Peritoneal Dialysis Does Not Reduce Serum Porphyrin Levels in Porphyrria Cutanea Tarda

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Dear Sir,

We found a patient who was undergoing continuous ambulatory peritoneal dialysis to have porphyria cutanea tarda (PCT). Standard laboratory studies for assessing PCT included 24-hour urine and stool collections and blood for porphyrins. Although plasma or serum porphyrins and stool isocopropor-pyrins can be employed to make this diagnosis in anuric patients, the literature currently does not describe the effect peritoneal dialysis has on circulating porphyrin levels. In this patient's evaluation, measurements of porphyrins in serum and in dialysate were used to (1) support the diagnosis, and (2) assess whether porphyrins are dialyzed across the peritoneal membrane.

A 73-year-old black man was referred to the Dermatology service in December 1986 with generalized pruritus that was considered to be secondary to his renal failure. In the subsequent 6 months, the patient developed a photo-distributed eruption of erythematous papules over the chest and edema of the hands, with multiple ulcers and vesicles on the dorsal aspects. There was no recent history of furose-mide, dyazide or naproxen use. A punch biopsy from the dorsal surface of the hand showed histologic findings consistent with porphyria or pseudoporphyria. Plasma uroporphyrin levels were abnormally elevated to 9.9 µg/dl (normal < 1.0) and heptacar-boxyporphyrins to 1.9 µg/dl (normal < 1.0). Hexa-, penta-, copro- and protoporphyrins were all within normal limits. To examine the effect of peritoneal dialysis on circulating porphyrin levels, we collected pre- and postdialysis blood samples, urine, and dialysate fluid from our patient for analysis. Blood was drawn before and after a 4-hour exchange and 24 h after the first specimen to assess the level after a complete day of exchanges. The dialysate sample was obtained after an abdominal dwell time of approximately 8 h. Results of studies performed by the laboratory of Dr. Poh-Fitzpatrick are listed in table 1. Stool porphyrin levels are listed in table 2.

Erythrocyte porphyrins were quantified by the method of Piomelli [1]. Total porphyrin content of serum, urine and dialysate was measured as uroporphyrin, essentially as described by Poh-Fitzpatrick et al. [2] for determination of plasma porphyrin levels in hemodialysis patients, but using a different fluor-o-meter and a factor for relative fluorescences of coproporphyrin (used as calibration standard) and uroporphyrin determined for that

instrument. Stool porphyrins were quantified by SmithKline Beecham in Van Nuys, California, using liquid chromatography and fluorometry.

Our data indicate that peritoneal dialysis is not effective in lowering circulating serum porphyrin levels. Both hydrophilic and lipophilic porphyrins are bound to serum proteins and lipoproteins [3]. This binding is a probable cause of the failure of porphyrins to dialyze across either standard hemodialysis membranes or peritoneal membranes, despite their small (< 1,000) molecular weights.

References

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