Hepatitis B Viral DNA Detectable in Dialysate

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Dear Sir,

A 36-year-old woman underwent hemodi-alysis because of renal failure due to function loss after a recent kidney transplantation. She was found to be positive for hepatitis B virus antigens, both HBsAg and HBeAg appearing highly reactive in enzyme immunoassays (Abbott IMx, Abbott Laboratories, North Chicago, 111, USA). Serum specimens were also positive for hepatitis B viral DNA, as determined by liquid hybridization assay (Abbott Genostics) with values of 935 and 1,574 pg/ml in the first 2 months of hemodialysis, respectively. Hepatitis B viral DNA in serum was also demonstrated by polymerase chain reaction (PCR) and hybridization with radioactively marked c- and s-gene-specific probes [1, 2]. As this patient presented with the probably most infectious stage of hepatitis B, it was of interest to try to detect viral DNA in the dialysate to assess the potential risk of cross-infections in the hemodialysis procedure. Routine 5-hour hemodialysis was performed applying a disposable high-flux membrane (CT-110G hollow fiber, 1.1 m², Baxter, USA) with standard bicarbonate dialysate. Serial analysis of 7 sequential dialysates was performed, using the PCR assay for hepatitis B DNA without concentration. There were no overt blood leaks detected by the dialyzer during these dialysis procedures. It was found that 2 of these 7 dialysates were reproducibly positive for hepatitis B viral DNA.

These results confirm that high-flux membranes cannot be assumed to be impermeable to hepatitis B virus or at least fragments of the virus [3]. These findings seem to contrast with a recent letter [4], reporting a failure to detect any hepatitis B viral DNA in the dialysate. Two differences should be taken into account, however, when comparing this observation with the present case. The detection technique used, a liquid hybridization method, is much less sensitive than the amplification-based PCR technique [6]. Furthermore, the patient studied in the present case should be considered extremely infective.

The present case demonstrates that hepatitis B infectious material is potentially present in the dialysate of a hepatitis B patient. However, even in this most infectious stage, hepatitis B viral DNA is only intermittently detectable by the most sensitive technique, which suggests that only a very low level of viral contamination of the dialysate occurs during dialysis. It

appears, therefore, that the risk of hepatitis B virus transmission by modern dialysis procedures is probably very small but cannot be entirely ruled out.

References

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