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Rapid accelerated hemodialysis in children with end-stage renal disease: A randomized clinical trial

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In rapid accelerated hemodialysis (R-AHD), blood partially recirculates from the venous (outflow) to the arterial (inflow) line through a recirculation line (R) to selectively increase the filter blood flow rate (BFR). R-AHDPR uses two blood pump segments at the patient segment of the arterial line and at (R). To determine the effectiveness of R-AHD with regard to increasing anticoagulation and dialysis efficiency, ten children with end-stage renal disease in two stages were studied: stage 1 with 10 routine heparin R-AHD, then 10 half-dose heparin R-AHD, then 145 routine heparin R-AHD sessions for 1 month and then routine heparin double needle hemodialysis (DNHD) for one month (control). In stage 2, the patients with 10 routine heparin-mixed AHDPR and DNHD sessions were dialyzed, then eight low-dose heparin R-AHDPR² sessions, then one of the children with 10 no-heparin R-AHDPR sessions and then 10 routine heparin DNHD sessions² (control). Signs of blood clotting and dialysis efficiency were monitored. Blood clots appeared in four out of 165 R-AHD0 (one pump circuit) sessions but in none of the 28 R-AHDPR sessions. In stage 1, the mean urea reduction rate was 0.60, 0.60 and 0.70 for the R-AHD protocols, compared with 0.71 for the control ($P>0.05$). In stage 2, the arterial blood urea nitrogen was reduced by 0.66 ± 0.15 after an R-AHDPR period, compared with 0.79 ± 0.18 after a DNHD period ($P=0.059$). In conclusion, R-AHDPR allowed successful low heparin and no heparin hemodialysis in children without increasing the patients' BFR. However, the technique did not increase the efficiency of dialysis.

Biography

Mohamed Khaled El Hatw graduated from the faculty of medicine, Cairo University. He got a Master degree in pediatrics in 1987 and MD in pediatrics in 1995. Recently he got a Diploma of Public health from Liverpool University. He holds the position of a Pediatric Nephrology consultant in Cairo University Children hospital and currently works as pediatric consultant in a military hospital in Saudi Arabia. He has published 12 papers in reputed journals and holds 12 patents in the field of medical engineering in the Egyptian and US patent offices.

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