CHRONIC HAEMODIALYSIS

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SUMMARY

Review of the haemodialysis experience revealed patient survival between 1976 and 1982 to be 90%, 77% and 44% at one, three and six years respectively. This was similar to other published reports. Patients under the age of 50 years did better than those above 50 years, and diabetics did worst of all. There was a high rate of rehabilitation and return to employment or household responsibilities. Our policy of self-care dialysis allowed more patients to be treated without increasing the number of staff. Dialysis encephalopathy and sudden deaths were important causes of death.

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INTRODUCTION

Since maintenance haemodialysis was first initiated by Scribner and colleagues in 1960, this treatment has been practised worldwide; in 1976 about 64,000 patients were treated to this form of treatment.[1] However the growth in chronic haemodialysis has not occurred evenly; 90% of patients in the world on chronic haemodialysis are found in Europe, USA, Canada and Japan, with 10% in the remaining countries.[2]

Some of the problems related to the treatment of endstage renal disease (ERSD) in developing countries have been reviewed recently by Kennedy.[3]

Chronic haemodialysis in Malaysia was started in the Department of Urology, General Hospital, Kuala Lumpur in the mid-sixties and was later taken over by the newly-formed Department of Nephrology in 1976. The experience with chronic haemodialysis from 1969 until 1982 has been reviewed.

PATIENTS AND METHODS

All patients accepted for chronic haemodialysis treatment have been included in this review. Patients dialysed for acute renal failure or for poisoning have been excluded. From 1969 to 1974, all patients were dialysed nine hours, three times weekly on the standard Kiil dialyser. From 1974 to 1977, patients on the standard Kiil dialyser were dialysed nine hours, three times weekly, those on the multipoint Kiil dialyser and others on disposable dialysers were dialysed six hours, three times weekly. From 1978 all patients were dialysed on disposable dialysers four hours, three times weekly.

Water used for haemodialysis was not treated until 1979, when a reverse osmosis unit was installed. Home haemodialysis patients had their water treated by reverse osmosis or by a deioniser.

Since 1978, all patients on chronic haemodialysis as definitive treatment were taught to perform haemodialysis independently, setting up the machine, kidney and lines, putting themselves on and taking themselves off dialysis, taking and charting their own observations. All patients were prescribed vitamins; since 1976 most were treated with aluminium hydroxide as well.

Patient survival was analysed by actuarial life table methods.[4] The periods from 1969 to 1975 and 1976 to 1982 were analysed separately.

Causes of death were assessed clinically and no postmortems were performed. Assessment of rehabilitation has been conducted and reported elsewhere.[5]

RESULTS

A total of 471 patients were treated on the chronic haemodialysis programme between 1969 and 1982; 333 were males and 138 females. There were 246 Chinese, 158 Malays, 65 Indians and two others. Their ages ranged between 12 and 72 years, with an average age of 31.3 years in 1975, and 37.9 years in 1980. No patients below 20 years and only one patient above 50 years were treated before 1978. Since 1978, 21 patients below the age of 20 years, and 38 above 50 years were accepted for treatment.

Between 1969 and 1975, 126 patients were accepted for treatment; between 1976 and 1982, 342 patients were treated. Since 1980, 14 patients with diabetes mellitus and ESRD have been treated.

Between 1969 and 1975, 51%, 31%, 19% and 10% of patients survived one, two, three and four years respectively. Between 1976 and 1982, 90%, 83%, 77%, 58% and 44% of patients survived one, two, three, four and six years respectively. Since 1978, survival of patients below the age of 50 years was 91%, 85% and 79% at one, two and four years respectively, while 78%, 60% and 50% of patients above the age of 50 years survived one, two and four years respectively. Survival among patients with diabetes mellitus has been 71%, 53% and 32% at one, two and three years respectively.

Mortality

Dialysis encephalopathy and sudden death were the commonest causes of death. Other causes are shown in Table I.

Rehabilitation

In a survey conducted over two months in 1982 to assess rehabilitation in 142 patients

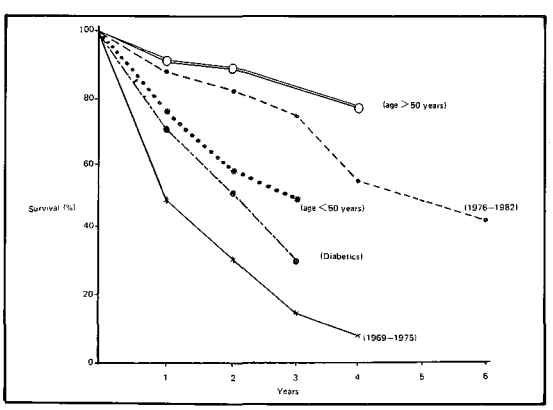

Fig. 1 Actuarial survival of patients treated on chronic haemodialysis.

TABLE I
CAUSES OF DEATH IN 50 PATIENTS
ON CHRONIC HAEMODIALYSIS

Cause of Death	Number of patients
Sudden death	13
Dialysis dementia (encephalopathy)	14
Pulmonary oedema	9
Infections	3
Uraemia (vascular access failure)	3
Pulmonary embolism	2
Gastrointestinal bleeding	1
Cardiac tamponade	1
Head injury	1
Left treatment	3
Total	50

on chronic haemodialysis,[5] evaluation of physical activity revealed 96% of patients were either "active" or "almost normal" as judged by the Karnovsky scale. The employment rate was 81%, with another 15% occupied looking after the home. This showed a high rate of rehabilitation with over 90% of patients returning to work or performing household responsibilities.

DISCUSSION

The survival of patients on chronic haemodialysis tend to show a consistent pattern worldwide.[2] Our experience from 1976 onwards showed survival figures similar to that reported in Europe, USA and Japan.[6,7] The survival of patients after 1976 was very much better than that before 1976. This occured following the Nephrology service taking over the management of the haemodialysis unit. The greater commitment and closer supervision of patients, application of new techniques and modern equipment, and the philosophy of self-care all contributed to this marked improvement in survival. The approach of self-care in home and hospital haemodialysis commits the patient to involving themselves in their own treatment, which we feel contributes greatly to the excellent rehabilitation achieved, irrespective of whether dialysis was carried out in hospital or at home.[5]

Whether self-care dialysis results in better informed and more compliant patients with lower expected mortality and morbidity remains unverified; Shapiro[8] feels that patient outcome depends on the patient's characteristics and the follow-up care provided, rather than the dialysis modality employed. We agree with this and feel that the learning process will result in better informed patients. However, a study to assess whether self-care dialysis results in better informed and compliant patients has not been done. In our experience, self-care dialysis with little or no assistance at all is practical in our local population, with excellent results and a high rate of rehabilitation. A practical aspect of this experience has been that although the staff have had to spend time initially in teaching the patients the dialysis procedures, it eventually allows many more patients to be treated than would have been possible, with very little increase in the number of staff. The number of haemodialysis performed has increased fourfold between 1979 and 1982, with no increase in the number of staff (Table II).

As has been experienced elsewhere, younger patients did better than older patients, whilst diabetics did worst of all. Large registries have shown that survival rates become increasingly worse with increasing age.[9] The mean age of dialysis patients increases every year[10] and this has also been our experience.

TABLE II
NEW PATIENTS TREATED ON CHRONIC HAEMODIALYSIS

Year	1969	70	71	72	73	74	75	76	77	78	79	80	81	82
No. of patients	15	31	24	15	18	13	12	14	18	20	44	58	87	121
Total no. of dialysis performed								2260	3088	3836	4032	6661	9275	18055

Cardiovascular complications and infections have been the most common causes of death in haemodialysis patients reported by registries in Europe and USA.[10] While the incidence of cardiovascular deaths has continued to increase to alarmingly high levels, the incidence of infections as a cause of death has decreased over the last two decades.[10]

Dialysis encephalopathy has become an important cause of death with an unusual geographical distribution associated with aluminium toxicity.[10,11] Our experience has been similar with sudden deaths, dialysis encephalopathy and infections as important causes of death. Dialysis encephalopathy is a terrifying complication related with high aluminium levels in the untreated water used for haemodialysis, which has been studied locally; since 1979, when water treatment began using reverse osmosis or deioniser, this complication is no longer seen here.[12]

Through experience, patient survival on chronic haemodialysis is similar to that reported elsewhere, with a high rate of rehabilitation, and that age is no barrier to practising self-care haemodialysis, at home or in hospital. As in other developing (and even in some developed countries) countries, the resources available to the health services are limited. This is the main factor preventing more patients with ESRD from deriving benefit from dialysis treatment.

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