SHORT REPORTS

Impact of Interventional Nephrology on Outcome and Penetration Rate of a CAPD Program

Continuous ambulatory peritoneal dialysis (CAPD) remains relatively underutilized, with the worldwide penetration rate averaging 10% – 15% (1–3). There are many reasons for this, including doctor and patient preferences, financial incentives, cost, and accessibility to Tenckhoff (TK) catheter insertion services (4–9). At the University of Malaya Medical Centre (UMMC), TK catheter insertion service was traditionally provided by junior surgeons who performed the service as part of their training requirements. Both access to and the results of TK catheter insertion were therefore dependent on the learning curve of junior surgeons who rotated every 3 months. The high complication and failure rate of TK insertion was frequently blamed for our low CAPD penetration rate of about 10% (2,10). We report here the results of TK catheter insertion by nephrologists, a practice implemented at UMMC in 2004 with the support and supervision of our senior surgical colleagues.

MATERIAL AND METHODS

A cohort of 95 consecutive patients with end-stage renal failure undergoing TK catheter insertion for CAPD was studied prospectively from January 2004 to August 2007. Data on patient demographics, date of catheter insertion and removal, and all complications were recorded and analyzed.

While many patients were referred from the renal clinic and inpatient services, many patients came in through the emergency room requiring urgent dialysis for uremic emergencies. Patients were educated about renal failure and counseled regarding dialysis modality choices.

The TK catheters were inserted by minilaparotomy technique. Double cuffed, coiled TK catheters were used. Routine preoperative preparation included laxatives given in the evening before the procedure and a Hibiclens (Mölnlycke Health Care, Norcross, GA, USA) shower in the morning of the procedure, together with antibiotic prophylaxis in the form of cefuroxime 1.5 g intravenously perioperatively. The procedure was performed in the operating theater under conscious sedation and local anesthesia. A 2- to 3-cm incision was made through the rectus muscle and, after identification of the parietal peritoneum, the catheter, along with an internal stylet, was inserted into the pelvic cavity until the deep cuff was within the rectus muscle. The internal stylet was then removed and the wound closed using absorbable sutures. The catheter was attached to a tunneler tool and brought through a subcutaneous tunnel to emerge at a separate skin incision. The second cuff was placed about 2 cm proximal to the exit site, which faced downward and was directed laterally.

On completion of the procedure, the catheter was flushed with 0.9% saline to ensure catheter patency and to assess for intraperitoneal bleeding. In the majority of cases, catheters were rested and used only after 2 – 3 weeks.

RESULTS AND DISCUSSION

Altogether, 97 patients with end-stage renal failure underwent 113 catheter insertions. Mean age was 50 years; the majority of patients were Malay females (mean age 50 years), and 68% of patients were diabetics.

The overall first-catheter failure rate was 35% and the probability of catheter survival at 12 months was 67% (Figure 1). The most common cause of failure requiring catheter removal was flow obstruction (46%), followed by refractory peritonitis (33%). A large proportion of patients (35%) transferred to hemodialysis and, although many of these transfers were due to catheter failure, a significant minority were due to patient preference. The most common complication was exit-site infection (24%), followed by exit-site bleeding, flow obstruction, catheter leak, tunnel infection, catheter migration, and peritonitis.

The relatively high infection rate and the poor 1-year catheter survival rate are clearly areas of concern, although this may be part of our learning curve (11). All catheters were inserted by 3 nephrologists who were initially trained by colleagues skilled in TK catheter insertion. The disproportionately large number of diabetics clearly contributed to the higher infection rate. A substantial number of patients were placed on CAPD not
by personal preference but due to funding constraints necessitating insertion of the TK catheter, some of which were done as an emergency due to the critical nature of the patients’ illness. In addition, it is likely that those who were placed on CAPD out of necessity rather than choice were less likely to be motivated and will have contributed to the higher infection rate and poor catheter survival rate.

We believe our preliminary experience remains encouraging despite the suboptimal result, which leaves room for further improvement. A major impact of the introduction of nephrologist-driven TK catheter insertion service is the CAPD penetration rate, with a substantial increase in the number of patients on CAPD: from 63 in 2004 to 86 patients in 2009. Stricter patient selection and counseling is expected to further improve our results, although this may be limited by funding policies that oblige patients to go for CAPD even if they may not be the best candidate. Our results also support the increasingly important role of interventional nephrology, which is expected to improve access to and quality of our local TK catheter insertion services and lead to further increases in the penetration rate of CAPD (7,8,12).

DISCLOSURES

The authors do not have any conflicts of interest to declare.

REFERENCES