How Much Heparin Intraperitoneally Is Necessary in CAPD?

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Dear Sir,

The intraperitoneal heparin concentration in CAPD is based on clinical observations [1, 2] and differs from center to center [3]. The aim of an intraperitoneal heparinization should be a sufficient inhibition of intraperitoneal fibrin formation without a systemic anticoagulatory effect. The determination of fibrinopeptide A (FPA), a specific marker for thrombin action on fibrinogen, enables the control of fibrin monomer production by thrombin [4,5]. In 6 patients with diabetic end-stage renal failure we investigated the FPA concentration in dialysate after 500 and 7,500 U heparin/l dialysate for a dwell time of 4h (table I).

Intraperitoneal heparin reduces the fibrin production measurable as FPA concentration. There was no difference between 7,500 and 500 U/l heparin intraperitoneally.

During the experiments with 500 U/l heparin one additional patient got peritonitis (by *Achromobacter xylosoxidans*) with an increase of total protein from 58.9 to 209.8 mg/dl and of antithrombin III (AT III) from 0.32 to 1.04 mg/dl in 4-hour dialysate. The FPA concentration remained at 6.3 ng/ml as in his heparinized dialysate without peritonitis. There was no increased fibrinogen cleavage.

A second patient with end-stage renal failure, CAPD treatment and an extended myocardial infarction in the past got peritonitis by *Pseudomonas aeruginosa*. The initial leukocytosis in dialysate was 23,000/ μ l. The peritonitis was treated successfully with intraperitoneal ticarcillin and with 500 U heparin per liter dialysate for some weeks. Ten weeks after the peritonitis the patient died of sudden ventricular fibrillation. At autopsy the peritoneum had a glossy surface without any fibrin deposits or visible alterations.

Table I. Concentrations in dialysate after a 4-hour dwell time ($\bar{x} \pm \text{SEM}$)

Heparin, U/l	7,500	500	0
AT III, mg/dl	0.33 ± 0.06	0.44 ± 0.13	0.45 ± 0.07
FPA, ng/ml	$20.6 \pm 5.6^*$	$22.8 \pm 6.0^*$	152.2 ± 11.8

* Significant versus dialysate without heparin ($p < 0.05$).

We suggest that the application of 500 U heparin per liter of dialysate is enough to inhibit the intraperitoneal fibrin formation. In addition, we could show in two patients that fibrin formation was suppressed even during peritonitis.

References

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