CORRESPONDENCE

Crystallization in Transfer Set Before Continuous Ambulatory Peritoneal Dialysis Initiation—Three Case Reports

Editor:

In our new continuous ambulatory peritoneal dialysis (CAPD) patients, the transfer set is applied after the Tenckhoff catheter is implanted. To assure good inflow and outflow, the surgeon uses 1.5% dialysate in the operating theater to flush the catheter through the attached transfer set. The transfer set is then filled with 1.5% dialysate (1.36% anhydrous glucose) and closed until the surgical wound has healed and training in the CAPD procedure is accomplished. Before CAPD initiation, the drainage system (Tenckhoff catheter and transfer set) is not routinely flushed, but is immobilized to the abdominal skin using the pouch of an abdominal binder (Figure 1) during the training period.

Although peritoneal catheter malfunction has been described in previous reports, malfunction of the transfer set before CAPD initiation has seldom been described (1). Here, we present 3 cases in which patients found yellowish-brown crystals in their transfer set before CAPD initiation. Part of the set seemed occluded, although that observation was not tested by flushing the transfer set.

The patients involved were 53, 71, and 59 years of age. All were women, and all were using a CAPD treatment system from Fresenius Medical Care. Their causes of end-stage renal disease were herb nephropathy, diabetic nephropathy, and analgesic nephropathy. In these patients, the Tenckhoff catheter has been implanted without any complications in 30 April 2008, 6 December 2010, and 26 October 2012. However, before CAPD could be initiated, the transfer sets were found to contain some yellowish-brown crystal-like material (Table 1, Figure 2). After the transfer

Figure 1 — For immobilization of the drain system, the Tenckhoff catheter was taped onto the skin. The long transfer set was coiled and set in the pouch of an abdominal binder.

TABLE 1
Clinical Manifestations in Three Cases of Crystallization in the Transfer Set Before Continuous Ambulatory Peritoneal Dialysis (CAPD) Initiation

Patient age (years)	Cause of uremia	Tenckhoff catheter insertion	Catheter insertion to last flush ^a (days)	Last flush to observation of crystallization ^b (days)	CAPD initiation
53	Herbs	30 Apr 2008	51	67	10 Sep 2008
71	Diabetes	6 Dec 2010	43	57	29 Apr 2011
59	NSAIDs	26 Oct 2012	7	24	27 Nov 2012

NSAID = nonsteroidal anti-inflammatory drugs.

^a Date that the Tenckhoff catheter and transfer set were last flushed.

^b Date that the crystal-like material was found in the transfer set.

Figure 2 — Yellowish-brown and whitish crystal-like material (arrows) were found inside the transfer set, where nothing should appear. The loose and dense crystal-like materials indicate the varying extent of crystallization. The yellowish-brown color of the crystals might be related to glucose degradation products.

sets were replaced, these patients had a smooth CAPD course.

In these patients, the crystallization in the transfer sets was discovered in different seasons (Table 1). The crystals were dissolved in distilled water and tested with a urine dipstick, which showed a positive reaction for glucose (data not shown). This glucose reaction might support our hypothesis that the crystals are probably deposits from components of the dialysate that had lain for a period of time in the transfer set (Figure 2). However, that hypothesis cannot explain why the crystallization happened in the transfer set, and not in dialysate bags. We also hypothesize that the length of the transfer set (40 cm) might, because of being immobilized in a curved position in the pouch of the abdominal binder (Figure 1), have led to gradients forming in the contents of the dialysate during the training period, becoming crystal-like material. The varying extent of the crystallization in the transfer set (Figure 2) might support our second hypothesis that the curve is a precipitating factor for crystallization. The yellowish-brown crystals might be related to glucose degradation products.

Although further cases and studies are necessary to investigate the mechanism of crystallization in transfer sets, we suggest that frequent flushing of the drain system during the CAPD training period, approximately once every 1 – 2 weeks, might avoid crystallization in the transfer set.

ACKNOWLEDGMENTS

This study was supported by grants (NSC 101-2629-B-075-001, V101-C-186) from the National Science

Council and by the Taipei Veterans General Hospital, Republic of China.

DISCLOSURES

No financial conflict of interest exists.

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doi:10.3747/pdi.2012.00344