CHANGING PATTERN OF ETIOLOGY OF CHRONIC RENAL FAILURE AMONG DIALYSIS PATIENTS

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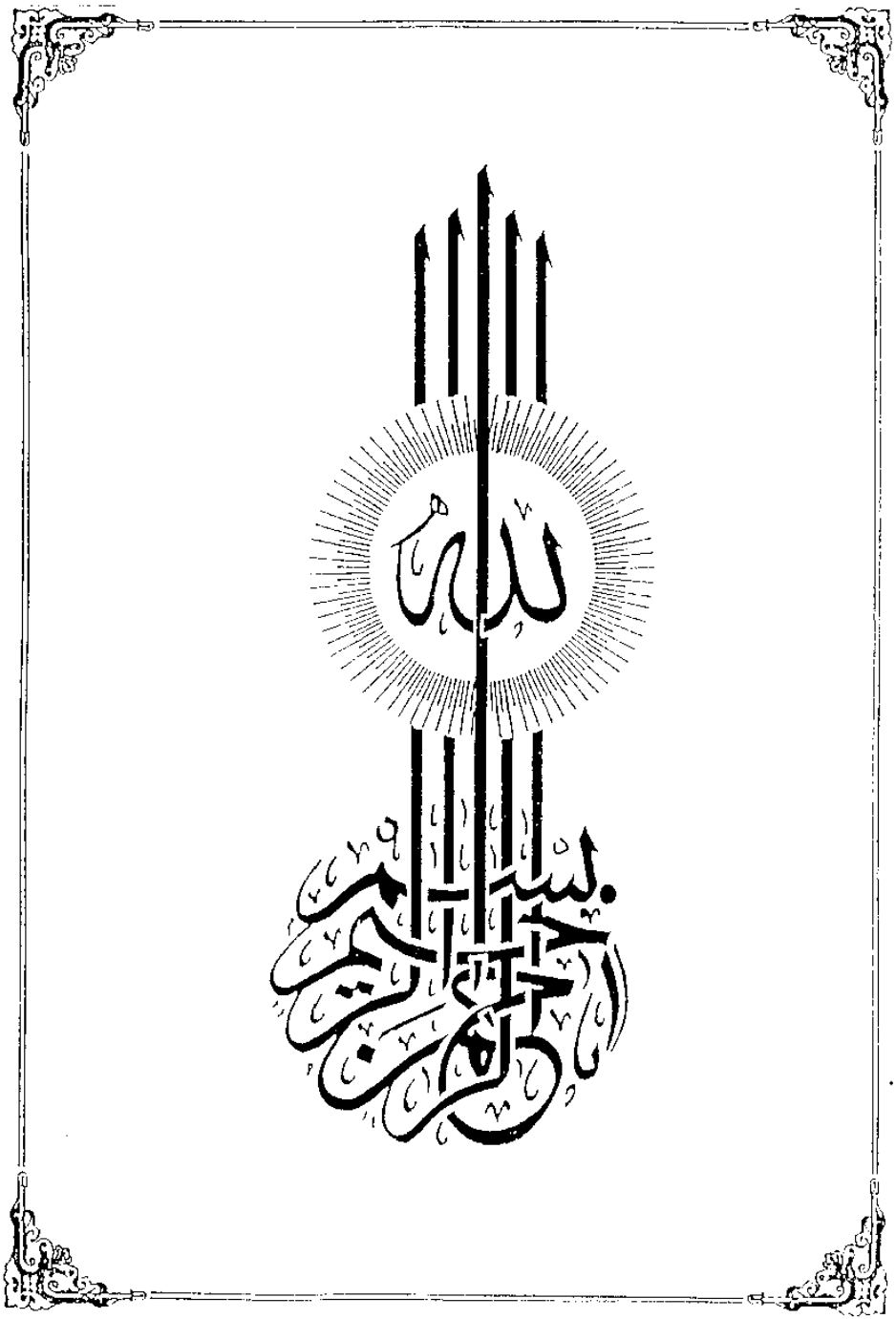
Abbreviations

CRI	Chronic renal insufficiency
CRF	Chronic renal failure
ESRD	End stage renal disease
ESRF	End stage renal failure
EDTA	European Dialysis & Transplant Association
CGN	Chronic glomerulonephritis
CPN	Chronic pyelonephritis
OU	Obstructive uropathy
ADPK	Autosomal Dominant Polycystic Kidney
LUTH	Lagos University Teaching Hospital
SES	Socio-economic status
USRDS	United States Renal Data System
GFR	Glomerular Filtration Rate
RPF	Renal Plasma Flow
BUN	Blood Urea Nitrogen
PTH	Parathyroid hormone
ECF	Extracellular fluid
ACE	Angiotensin Converting Enzyme
EPO	Erythropoietin
r-HuEPO	Recombinant human erythropoietin
TSH	Thyroid Stimulating Hormone
CAPD	Continuous Ambulatory Peritoneal Dialysis
CCAPD	Continuous Cycle Assisted Peritoneal Dialysis
ANZ	Australian and New Zealand



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Introduction

End stage renal disease (ESRD) is defined as patients who reached the stage where they required dialysis or renal transplantation (**York et al., 1992**).

The etiology of ESRD varies from one geographical area to another, for example: The commonest causes of ESRD in Sudan are: chronic glomerulonephritis, obstructive nephropathy, hypertension and diabetes mellitus in that order, in Sweden, they are chronic glomerulonephritis, diabetes mellitus and chronic pyelonephritis (**Osman, 1987**). Also, the commonest causes of ESRD in Slovenia are as follow: glomerulonephritis 26.7%, analgesic nephropathy 12.9%, chronic pyelonephritis 10.8% and diabetic nephropathy 7.9% (**Malovrh, 1992**).

Also the causes of chronic renal failure had changed over the time, for example: in 1961, the most common causes of CRF were chronic pyelonephritis, benign nephrosclerosis and chronic glomerulonephritis. The less common causes were diabetic nephropathy, lupus nephritis and amyloidosis (**White, 1961**).

In 1979, the most common causes of CRF according to European Dialysis and Transplant Association (E.D.T.A.) were: glomerulonephritis 55%, chronic pyelonephritis 14%, polycystic renal disease 7% and vascular nephropathy 6% (**Grunfeld, 1979**).

In 1988, the most common causes of ESRD according to data bases on U.S. Renal Data System were diabetes and hypertension contribute

about 56%, glomerulonephritis accounts for 14.4%, cystic renal disease 3.6%, other urologic diseases 6%, other 5.8% and unknown 14.3% **(Warnock, 1992).**

In 1992, in U.S.A. two third of ESRD now were due to two treatable systemic diseases: type II diabetes mellitus and hypertensive nephrosclerosis **(Robert, 1992).**

Aim of the Work

The aim of this work is to study the changes which had happened in the etiology of chronic renal failure across the years in Egypt.

Chronic Renal Failure

Definitions:

Chronic renal insufficiency (CRI) is defined as a condition in which the creatinine clearance of less than 60 ml/min./1.73m2 persisting for at least 12 months (**York et al., 1992**).

Chronic renal failure (CRF) is a clinico-biochemical term denoting gradual and progressive reduction in renal function causing retention of waste products and disturbances of the internal environment (**Gabriel, 1985**).

End-stage renal failure (ESRF) is defined as patients who reached the stage where they required dialysis or renal transplantation (**York et al., 1992**).

Chronic renal failure is also defined as the persistent impairment of both glomerular and tubular function of such severity that the kidneys are no longer able to keep the internal environment normal (**Flamentaum and Hamburger, 1982**).

Aetiology:

Various forms of renal diseases give rise to chronic renal failure (CRF), and particularly after life has been supported by chronic dialysis, it may be difficult to determine the original nature of the condition. The principal kidney diseases that lead to chonic progressive renal failure produce kidneys that have many morphological features in common. In fact, their similarities are often more striking than their differences, and it is frequently impossible to determine morphologically the etiology of chronic renal failure. Although, one can sometimes be certain of the diagnosis on basis of the microscopic features, the macroscopic appearance of the end stage kidney is often more helpful than microscopy.

It is known that the incidence of the different etiologic agents responsible for chronic renal failure often shown geographical variations being different in different countries (**Modan et al., 1975**).

The different types of renal disease which are included in most of the knwon classifications are: chronic glomerulonephritis, chronic pyelonephritis, renal vascular diseases, metabolic disorders (e.g. diabetes

mellitus), congenital anomalies (e.g. polycystic kidney), obstructive uropathy and chronic nephrotoxicity (**Golden & Maher, 1977, Becker, 1992**).

Chronic Glomerulonephritis:

The diagnosis of glomerulonephritis is suggested by the history, supported by the urinary findings and confirmed by renal histology. History of an acute illness of the nephrotic syndrome may highlight the course of chronic glomerulonephritis. Persistent proteinuria, renal hematuria, characterised by dysmorphic red blood cells (**Fairley and Birch, 1982**) and urinary casts are the tell-tale signs of chronic renal disease.

Renal biopsy is technically easier to perform and more informative in the earliest stages if any chronic glomeurlar disease progresses, secondary ischemic and sclerotic changes complicate the picture. Early referral to the nephrologist, as soon as chronic glomerulonephritis is suspected, is therefore advocated. Recent technical developments with the "Biopsy Gun" used under ultrasonic control (**Linddgren, 1982**) seem likely to reduce the risk of complications.

Occult glomerulopathy is usually silent, being reported in asymptomatic patients infected by S.hematobium (**Soliman et al., 1987**) as well as S.mansoni (**Sobh et al., 1988**) infestations without significant hepatic involvement. The lesion is usually described as mesangioproliferative glomerulonephritis.

Chronic Pyelonephritis/ interstitial nephritis:

Chronic pyelonephritis was in the past overdiagnosed as a cause of end-stage renal failure with consequences that urinary tract infections were thought to be a major cause of progressive renal disease and that antibiotics were prescribed excessively. The great importance of infantile vesicoureteric reflux in causing intrarenal reflux, and scarred kidneys is now well recognized, and in the Australian and New Zealand registry (**Disney, 1989**) the term reflux nephropathy has now replaced pyelonephritis. The original definition of chronic pyelonephritis was a pathological one (**Heptinstall, 1967**) but it is now realized that many of the changes described can be reporoduced by ischemia and obstruction and are not infrequently mimicked by toxic effects as in analgesic nephropathy.

In Egypt, pyelonephritis and obstructive uropathy are extremely common in association with urinary schistosomiasis. Mixed stones are common among bilharzial patients with chronic urinary infections mainly with proteus (**Barsoum, 1992**).

Reflux nephropathy is the cause of 5%-10% of dialysed end-stage renal failure. Once scarring has occured, the prognosis depends on the severity of initial damage and the presence of proteinuria which reflects the development of glomerulosclerosis. It is independent of ongoing reflux infection (**Recker et al., 1993**).

Age-specific rates for entry into Australian maintenance dialysis and transplantation programmes show that reflux nephropathy is equally common as a cause of end-stage renal failure in males and females from 5 to 25 years, and over 75 years of age, but between 35 and 64 years renal failure due to this disease is significantly more common in women than men (**Stewart and Hodson, 1995**).

Diabetic nephropathy:

End-stage renal failure due to diabetic nephropathy contributes a large proportion of the patients on renal replacement in the United States. In 1980 and 1981, the number of black diabetic patients accepted for treatment in Michigan was almost 60 per million population **(Weller et al., 1985)** which was higher than the total take-on rate for all diseases in any one European country at the time. The proportion of European patients who had diabetic nephropathy increased from 3 % in 1976 to 13.1 % in 1987 **(Brunner, 1989)** in keeping with expansion of treatment facilities and relaxation of selection criteria. The total proportion of patients who were diabetic is greater than this but the EDTA Registry does not collect data on diabetics who had other primary renal disease.

Data returned to EDTA registry classify 70% of diabetic nephropathy patients as insulin-independent and many authors think that type II diabetics may have been mistakenly diagnosed as type I because they were insulin-users rather than truely insulin-dependent. Nevertheless, there does appear to be a particularly high incidence of diabetic nephropathy due to insulin dependent diabetes in some Scandinavian countries. In 1987, Finland recorded that 27.4% of all patients had diabetic

nephropathy and Sweden 19.2%, of these 99% and 96% respectively were classified as insulin-dependent (**Brunner, 1989**).

Renal Vascular disease/hypertension:

Many primary renal diseases may give rise to hypertension, and chronic renal parenchymal disease is said to cause 2 to 5% of all cases of hypertension. Considerably evidence suggests that an inherited defect in renal sodium handling is a basic cause of primary essential hypertension **(de Wardner and McGregor, 1980).**

Malignant hypertension was diagnosed more frequently in middle age (35-54 years) and simple hypertension was blamed, particularly in the older age groups. Hypertension of both categories together caused 6.6% of all diseases in patients starting renal replacement therapy between 1985 and 1987, and a further 2.6% of cases were attributed to renovascular disease-type unspecified **(Cameron et al., 1992).**

Multisystem diseases:

From study by EDTA registry, another variations of diseases which affect other systems in the body: myelomatosis 1%, amyeloid 1.5%, which