Continuous Ambulatory Peritoneal Dialysis in India

Patients in end-stage renal disease (ESRD) require renal transplantation or have to be on regular dialysis. The two broad categories of chronic dialysis are haemodialysis and peritoneal dialysis. In the treatment of ESRD, doubts exist regarding the effectiveness of different therapies. In 1992, over 65,000 ESRD patients were on continuous ambulatory peritoneal dialysis (CAPD). The percentage of patients on CAPD varied from 6% in Japan to 51% in the United Kingdom to 93% in Mexico. Though CAPD was introduced seventeen years ago for therapy of ESRD, it did not gain popularity in India till 1991 due to unfounded fears. These were cost, availability of dialysis fluid, fear of increased incidence of peritonitis due to climatic conditions compounded with poor hygiene and lack of education, as well as personal bias regarding the choice of renal replacement therapy by nephrologists. Of late, a few hospitals have started regular CAPD programmes.

CAPD is a simple manual procedure in which dialysis fluid is instilled into the peritoneal cavity by gravity and drained after a dwell period of viable duration, depending on a peritoneal equilibration study done on each patient. On an average, each patient in the West requires 4 to 5 exchanges of 2 litres per day, while in India, as patients are of small build and have less muscle mass and lower protein intake, they require 3 exchanges of 2 litres per day. However, the ultimate dialysis prescription is based on weekly urinary and peritoneal creatinine clearance which should be above 60 litres per week. The main drawback is the potential risk of peritonitis which is the major cause of hospitalization and drop-out. Peritonitis is caused mainly from contamination while connecting the dialysis bag to the tubing system. Improvement in the design of the connecting system over a period of time has reduced the risk of peritonitis. At present five types of connecting systems are available in India: (i) straight-line spiking system, (ii) ‘O’ set system, (iii) easy ‘Y’ set, (iv) ultra ‘Y’ set, and (v) ultra bag. The approximate cost per month of straight-line spiking system is Rs 10,000, ‘O’ set system Rs 14,000, easy ‘Y’ set Rs 18,000, ultra ‘Y’ set Rs 25,000 and ultra bag Rs 48,000. This includes customs duty imposed by the Government of India and the sales tax levied by the state government. The most common connecting systems in use are the ‘O’ set and the ultra ‘Y’ set as they are cost-effective and the incidence of peritonitis is comparable to the data from the West.

The ‘O’ set consists of a re-usable Y-shaped connecting device and sodium hypochlorite used as the luminal disinfectant. This connecting device can be re-used with each exchange and has to be replaced once in six to eight weeks. The ultra ‘Y’ set and the ultra bag connecting devices are not re-usable. They have to be disposed of with each exchange and, therefore, cause fewer episodes of peritonitis.

CAPD can be prescribed to any patient requiring dialysis, except for those who have multiple peritoneal adhesions, inflammatory bowel disease, or severe chronic respiratory disease. CAPD has many advantages such as ease of operation, freedom from mechanical equipment and electrical supplies, promotion of home dialysis, compatibility with long distance travel, increase in weekly clearance of small and middle molecules, few dietary restrictions, and better control of blood pressure and anaemia. Several types of peritoneal catheters are available which can be implanted surgically or through a laparoscope. Once the peritoneal catheter is implanted, dialysis can be initiated immediately with a small volume of fluid, or after ten days, depending on the patient's condition. The most important step in CAPD is to educate the patients and their relatives. This consists of exit site care, catheter care, steps in performing the dialysis procedure, in identifying early symptoms and signs of peritonitis, and, if present, to initiate the treatment while awaiting culture reports.

Since 1993, 189 patients (131 male, 58 female) were started on CAPD in our unit. Straight or swan neck double cuff Tenckhoff catheters were surgically implanted either under local or general anaesthesia. One hundred and three patients had diabetic nephropathy and preferred CAPD for reasons of age, associated comorbid conditions,
or poor vascular access. Seventy-four patients were on ‘O’ set, 102 on ultra ‘Y’ set and 13 on ultra bag. The peritonitis rate was one episode in 19.2 patient-months which is comparable to the data from the West.\(^6\) Exit site infection was seen in 16% of patients which is lower than that reported by Bonnardeaux.\(^7\) Of 189 patients, 138 (73%) opted for CAPD; of whom 51 (27%) had either vascular access problem or other associated comorbid state making haemodialysis difficult, hence CAPD was the only choice. The incidence of drop-outs in 1993 was 61% when all had died, but in the subsequent years the rate declined to 28.3%, all drop-outs having undergone renal transplantation. The improvement in drop-out rate may be due to better technique and selection of patients.

In India, CAPD has been established in a few renal centres. In many parts of our country, patients living at long distances from the haemodialysis unit may benefit from CAPD. The fear of increased incidence of peritonitis or technique failure has not been confirmed. Physician bias is transmitted directly or indirectly to the patient when the mode of treatment is selected. With the per capita income in 1995–96 of Rs 9321, I do not think that the common man would find long term dialysis—whether haemodialysis or CAPD—affordable. The only major hurdle in CAPD is the cost, which could be drastically reduced if the dialysis fluid and connecting systems of international quality were manufactured in India. With the exemption of customs duty and sales tax levied by the state government each patient would save between Rs 3000 to Rs 18 000 per month, depending on the connecting system used. Since a haemodialysis machine and its accessories are exempt from customs duty, why should CAPD accessories be charged customs duty when it is an alternative mode of renal replacement treatment?

REFERENCES

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