Antibody Production in Patients on Regular Haemodialysis to Organisms Present in Dialysate

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Effluents from dialyses have been monitored for the presence of bacteria over a number of years. The bacterial flora has been found to alter with changes in technique. The bacteria cultured from effluents, when present in large numbers, have been related to pyrogenic reactions. In 1968 changes in bacterial flora occurred and reactions became more frequent and severe. This period was defined by the regular isolation of Enterobacter aerogenes from dialyser effluents. Despite many hygienic measures this organism was not eradicated from the unit until all Kiil dialysers in use were simultaneously either re-gasketed or fitted with loose gaskets (Tobin et al, 1970). The presence of a particular micro-organism for a finite period in the environment of the unit enabled us to make observations on the immunological response of patients with chronic renal failure to the antigens of this strain of E aerogenes.

Bacteriology of effluents

Approximately half of 617 effluents collected towards the end of dialysis during 1968 and 1969 contained more than $10^5$ organisms/ml. The bacteria that predominated during 1968 were non-pigmented Pseudomonas sp, aerobic spore-bearers, Achromobacter anitratum and Pseudomonas aeruginosa. Between February, 1969 and January 1970 Enterobacter aerogenes was found in addition to the other organisms. This organism colonised the unit for twelve months and patients dialysed on the unit before or after this period were not exposed to this bacterium.

Blood cultures

During 1969 E aerogenes was isolated from 37 (24%) of blood cultures taken during reactions; prior to this reactions though frequent were not accompanied by bacteraemia. E aerogenes, though invariably present, was not
always the predominant organism in the dialysate on these occasions; the other bacterial species in the dialysate were not cultured from the blood.

Antibody estimations

Agglutination with 'O' and 'H' bacterial suspensions were performed. Twenty-nine patients had antibodies and 11 did not. Of the 11 patients without antibody, 8 commenced dialysis after January 1970 and three were dialysed on the unit in 1968 but received only home dialysis throughout 1969.

The antibody responses are shown in Figure 1.

Comment

Antibodies were only detected in patients dialysed during the period that E aerogenes colonised the unit. The form of antibody responses to 'O' and 'H' antigens did not seem to be influenced by the presence of detectable bacteraemia. We interpret these results as indicating that all the patients with antibody had antigenic experience of whole bacteria, whether bacteraemia was detected or not. Intact Cuprophane 150 does not allow the passage of endotoxin molecules, or whole bacteria. Our results confirm that whole bacteria do penetrate Cuprophane, probably through small tears. (Gazenfield-Gazit & Elishou, 1969)

REFERENCES