

A Study on Early Onset Peritonitis in CAPD Patients

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ABSTRACT

Objective: To study the incidence of peritonitis in CAPD patients in their first six months on CAPD.

Patients and methods: All patients who started on CAPD between 1 January 1999 and 31 December 1999 were included in the study. All of them were followed for six months for development of peritonitis.

Results: Four episodes of CAPD related peritonitis occurred in four different patients during this period. Patient One was an elderly man with diabetes mellitus who had Streptococcal peritonitis two months after he started on CAPD. Patient Two was an elderly woman with diabetes who developed Streptococcal peritonitis four months after she was on CAPD. Patient Three was a 51-year-old lady with diabetes who suffered Pseudomonas peritonitis at four months on CAPD. Patient Four was a young man without diabetes. He had peritonitis after he was on CAPD for four months. The culture showed no bacteria growth.

For the first six months of CAPD the peritonitis rate was calculated as one episode for every 51 patient months. The average peritonitis rate of all patients on CAPD at the National University Hospital in 1999 was calculated as one episode for every 27 patient months. The CAPD related peritonitis involving new CAPD patients was lower.

Keywords: early onset, peritonitis, CAPD

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INTRODUCTION

Peritoneal dialysis is a widely accepted therapeutic modality for patients with end-stage renal disease. Peritonitis has been one of the main complications of continuous peritoneal dialysis⁽¹⁾. It is one of the major causes of hospitalisation and a leading cause of technique failure and catheter loss⁽²⁻⁴⁾.

Peritonitis rates vary between centres and may be influenced by various factors such as poor

Table I. Patient characteristics.

| | |
|---------------------------------|----------------|
| Total no of patient | 34 |
| Sex | |
| Male | 20 (59%) |
| Female | 14 (41%) |
| Ethnic group | |
| Chinese | 22 (65%) |
| Malay | 9 (26%) |
| Indian | 2 (6%) |
| Others | 1 (3%) |
| Age | |
| Range | 37-92-year-old |
| Median age | 66.5 years |
| Mean age | 64 years |
| No >65-year-old | 20 (59%) |
| Causes of renal failure | |
| DM | 25 (73.5%) |
| Presumed chronic GN | 8 (23.5%) |
| Bilateral renal artery stenosis | 1 (3%) |
| Comorbidity | |
| Hypertension | 29 (85%) |

technique, patient comorbidity and possibly malnutrition and inadequate dialysis⁽⁵⁾. All these factors may have increasing impact on peritonitis rate with time.

OBJECTIVE

We therefore aimed to study the incidence of peritonitis in CAPD patients in their first six months on CAPD.

PATIENTS AND METHODS

All patients who started on CAPD as the primary intended treatment modality between 1 January 1999 and 31 December 1999 at the National University Hospital, Singapore, were included in the study. All of them, were followed for six months for development of peritonitis.

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The patient demographics, diabetes status, primary renal disease, date of first dialysis and date of peritonitis were collected.

There were 34 patients in the study and 20 (59%) were male. Majority of them were Chinese (65%), followed by Malay (26%) and Indian (6%). The mean age was 64 years. Twenty-five (73.5%) of the patients had renal failure secondary to diabetes mellitus. Chronic glomerulonephritis contributed to renal failure in 8 (23.5%) of the patients. Vast majority (85%) of the patients had hypertension as comorbidity.

Table I shows the patient characteristics, cause of renal failure and comorbidity

The diagnosis of peritonitis was made if at least two of the following were present⁽⁶⁾:

1. Symptoms of peritoneal inflammation, such as abdominal pain.
2. Cloudy dialysis effluent containing more than 100 white cells per microlitre with at least 50% polymorphs.
3. Presence of organisms disclosed by gram stain or culture.

RESULTS

Four episodes of CAPD related peritonitis occurred in four different patients during this period. Patient One was an elderly man with diabetes mellitus who had Streptococcal peritonitis two months after he started on CAPD. Patient Two was an elderly woman with diabetes who developed Streptococcal peritonitis four months after she was on CAPD. Patient Three was a 51-year-old lady with diabetes who suffered Pseudomonas peritonitis at four months on CAPD⁽⁷⁾. Patient Four was a young man without diabetes. He had peritonitis after four months on CAPD. The culture showed no bacteria growth⁽⁸⁾.

All the episodes of CAPD related peritonitis happened without coexisting exit site infection. The patients were empirically treated with intraperitoneal Vancomycin and Gentamicin. The antibiotic regime was adjusted according to culture result. All the peritonitis responded well to treatment. There was no catheter loss and there was no mortality as a result of CAPD related peritonitis.

Table II shows the patient characteristics of those with and without peritonitis. Using the chi-square test, it was demonstrated that sex, age or diabetes mellitus status did not influence the incidence of CAPD related peritonitis.

For the first six months of CAPD in our study, the peritonitis rate was calculated as one episode for every 51 patient months. In 1999, there was a total of 972 patient months of experience on CAPD

Table II. Patient characteristics of patients with and without peritonitis.

| | Patients with peritonitis | Patients without peritonitis | Total |
|-------|---------------------------|------------------------------|-------|
| DM | 3 | 22 | 25 |
| No DM | 1 | 8 | 9 |
| Total | 4 | 30 | 34 |

Through chi-square test, p-value = NS

| Sex | Patients with peritonitis | Patients without peritonitis | Total |
|--------|---------------------------|------------------------------|-------|
| Male | 2 | 18 | 20 |
| Female | 2 | 12 | 14 |
| Total | 4 | 30 | 34 |

p-value = NS

| Age (years) | Patients with peritonitis | Patients without peritonitis | Total |
|-------------|---------------------------|------------------------------|-------|
| >65 | 2 | 18 | 20 |
| <65 | 2 | 12 | 14 |
| Total | 4 | 30 | 34 |

p-value = NS

with 36 episodes of CAPD related peritonitis. The average peritonitis rate of all patients on CAPD (who were on CAPD for a duration varying from two days to 11 years) in the National University Hospital in 1999 was calculated as one episode for every 27 patient months. Thus, the CAPD related peritonitis involving new CAPD patients was lower. The commonest organism causing CAPD related peritonitis in all CAPD patients was staphylococcus but it was streptococcus for those with early onset peritonitis.

DISCUSSION

In this study we found that new CAPD patients had a lower rate of CAPD related peritonitis compared to the general patient group. This implies that the majority of CAPD related peritonitis occur later than six months after starting dialysis. Possible reasons could be technique lapses, malnutrition or inadequate dialysis as the effect of these factors tend to increase with time on dialysis.

In this study of patients in their first six months on CAPD, sex, age and diabetes mellitus status did not seem to have influenced the incidence of CAPD related peritonitis. This finding is similar to other published studies.

REFERENCES

1. Holley HL, Piraino BM. Complications of peritoneal dialysis: Diagnosis and management. *Semin Dial* 1990; 3:245.
2. Schreiber M, Burkart JM. Peritonitis remains the leading cause of transfer from PD to HD. *Perit Dial Int* 1996.

3. Woodrow G, Turney JH, Brownjohn AM. Technique failure in peritoneal dialysis and its impact on patient survival. *Perit Dial Int* 1997; 17:360.
4. Piraino B, Bernardini J, Sorkin M. Catheter infections as a factor in the transfer of continuous ambulatory peritoneal dialysis patients to hemodialysis. *Am J Kidney Dis* 1989; 13:365-9.
5. Golper TA, Brier ME, Bunke M, et al. Risk factors for peritonitis in long term peritoneal dialysis: The network 9 peritonitis and catheter survival studies. *Am J Kidney Dis* 1996; 28:428-36.
6. Vas SI. Peritonitis during CAPD. A mixed bag. *Perit Dial Bull* 1981; 1:47-9.
7. Chan MK, Chan PCK, Cheng IPK. Pseudomonas peritonitis in CAPD patients: Characteristics and outcome of treatment. *Nephrol Dial Transplant* 1989; 4:814.
8. Bunke M, Brier ME, Golper TA. Culture negative CAPD peritonitis: The network 9 study. *Adv Perit Dial* 1994; 10:174.

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