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EXTRACORPOREAL REGIONAL COMPLEXATION DIALYSIS IN PATIENTS WITH MERCURY POISONING

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An outbreak of methylmercury poisoning occurred in Iraq in late 1971. Exposure was due to the consumption of home-made bread prepared from seeds dressed with fungicide containing methylmercury. The number of cases and the seriousness of the exposure in some, posed a therapeutic challenge.

In view of the severe damage which methylmercury can cause to the tissues, especially the nervous system, it was obvious that rapid elimination of the methylmercury from the body was vital if tissue damage was to be minimized.

Chelation therapy using complexing agents containing free sulfahydral groups or the use of non-absorbable polythiol resins, do not seem to be adequate even at their best in the face of dangerously high methylmercury ingestion.

A new approach to the problem is described, utilizing extracorporeal regional complexation dialysis, using the Travenol RSP 145 twin coil dialyser. Essentially this consists of a blood compartment and dialysate compartment, separated by semi-permeable dialysis membrane. Using an infusion pump, arterial blood from the patient is mixed extracorporeally with the complexing agent before it enters the dialysis coil, where redistribution, complexation and diffusion of the complexated methylmercury and free complexing agent occur. The blood is then returned to the patient having lost (as estimations indicated) an important part of its methylmercury and the infused complexing agent. N-acetyl penicillamine was used early in the project, but cyseine which is devoid of side effects was substituted later. The amount of methylmercury depleted was found to be related to the dialyser blood flow and the concentration in the blood of the infused complexing agent. These parameters can be manipulated to achieve the optimum results.

The well-known rapid equilibration of methylmercury in the blood and other parts of the body ensures a constant decline of tissue levels with falling blood levels. As far as one can tell, no harmful effects are encountered using this procedure. It was difficult to tell if clinical improvement was obtained as these cases were received very late and had sustained widespread organ damage.

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