Title: THE DECISION TO DIALYZE CRITICALLY ILL PATIENTS; PROGNOSIS, SURVIVAL AND QUALITY OF LIFE

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Introduction: The decision to dialyze a critically ill patient with multisystem organ failure is difficult because of uncertain prognosis. Studies of clinical outcome have assisted in the decision-making process in areas such as non-traumatic coma.[1] We retrospectively studied whether an acute physiological score (APS) is helpful in predicting survival of individual patients if measured in the 24 hours prior to dialysis; whether nutrition may be improved with dialysis; and we evaluated the functional outcome of the survivors.

Methods: We identified 55 patients with acute renal failure for whom dialysis was considered clinically appropriate during a critical illness from our multi-disciplinary ICU database (1983-1987) consisting of 4,523 admissions. Patients excluded from this study were neurosurgical patients cared for in another unit, patients previously dialyzed, and those patients with acute renal failure for whom dialysis was felt not to be clinically appropriate.

Age, sex, primary diagnosis, reason for admission, ICU length of stay (ICULOS), hospital length of stay (HLOS), duration of dialysis and nutritional status were documented. We assessed the severity of illness using the acute physiology score (APS) of the APACHE II system, during the 24 hour period prior to the decision to dialyze and also documented the number of organ system failures (OSF) existing at that time. The type and quantity of alimentation was calculated for each patient prior to, and after dialysis, to assess whether the institution of dialysis aided in the nutrition of the patient and whether it improved survival.

With approval of our hospital's Clinical Trials Committee, attempts to interview all survivors 1-3 years after hospital discharge focused on their current satisfaction with life (SWL)[2] and their ability to carry out instrumental activities of daily living (IADL).[3]

Results: Overall mortality was 73%. Neither age, nor severity of illness (as assessed by the APS) discriminated survivors (S) from non-survivors (NS). Only 3 of 18 (17%) patients with OSF$\geq$3 survived, and no patients with 4 or more OSF's survived. ICULOS was longer for the NS group and HLOS was longer for the S group ($p<.05$).

Nutritional status, as reflected by an increase in daily caloric intake, volume and protein administered, improved after dialysis was instituted in both groups ($p<.05$). There was no significant difference in the amount of nutrition administered to the S and NS groups.

The 18 post-op cardiovascular (CV) patients had a similar mortality rate (78%) as compared to the 37 patients of the non-CV group (70%). The CV patients also had a similar severity of illness, (APS 19.8$\pm$6.9), on the day the decision to dialyze was made, as the non-CV group, (APS 21.1$\pm$6.0). However the CV patients were in the ICU 10.2$\pm$6.7 days before dialysis was started, whereas the non-CV patients were dialyzed after 2.8$\pm$2.9 days ($p=.0003$). This occurred in the CV group even though 6.0$\pm$4.9 days elapsed between the time that the serum creatinine had doubled from normal values and the patients were dialyzed. The indication for dialysis in all patients was volume overload.

On follow-up of the 15 survivors, 5 subsequently died within one year of ICU discharge, and the remaining 10 returned their questionnaires and were interviewed. Only 1 of the 3 patients in the S group with OSF=3 survived greater than 1 year post-ICU discharge. The youngest survivor interviewed, age 19, had the lowest SWL score (14/35) indicating he was the least satisfied with life, but had the highest IADL score (30/30). The oldest survivor, age 78, had the lowest IADL score (16/30) but had an adequate SWL score (29/35).

Discussion: The APS performed during the 24 hours prior to dialysis, thus reflecting the physiological status of the patient when the decision to dialyze was made, did not discriminate survivors from non-survivors. The large discrepancy in the number of days before dialysis was instituted between the CV and non-CV groups perhaps is a result of attempts to avoid dialysis and its complications after CV surgery. As a result, a delay in providing increased nutritional support ensued. Dialysis instituted earlier in the course of acute renal failure that occurs after CV surgery, with appropriate nutritional support, may improve outcome[4]. Survivors of critical illnesses receiving dialysis in the ICU have generally good long-term outcomes when SWL and IADL are considered.

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