A RETROSPECTIVE STUDY OF 121 CASES OF CHRONIC RENAL FAILURE

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This is a retrospective study of chronic failure cases presenting in Medical Unit II, Singapore. The cases were collected over a three year period from July 1st 1961 to June 30th, 1964. They were followed up till June 30th, 1967.

Cases included in the study are those with a blood urea persistently raised to at least 50 mg. % for at least one month without any treatment, such as dialysis, to lower the blood urea value. Where patients have died within one month or have been lost to follow-up after early discharge from Hospital, their clinical picture together with laboratory findings were reviewed by the group studying this project before they were included. Doubtful cases were rejected.

Over this period 121 cases of chronic renal failure were seen in Medical Unit II. There were 76 males and 45 females giving 1·5 males to one female. Over this same period there were 16,866 admissions into Medical Unit II with 10,505 males and 6,361 females giving 1·7 males to one female. Hence there were 71 chronic renal failure cases per 10,000 cases admitted into Medical Unit II. (Fig. 1). The period

1961-1964

Chronic Renal Failure

Males	76		
Females	45		
Total	121	M:F	1·5:1

Admissions Medical Unit II

Males	10,505		
Females	6,361		
Total	16,866	M:F	1·7:1

Incidence chronic renal failure in Medical Unit II-71 per 10,000.

Fig. 1.

selected for this study was such as to avoid any bias as after mid 1964, other departments were referring cases of renal failure for dialysis in Medical Unit II.

A breakdown of these cases into sex and age groups show that very few cases occurred under the age of 20 years. In males the peak incidence seems to be from 40-60 years whereas in females the cases were spread more widely from 20-60 years.

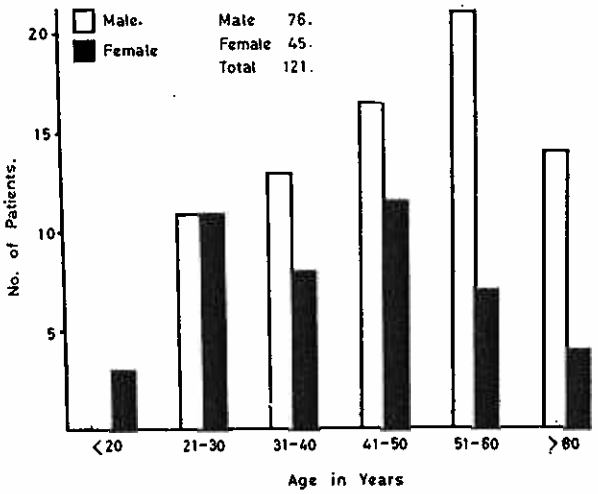

Fig. 2.

Chinese form 84% of the cases. Admissions into Medical Unit II show 76% Chinese. In Singapore Chinese form 75% of the population.

Regarding past history, only 32 (26%) gave a definite past history of renal disease. 21 (17%) gave a history of hypertension. 68 (57%) had no significant past history.

Examination showed that 98 (81%) had hypertension. Hypertension was diagnosed only if diastolic blood pressure was 100 mm. Hg or above. Only 40 of these hypertensives had E.C.G.s done and 34 (85%) showed evidence of left ventricular hypertrophy.

Fundus oculi examination in 83 cases showed 64 abnormal ones. Of the abnormal ones, ¼ were grades I and II, ½ were grade III and ¼ were grade IV changes.

33 (27%) were in cardiac failure when seen. Only one had a myocardial infarct and 6 had cerebro-vascular episodes.

Urine examination was done in all except six cases. RBCs or WBCs were taken as significant if these were more than 10 per h.p.f

All had proteinuria in varying degrees. Microscopic examination showed:

29 (25%) with RBCs

44 (38%) with WBCs

43 (37%) with Granular casts.

84% of the cases had haemoglobin values of 10 G% or less and 40% were not more than 7 G%.

73 (60%) of the cases had blood urea values of up to 200 mg. %. Of the 21 who had values more than 300 mg. %, ½ was dead in one week though some carried on for two to three weeks and one went on for eight months.

82 (68%) had blood alkali reserve estimations. Of these only seven were normal; all the others were low, some grossly so.

103 (85%) serum potassium levels were estimated. 86% of these were in the normal (3·5-5·0 mEq/L) or low range. There were only 14 cases with serum potassium levels above 5·0 mEq/L and only nine of these were above 5·5 mEq/L. We have found this of value in Medical Unit II to help differentiate between acute and chronic renal failures. A good number of our renal failure cases do not give a past history of renal disease nor of an incident to cause acute renal failure. In such cases, a low or normal serum potassium value would bias us towards a diagnosis of chronic rather than acute renal failure. Of the 13 who had serum potassium values above normal, all but one had evidence of acute on chronic renal failure. The commonest cause precipitating these cases into acute renal failure was acute infection of the renal system. (Fig. 3)

Only 30 cases had serum calcium estimations and 80% of these were low and associated with a raised serum phosphorus value. All other values were normal. There were no high serum calcium levels.

In assessing the cause of renal failure, the aetiology was decided on histological or good clinical evidence. All others were labelled as undetermined. Evidence of pyelonephritis was taken to be repeated clinical attacks of acute pyelonephritis or history of renal stone or presence of leucocyte casts or IVP evidence. Chronic glomerulonephritis was diagnosed if there was a past history of glomerulonephritis or evidence of two equally small kidneys in the IVP.

There were thus 29 (11) chronic pyelonephritis
20 (7) chronic glomerulonephritis
12 essential hypertension
3 gout
1 polycytic kidneys.

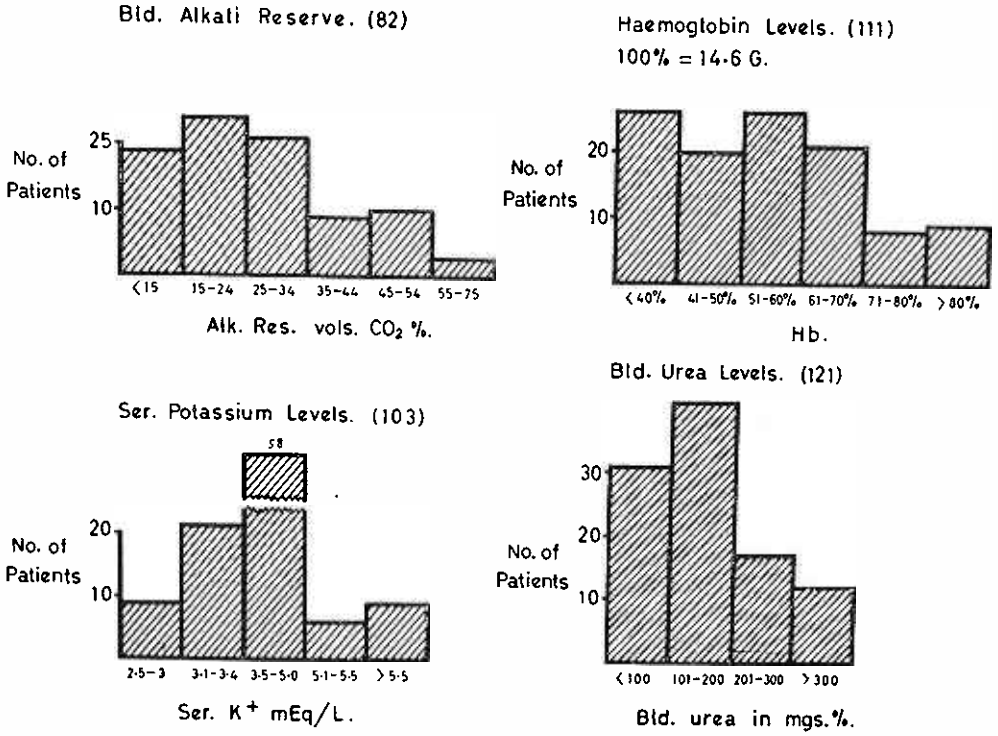

Fig. 3.

Figures in brackets refer to histological diagnosis. There were 56 cases in whom diagnosis could not be ascertained definitley. The cases of essential hypertension were problems of hypertension and cardiac failure and their renal failure was of no major concern during their disease. Cases that had serious progressive disease of other systems in the body were excluded from this study for example, diabetes mellitus, disseminated lupus erythematosus.

With regard to mortality, up to June 30th 1967, 97 (80%) are known to be dead. Ten more are presumed to be dead as they were taken home in a moribund state against medical advice. Only 3 are known to be definitely alive and symptomatically well. They have survived for 2, 4¾ and just over 5 years respectively. 11 have been lost to follow-up. One of these was relatively well after 5 years and he was then lost to follow-up after 1966. (Fig. 4).

OUTCOME

Dead	97	80%
Presumed dead	10	8%
Alive	3	3%
Lost to followup	11	9%
	121	

Fig. 4.

Of those known to be dead, 1/3 were dead in the first week, ¾ within the first 6 months and 90% were dead within 1 year. Thus it can be seen that at least 1/3 of our cases present very late in their disease process.

Of the 97 deaths if we only take those aged 21-40 years and only if they die from renal failure per se, we are left with 42 cases. If we then exclude the myocardial infarct and the cerebrovascular accidents we are left with 35 cases for 3 years or 12 per year. We feel this would be the minimum number that could benefit from a chronic dialysis programme.

In Singapore in 1961-1964, Medical Unit I and II were the only general medical departments in the Ministry of Health. Thomson Road Hospital was then not fully functioning yet and so had much fewer and also more selected cases as cases admitted there had to be fit to be transferred there from General Hospital where Medical Unit I and II are situated. Medical Unit I and Medical Unit II admit roughly the same number and type of cases. Thus if we double the Medical Unit II figures we would roughly represent the figures for Singapore. This would leave out the few cases in Thomson Road General Hospital, a few private hospitals and the cases treated by general practitioners. Hence 24 cases per year is the minimum figure Since the population of Singapore is 2 million this would mean 12 patients per year per million population.

Comparing this figure with some from other parts of the world, we come closest to the Denmark figures. The estimate for Denmark is that for the maximum. (Fig. 5).

ESTIMATE OF NUMBER OF PATIENTS REQUIRING TREATMENT FOR CHRONIC RENAL FAILURE*

Country	No. per year per million population
Denmark	193 (no age limits)
	43 (age 15 — 54 years)
	19 (age 15 — 44 years)
Sweden	75 (no age limits)
U.S.A.	20 — 50 (age 15 — 54 years)
Singapore	12 (age 20 — 40)

*Proceedings of the European Dialysis and Transplant Association Vol. II 1965, Vol. III 1966.

Fig. 5.

Also to show that our estimate for Singapore is probably the minimum, we see that from the Registrar of Deaths figures, there are 214 renal deaths per year. These figures are the average of those for 1961-1964. If we take only the chronic nephritis and the renal infections as these form the bulk of cases of chronic renal failure, there are 144 deaths per year. Our study showed 97 deaths over 3 years, that is, 32 per year or 64 per year if Medical Unit I and Medical Unit II are combined and this still falls short of the 144 in the Registrar of Deaths figures. (Fig. 6)

Registrar of Deaths, Singapore.

1961 — 1964	No./Year
Acute Nephritis	11
Nephrosis	7
Chronic nephritis	110
Nephritis type unspecified	46
Infections of kidney	34
Hydronephrosis	1
Calculi kidney and ureter	3
Other diseases kidney and ureter	2
	214

Fig. 6.