certain aspects of their original paper on this topic (Wright et al., 1975).

Although we did not repeat liver function tests after 72 h after anaesthesia, we did repeat anaesthesia, and thus liver function tests approximately 50 days (1st–2nd anaesthetic) and then 14 days (2nd–3rd anaesthetic) later in a reasonable proportion of our patients.

We accept that both the trials published by Wright and others (1975), and Trowell, Peto and Crampton Smith (1975), did allow comparison with other anaesthetic techniques, but they did not compare specifically two commonly used volatile agents as we attempted to do.

Their final comment is unfair, as our study was based on the views and findings of several eminent authorities who were quoted, many of which run contrary to those of Professor Wright and his colleagues.

A further basis for the study was our extensive clinical experience, amounting to hundreds of cases per year over the past 10 years, of halothane anaesthesia for insertion of radium in the management of cervical cancer. Perusal of our mortality and morbidity records revealed no evidence of hepatic complications after halothane anaesthesia in this group of patients. Indeed, our practice still has not changed despite reports suggesting inherent hazards with this anaesthetic technique.

Our belief is that, in our black population at least, repeated halothane or enflurane anaesthesia for radium insertion is as safe a technique as any other. Therefore, we are currently planning a further extension of the trial comparing the two anaesthetics against spinal saddle block for the procedure.

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