

TERMINAL RENAL FAILURE: TRANSPLANTATION OR DIALYSIS?

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Chronic renal failure is a relatively common cause of death in adults and often occurs at the most active and productive stage of life. Effective treatment for this invariably fatal condition is therefore of great importance and is now available by both regular intermittent haemo-dialysis and by kidney transplantation.

Regular dialysis, usually three times weekly, became a practical possibility with the development of the Quinton-Scribner arteriovenous shunt in 1960 and in the past 20 years more than 500,000 patients have been treated for varying lengths of time by this method. Many new dialysis units have been started and have absorbed a steadily increasing amount of health and hospital budgets. Although estimations of the total annual cost of regular haemodialysis in hospital or the home are very variable, ranging from about \$20 million in the U.K. to \$1,000 million in the U.S.A., all are agreed that the procedure is very expensive and that even in the most wealthy society, is unlikely to be available for all who may require treatment (Rennie, 1978).

Although financial considerations have to limit the scale of provision of dialysis facilities in the community, medical factors are also important to make the most effective use of existing facilities. Twenty years of successful dialysis have been achieved with young patients with good vascular access sites, but only after careful patient selection. Severe arterio-vascular disease may cause problems of access site surgery as arteriovenous fistulae may be impossible to create and bovine or umbilical cord vascular grafts may become necessary. Patients over the age of 50 with severe vascular complications of their renal failure or severe hypertension have a poor life expectation on dialysis because of acute heart failure, pulmonary oedema or myocardial infarction. The high mortality rate in the first six weeks of treatment in many units (EDTA, 1978) reflects these acute cardiovascular complications. Lindner et al (1974) claimed that all patients on regular dialysis have a serious risk of developing such complications, possibly due to abnormalities of lipid metabolism either from the dietary restrictions of chronic renal failure or from factors directly associated with dialysis for the same reason. Active tuberculosis, malignant disease and severe psychiatric disturbances have all been regarded as contraindications to dialysis but it must be admitted that where adequate facilities have existed even these conditions have been successfully managed.

Many nephrologists have undoubtedly used these medical criteria as justification for refusing dialysis when facilities are scarce without much convincing evidence of their validity.

Despite careful selection major psychological and marital problems are relatively common in most regular haemodialysis units as the stress of treatment with its inevitable restrictions on travel, fluid intake and diet is often more than patients or their families can tolerate. The enforced treatment three times per week also often interferes with regular work and in times of national economic problems, these patients are the first to lose their employment, further aggravating the psychological problems. These difficulties can be largely overcome by a well run and well staffed dialysis unit so that the young emotionally stable patient with terminal renal failure without serious vascular complications or hypertension who has not developed major metabolic bone disease or other long term effects of renal failure, should certainly be treated by dialysis if facilities are available and a good prognosis can be given for at least 5 to 10 years treatment. If the equipment can be installed in the patient's own home, the motivation and rehabilitation is even better than for those treated in hospitals. The hazard of serum hepatitis has caused difficulties in staffing and maintaining dialysis units, since unfortunately, acute B virus infection has led to severe illness and deaths in medical, nursing and technical staff employed in

some regular haemodialysis units. Careful screening for B antigen and rigorous exclusion of positive cases from treatment in the main centres has controlled the spread of infection but some units have remained closed for long periods with consequent loss of trained staff and great expense in re-equipment.

The large numbers of patients presenting with chronic renal failure clearly makes regular dialysis treatment for all unobtainable even in the western world and the alternative of kidney transplantation has to be considered. Although early results were poor, improved methods of tissue typing and increasing experience in the management of the transplant patient has greatly increased the chances of success. Long term graft survival figures vary widely between different units, but a success rate of 40% at least or higher four years after a kidney transplant is now generally accepted (EDTA, 1978). This represents a substantial improvement over the results of treatment of many other potentially fatal conditions such as carcinoma of the stomach or bronchus which usually has less than 5% survivors at 5 years. The patient with a successful kidney transplant has normal or near normal renal function, and a normal haemoglobin level, in contrast to the dialysed patient who remains with abnormal serum chemistry and with a low haemoglobin. Regular attendance at a clinic with frequent clinical chemistry examination to recognise early rejection is necessary after the transplant but this is less irksome to the patient than the 4 hourly dialysis period three times per week. Continued dosage with immunosuppressive therapy, especially steroid drugs, presents problems of physical appearance, excessive weight gain and hypertension which may cause both psychological and clinical difficulties in management but in the average patient, these are much less than with dialysis.

Rejection of the transplanted kidney presents serious hazards and the mortality of associated surgical procedures is considerably higher than that for regular haemodialysis in the well established patient. The removal of the acutely rejected kidney, urinary leaks from the transplanted ureter and gastro-intestinal ulceration from high dosage steroids are among the difficulties facing the patient with a newly established transplant. Severe systemic infection, at times by relatively non-pathogenic fungi or bacteria also present serious problems in diagnosis and treatment and contribute to the relatively high mortality in the first few months after transplantation (Hall et al., 1976). Increasing experience by the transplant teams however, undoubtedly has steadily reduced the death rate and many patients are able to return to regular dialysis after a failed transplant if facilities are available. Second transplant may be more successful than the first and may show normal function after 10 years or more (Barnes and Macintosh, 1979).

The source of the donor kidney has also been shown to be of great importance in the successful survival of the graft, since prolonged ischaemic times or difficult vascular anastomoses from double renal arteries have a much higher technical failure rate even in skilled teams (Hall et al., 1976). The relative scarcity of kidney donors in most societies still presents great difficulties since the temptation to use a less perfect kidney for a transplant operation when no further donor may be available for many months or even years, is clearly high (Moore et al., 1976).

There is therefore not a simple choice of an alternative between dialysis and transplantation as the best treatment for terminal chronic renal failure, since both procedures have their value. The best results are probably obtained by a period of preliminary dialysis while the patient recovers from all the clinical effects of uraemia, followed by a well-matched kidney transplant. Even in wealthy western societies, this ideal is far from being attained and many patients receive little more than limited dietary and simple medical control simply because of the large numbers involved and the shortage of staff and facilities.

References

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