Table 1.

	Patients (*n*)	Peritonitis *n*	Growths in solid media			Growths in liquid media	
			Blood agar	Chocolate agar	EMB	BKIB	TGB
First period	21	47	0	0	0	9 (19.1%)	9 (19.1%)
Second period	15	24	1	0	1	17 (70.8%)	17 (70.8%)
P (I/II)			Non-significant			($P<0.002$)	

EMB, eosin methilene blue agar; BKIB, brain–heart infusion broth; TGB, thioglycolate broth.

methods are used in the microbiological diagnosis of peritonitis. These are:

1. Concentration of 10–50 ml effluent by centrifugation and resuspension in 1 ml of sterile saline and nutrient broth. And then inoculation of blood agar and McConkey agar should be performed. If a perforated viscus is suspected, anaerobic cultures such as thioglycolate broth should be carried out.
2. Direct inoculation of 5–10 ml effluent into semiautomated blood culture system (Bactec, Septi-check etc).
3. Filtration of the effluent and the inoculation of the specimens left on the filter into the media mentioned above [2,3].

We investigated the effect of the amount of dialysate effluent on the results of the cultures. Thirty-six CAPD patients with peritonitis have been included in this study. Of these 19 were female and 17 were male. The mean age was 47 (22–70) years, mean duration of CAPD treatment was 12.5 (2–26) months. The study was done in two different periods. In the first period 10–50 ml effluent was evaluated. During the second period 100 ml effluent was evaluated. In both periods effluents were taken into 10 ml sterile tubes and then centrifuged at speed of 3500 *g* for 15 min to concentrate the organisms. The sediment was mixed with 1 ml sterile saline. From each of these suspensions, smears were prepared and examined by gram stain. The cultures were made from the suspensions left in the tubes. The same media were used for culture in both periods. These media were solid, such as blood agar, chocolate agar, and eosin methilene blue agar (EMB), and liquid such as brain heart infusion broth (BHIB) and thioglycolate broth (TGB). Inoculated media were incubated at 37°C and kept at least 72 h. For differentiation of the species, subcultures were obtained from the detected growths. Results are shown in Table 1.

Although the culture media used during both of the period were the same, we observed that if we increased the amount of the effluent, the positive culture results and the sensitivity of the method would increase. So we propose that the amount of the effluent examined must be not less than 100 ml no matter which method is used; and finally, as liquid media gives satisfactory results there is no need to use solid media for culture.

This study was presented at ISPD '95, 18–21 June, Stockholm, Sweden.

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Dialysate/plasma ratio of which solute is better correlated with clinical outcome in CAPD patients

Sir,

The peritoneal equilibration test (PET) has become a widely accepted method for assessing the peritoneal membrane transport properties [1]. Based on the ratio of dialysate/plasma creatinine concentrations (D/P_{crea}), patients can be classified as low, low-average, high-average, or high transporters. The results from PET have been used to determine the best peritoneal dialysis modality for a particular patient. The PET-derived D/P ratios of solutes have also been used to estimate daily solute clearance and to aid in prescribing modifications of the dialysis dose. There is evidence that increased peritoneal permeability has a deleterious effect on patient outcome [2–6]. High-transporter patients who have a D/P_{crea} ratio greater than 0.81 may have some problems related to ineffective ultrafiltration, which may in turn become poor prognostic factors. However, the relationships between the D/P ratios of other low-molecular-weight solutes such as urea or phosphate and clinical outcome have not been extensively studied.

Fifty patients, 27 male and 23 female, who had been on CAPD treatment for at least 6 months were studied. The mean age was 46.9 ± 13.8 years (range 15–75). All patients underwent a standard 4-h PET using a 2-l dialysate containing 2.5% glucose [1]. The D/P ratios for urea, creatinine and phosphate, and D_4/D_0 ratio for glucose were determined for each patient. None of the patients had peritonitis at the time of the study or in the 2 preceding months. Three clinical outcome parameters were selected: hospitalization days, peritonitis rate, and mortality. Correlations were calculated using Pearson's correlation coefficient. $P<0.05$ was considered as significant.

The mean D/P ratio was 0.91 for urea, 0.73 for creatinine, and 0.70 for phosphorus, and the mean D_4/D_{0glu} was 0.38 following a 4-h dwell. According to the D/P_{crea} ratio, the patients were classified as low ($n=2$), low-average ($n=11$), high-average ($n=23$), and high ($n=14$) transporters. The mean hospitalization rate was 20.2 ± 18.0 days/patient-year, and the peritonitis rate was 1.2 ± 0.9 episodes/patient-year. The mean D/P_{crea} ratio was positively correlated with hospitalization days ($r=0.494$, $P<0.001$), peritonitis rate ($r=0.378$, $P<0.01$), and mortality ($r=0.293$, $P<0.05$). The

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D/P_{phos} ratio correlated better with clinical outcome than did the D/P_{crea} ratio. The ratio of D/P_{phos} was positively correlated with hospitalization days ($r=0.520$, $P=0.0001$), peritonitis rate ($r=0.453$, $P<0.0001$), and mortality ($r=0.367$, $P<0.01$). There was no significant correlation between D/P_{urea} and clinical outcome parameters.

These findings suggest that the D/P ratio of certain solutes which was used to assess the characteristics of peritoneal membrane transport affected clinical outcome. Previous studies have also shown higher D/P_{crea} ratio to be associated with increased morbidity or mortality [2–4]. We found that the D/P_{phos} ratio better correlated with morbidity and mortality than D/P_{crea}. Although the cause of this finding is unclear, it may be suggested that the D/P_{phos} ratio can be used to evaluate peritoneal membrane transport properties, together with the D/P_{crea} ratio.

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Diagnostic value of collagen type I C-terminal cross-linked telopeptide in CAPD patients

Sir,

We have read with a great interest the paper by P. Joffe and co-workers [1].

Collagen type I C-terminal cross-linked telopeptide (ICTP) is a 12-kD_a peptide, produced together with other peptides when collagen fibrils undergo resorption. The peptide is freely filtered by glomerular membrane.

Osteocalcin (OC) [2] and iPTH [3] are considered to be markers of bone turnover. There are some data [4] that the sera iPTH concentrations do not always have good predictive values, especially in CAPD patients.

Serum (S) values of ICTP, OC, and iPTH were estimated in a group of 14 CAPD patients. ICTP was estimated in the dialysate (D). The peritoneal ICTP clearance (C1) was also calculated [2].

The patients were on CAPD for 4 months to 4 years 3 months. Four of them were on haemodialysis for 1 year 5 months to 13 years 7 months previously. There were eight female patients aged 21–60 years (median 47.5) and six males aged 47–68 years (median 52.5). Four female patients were postmenopausal, three of them had usually regular cycles, and one irregular ones. None of them had had peritonitis episodes for at least a month preceding the study, nor had been immobilized.

Blood was withdrawn at about 8 a.m. ICTP was estimated using RIA method (Orion Diagnostica, Finland), OC RIA method (CIS Bio international, France), and iPTH IRMA method (INCSTAR Co, Massachusetts, USA). Residual renal function was not evaluated. The ICTP sera, dialysate and clearance values were correlated to those of sera OC and iPTH. Spearman rank correlation test was used, the values of $P<0.05$ being considered significant.

Results. NV ICTP (S) 1.8–5.0 μmol/l, OC < 18 μmol/l, iPTH 1.0–6.0 pmol/l.

Patients. ICTP (S) 32.4–245.0 μg/l (median 73.5); ICTP (D) 2.95–22.67 μg/l (median 8.97); ICTP (C1) 0.32–1.68 ml/min (median 0.67); iPTH 3.7–130.4 pmol/l (median 13.5); OC 8.7–356 μmol/l (median 42.9). The correlations were as follows:

ICTP (S):	ICTP (D)	S
ICTP (S):	iPTH	NS
ICTP (D):	iPTH	NS
ICTP (S):	OC	NS
ICTP (D):	OC	NS
ICTP(C1):	iPTH	NS
ICTP(C1):	OC	NS
OC:	iPTH	S

ICTP sera values were elevated in all patients, at least several times, probably partly due to the impaired clearance. No correlation of ICTP sera, dialysate or peritoneal clearance values to those of sera OC and/or iPTH could be seen (sera values of OC and iPTH did correlate in our group).

Considering these results ICTP does not seem to be a useful marker of bone turnover, although further investigations are needed.

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