Peritonitis is a common complication of peritoneal dialysis. When peritoneal fluid culture is obtained by proper culture technique, it is very likely to diagnose the culprit microbial agent. Gram positive organisms are the most common organisms whereas anaerobic, enteric organisms or multiple enteric organisms suggest secondary peritonitis. Sometimes uncommon organisms can be seen as peritonitis agents. We had 3 uncommon organisms that growth in the peritoneal cultures of peritonitis patients recently. Samples of dialysis fluid were aspirated by our specialist continuous ambulatory peritoneal dialysis (CAPD) nurse by an aseptic technique and sent to our microbiological laboratory in 30 minutes. Leu-
cocyte count were performed by nageotte bright-line hemacytometer and Gram and Giemsa stain were performed on the dialysate samples of all cases. Approximately 5 cc dialysate was inoculated in a BACTEC BacT/ALERT (BIOMERIEUX, INC. Durham) and 5% sheep blood and Eosin-Methylene blue agar. After 24 hours of inoculation cultures were controlled. Identifications were determined using the Vitek2 system (bioMerieux SA, France).

CASE 1
A 47 years old male who is working as a bus driver was on CAPD for 2 months as a consequence of chronic kidney disease due to nephrolithiasis. He presented with complaints of nausea and vomiting. He had diarrhea for 3 days and he recognised that his dialysis solution was cloudy for 2 days. His peritoneal dialysis solution culture was obtained and cell count was made. There were 12,000 leucocytes/mm³, 90 percent as polymorphonuclear leucocytes and in the culture there was Gram positive coccus: Staphylococcus caprae. He was treated with cephalzone for 14 days. The following cultures were negative and there were no cloudier peritoneal dialysis solutions.

CASE 2
A 48 years old female was on CAPD for 6 years due to chronic kidney disease. The etiology for chronic kidney disease was chronic pyelonephritis. She presented with complaints of abdominal pain and cloudy fluid from the peritoneal catheter. The organism that growth from the peritoneal fluid was Bacillus subtilis. She was treated ampirically with cephalzone and ceftazidime for 4 days but no laboratory and clinical response could be achieved. Bacillus subtilis was accepted as the culprit organism of the peritonitis and treatment was changed to clindamycin. Peritonitis was treated successfully with clindamycin monotherapy.

CASE 3
A 43 years old female was on CAPD as a result of chronic kidney disease due to hypertension for 2 years. She presented with continuous abdominal pain increasing during filling peritoneal dialysis solution. She was started with cephalzone and ceftazidime therapy ampirically. The peritoneal fluid culture result was Pantoea spp. Ceftazidime antibiotherapy continued for 14 days and clinical and laboratory responses were achieved.

DISCUSSION
Peritonitis is a serious problem for the peritoneal dialysis population and it is the leading cause of technique failure causing significant morbidity and mortality. Early diagnosis and treatment are essential. A variety of microorganisms were identified in these cases. Coagulase-negative Staphylococcus spp. are the most common isolate.1 We present 3 uncommon organisms that were isolated as culprit peritonitis agents.

In our first patient we isolated Staphylococcus caprae from the peritoneal fluid. As a coagulase negative Staphylococcus spp., S. caprae has not been reported as a clinically-significant member. It was first isolated in goat milk sample taken from healthy goats in 1983.2 This bacterium has been associated with bone and joint infections, bacteremia, recurring sepsis, urinary infections, endocarditis and meningitis.3-6 Our patient reported he was a goat shepherd 30 years ago. Slime production and biofilm formation are traits of S. caprae and they may play a role in conferring virulence to this species. We successfully treated this patient with cephalzone.

In our second patient we isolated Bacillus subtilis from the peritoneal fluid. B. subtilis is a Gram-positive aerobic, spore-forming soil bacterium ubiquitous in the environment. The pathogenic potential of B. subtilis is generally absent. In the literature only a few cases of infections due to B. subtilis were reported.7,8 We first used cephalzone and ceftazidime for 4 days in our patient but we could not have a significant response to this antibiotherapy. Peritoneal cell count did not decrease. Bacillus subtilis was accepted as the culprit agent because peritoneal cell count decreased within 7 days of clindamycin therapy.
We isolated Pantoea spp in our third patient as the responsible agent from peritonitis. Pantoea spp is a ubiquitous Gram-negative bacterium that can be found in plants, fruits, vegetables and the feces of humans and animals. Pantoea spp has been implicated as the causative agent of a wide spectrum of infectious diseases, ranging from wound infection, cellulitis, to bacteremia. In the literature there are a few cases about peritonitis caused by Pantoea spp. Lim et al. cured a CAPD patient with Pantoea peritonitis with cefotaxime and intraperitoneal amikacin successfully and catheter was saved. In another patient, Pantoea agglomerans was treated with intraperitoneal sefuroxim and ciprofloxacin but because of clinical and laboratory unresponsiveness imipenem was started on third day. Despite offering removal of catheter, this was refused and the patient had died due to septic shock. In another peritoneal dialysis patient, peritonitis due to Pantoea was cured by cefotaxime and intraperitoneal gentamisin but catheter was replaced by a new one. In our patient we treated Pantoea peritonitis with 14 days of ceftazidime and a new peritoneal catheter was saved from being replaced. Oral contamination or bacterial translocation from gastrointestinal system may be responsible for pantoea infections. Peritoneal catheters are not known to be a risk factor of infection by Pantoea spp. We believe that bacterial translocation may be responsible factor for the peritonitis episode but as she was a farmer a plant associated injury might be responsible from this peritonitis episode.

In conclusion, these organisms are commonly considered to be contaminants, they rarely can cause symptomatic infections. These three organisms were probably the true culprit agents despite they are not common peritonitis agents. Physicians must be careful about these uncommon pathogens within peritoneal dialysis patients.

DISCLOSURES
No author involved in the preparation of the present manuscript has a conflict of interest in any form.

Informed consent: 'Informed consent was obtained from all individual participants included in the study.'

Ethical approval: 'All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.'

REFERENCES