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Continuous Ambulatory Peritoneal Dialysis in Children – Experience from Eastern India

Twenty-three children (≤ 18 years) have been initiated on continuous ambulatory peritoneal dialysis at our center over the last 32 months. Ten (43%) went on to have successful transplantation proving the viability of pediatric continuous ambulatory peritoneal dialysis in our scenario. Major concern identified was a relatively high peritonitis rate of 0.85 per year of peritoneal dialysis usage.

As per Western data, pediatric End Stage Renal Disease (pESRD) has an incidence of 9.4 per million age related population (pmarp) and prevalence of 56.8 pmarp [1]. Although no such reports are available from India, with a pediatric population of over 400 million [2] the numbers are likely to be significant. In children, peritoneal dialysis is usually preferred over hemodialysis with the significant advantage of it being conducted at home [3]. Unfortunately Indian data on chronic pediatric peritoneal dialysis is limited [4]. We retrospectively reviewed all children ≤ 18 years initiated on continuous ambulatory peritoneal dialysis (CAPD) between January 2011 and August 2014 at our centre.

Twenty-three children were identified with median age at last follow-up of 10.3 (range 5.1 -17.4) years (74% male). Underlying etiologies were: congenital anomalies of kidney and urinary tract ($n=6$), focal segmental glomerulosclerosis ($n=4$), autosomal recessive polycystic kidney disease ($n=3$), nephronophthisis ($n=3$), atypical Haemolytic Uremic Syndrome ($n=2$) and unknown etiology ($n=5$). 35% ($n=8$) needed urgent dialysis, whereas the rest were known to be suffering from chronic kidney disease for median 4.1 (range 0.4 to 10.8) years. Median age at onset of CAPD was 9.2 (range 3-16.5) years and median duration of CAPD was 15 (range 3- 48) months. Only 6 (23%) were local city residents and for the rest median distance from nearest pediatric dialysis centre was 102 (range 17 to 689) kilometre. Post initiation, four (17%) children required catheter reposition because of poor fluid drain, but of these, only one needed catheter change. Usual CAPD prescription was 3 to 4 exchanges of 4 to 6 hours duration with dwell volume of 1L/ m² of body surface area. Twelve (52%) children developed peritonitis as per standard definition [5]. Overall, peritonitis rate was 0.85/year of peritoneal dialysis use. *E. coli* was the commonest organism (82%). None had exit-site infection. Only a single episode of fungal peritonitis was reported. Culture negative peritonitis was seen in 5 (21 %) cases. Duration of CAPD significantly correlated with peritonitis ($P=0.006$). Significant improvements were seen in

TABLE I BIOCHEMICAL PARAMETERS

Biochemical parameters	At initiation	At last follow up
Albumin (g/dL)	2.8 (0.6)	3.3 (0.6)
Hemoglobin [#] (g/dL)	7.1 (0.8)	9.2 (1.5)
Urea (mg/dL)*	147.6 (43.2)	105.1 (39.3)
Creatinine (mg/dL)	7.5 (3.3)	6.2 (2.5)
Phosphate [#] (mg/dL)	6.9 (1.6)	4.8 (1.3)

Values in mean (SD); [#] $P < 0.001$; * $P < 0.01$.

various laboratory parameters except serum albumin and creatinine (**Table I**). One child was lost to follow up at 1 month. Of the rest, 8 (35%) underwent successful transplantation while on CAPD, 5 (22%) were switched to hemodialysis for recurrent peritonitis (2 subsequently underwent transplantation), 4 (17%) died on CAPD and 5 (22%) are still on CAPD for median duration of 9 (range 3 -14) months. Of the 4 deaths, three were associated with peritonitis and all of them had compliance issues due to financial constraints.

In conclusion, pediatric CAPD is a viable option in India as 43% of children finally progressed to transplantation. Although the results are better than previous Indian reports, peritonitis and mortality continue to be a major concern when compared to international reports [4,6]. A likely solution might be better training for the caregivers by institution-based peritoneal dialysis nurses and consideration for financial support for these families [6,7].

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