



Characterization and etiology of the chronic renal failure in a countryside nephrology unit of São Paulo State

Caracterização e etiologia da insuficiência renal crônica em unidade de nefrologia do interior do Estado de São Paulo

Caracterización y etiología de la insuficiencia renal crónica en unidad de nefrología del interior del Estado de São Paulo

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ABSTRACT

Objectives: Characterize the patients with chronic renal failure (CRF) in dialytical program; verify the causes of the CRF; identify the associated diseases to CRF; measure the type of treatment and the actual access of the patients to them. **Methods:** This is a epidemiological descriptive research performed in a nephrology unit, and all patients registered in the *Nefro Data* program were included. **Results:** Of the group of 217 patients registered in the studied unit, 68,2% have age of 40 or greater and 59,4% are male. Regarding the base disease, 31,3% of the patients have Hypertensive Nephrosclerosis, 25,3% have Diabetes Mellitus (DM) and 24,5% have Glomerulonephritis. Regarding the associated diseases, 42,4% of the patients have Systemic Arterial Hypertension (SAH) 24,9% don't have comorbidities, 19,8% have both SAH and DM. Regarding the type of vascular access, 70,5% have arteriovenous fistula, being the utilization of the Tenckhoff catheter exclusive of peritoneal dialysis in 13,3% of the studied cases. **Conclusion:** The results allow a better planning with regard to the patients real needs. **Keywords:** Renal insufficiency, chronic/etiology; Renal insufficiency, chronic/nursing; Renal dialysis

RESUMO

Objetivos: Caracterizar os pacientes com insuficiência renal crônica (IRC) em programa dialítico; verificar as causas de IRC; identificar as doenças associadas a IRC; levantar o tipo de tratamento e o acesso atual destes pacientes. **Métodos:** Trata-se de um estudo descritivo epidemiológico, realizado em uma Unidade de Nefrologia e foram incluídos todos os pacientes cadastrados no Programa *Nefro Data*. **Resultados:** Dos 217 pacientes cadastrados na unidade em estudo, observamos 68,2% com idade superior a 40 anos e 59,4% do sexo masculino. Quanto à doença de base, 31,3% dos pacientes apresentavam Nefrosclerose Hipertensiva e 25,3% Diabetes Mellitus (DM), seguido da Glomerulonefrite com 24,5%. Quanto às doenças associadas, 42,4% dos pacientes possuíam Hipertensão Arterial Sistêmica (HAS), 24,9% não possuíam comorbidades, 19,8% HAS e DM. Quanto ao tipo de acesso vascular 70,5% possuíam fistula artério-venosa, sendo a utilização de cateter de Tenckhoff exclusivo da diálise peritoneal em 13,3%. **Conclusão:** Concluiu-se que os resultados permitem um melhor planejamento frente às necessidades reais dos pacientes.

Descritores: Insuficiência renal, crônica/etiologia; Insuficiência renal crônica/enfermagem; Diálise renal

RESUMEN

Objetivos: Caracterizar a los pacientes con insuficiencia renal crónica (IRC) que participan en un programa dialítico; verificar las causas de la IRC; identificar las enfermedades asociadas a la IRC; levantar el tipo de tratamiento y el acceso actual de esos pacientes. **Métodos:** Se trata de un estudio descriptivo epidemiológico, realizado en una Unidad de Nefrología en el que fueron incluidos todos los pacientes registrados en el Programa *Nefro Data*. **Resultados:** De los 217 pacientes registrados en la Unidad en estudio, observamos que el 68,2% tenían edad superior a 40 años y el 59,4% eran del sexo masculino. En cuanto a la enfermedad de base, el 31,3% de los pacientes presentan Nefrosclerosis Hipertensiva y el 25,3% Diabetes Mellitus (DM), seguido de la Glomerulonefritis con el 24,5%. Respecto a las enfermedades asociadas, el 42,4% de los pacientes poseen Hipertensión Arterial Sistémica (HAS), el 24,9% no poseen comorbidades, el 19,8% HAS y DM. En relación al tipo de acceso vascular el 70,5% poseen fistula arteriovenosa, siendo la utilización del cateter de Tenckhoff exclusivo de la diálisis peritoneal en el 13,3%. **Conclusión:** los resultados permiten una mejor planificación frente a las necesidades reales de los pacientes.

Descritores: Insuficiencia renal crónica/etiología; Insuficiencia renal crónica/enfermería; Diálisis renal

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INTRODUCTION

Renal failure is a disease defined when the kidneys are incapable of eliminate the products of the body's metabolic degradation or perform regulatory functions. The substances normally eliminated in the urine accumulate in the corporeal liquids, in consequence of the jeopardized renal excretion, and lead to a rupture in the endocrine and metabolic functions, as well as hydroelectrolyte and acid-base disturbances. The renal failure is a systemic disease and consists in the final common way of many different kidney and urinary system diseases. It is estimate that 50,000 north-americans die due to renal failure every year⁽¹⁻²⁾.

The Acute Renal Failure (ARF) is an acute reduction of the renal function in a period of hours or days. It refers, mostly, to the decrease of the glomerular filtration rhythm, however, also occur disfunctions in the control of the hydroelectrolyte and acid-base balance⁽³⁾. In Brazil, there are few data about the incidence of ARF and related mortality. Studies performed in two centers of the State of São Paulo shows a incidence de ARF in tertiary hospital of 0,79% and 0,49%, respectively. About 50% of this patients were submitted to the dialyhtical treatment, with mortality rates of about 50%⁽⁴⁻⁵⁾.

The expression "Chronic Renal Failure" (CRF) refers to a syndromic diagnostic of progressive loss and generally irreversible of the depuration renal function, in other words, of the glomerular filtration. It is a clinic syndrome caused by the progressive and irreversible loss of the renal functions. It characterizes by the deterioration of the biochemical and physiological functions of all systems in the organism, secondary to the accumulations of catabolites (uremic toxins), alterations in the hydroelectrolyte and acid-base balance, metabolic acidosis, hypolemy, hyperfosfatemy, anemia and hormonal disturbance, hyperparathyroidism, infertility, retard in the growth, among others⁽⁶⁾.

The CRF can be treated initially by conservative therapeutics, like dietary or medication treatment and blood pressure control⁽⁷⁾. The indication of the dialyhtical program will be done when the conservative treatment isn't capable of keeping the life quality of the patient and when there are appearance of signals and important symptoms of uremy⁽⁸⁾.

The first symptoms of CRF can take years to be noticed. The same occurs with the uremic syndrome, typical of terminal CRF, what demonstrate the kidneys' great adaptive capacity, allowing that human beings stay alive with only 10% of the renal function⁽⁹⁻¹⁰⁾.

In the initial steps of the RF, when the clinic and laboratorial manifestations are minimal or absent, the diagnosis can be suggested by the association of manifestation of unspecific symptoms (fatigue, anorexia,

weight loss, itch, nausea or hemolysis, hypertension, polyuria, nicturia, hematuria or edema). The main symptoms are: nicturia, polyuria, oliguria, edema, arterial hypertension, weakness, fatigue, anorexia, nauseas, vomit, insomnia, cramp, itching, cutaneous paleness, xerosis, proximal miopathy, dysmenorrhoea, amenorrhoea, testicular atrophy, impotence, cognitive deficit, attention deficit, confusion, sleepiness, obnubilation and coma^(5,11).

In the advanced forms of CRF, virtually all organs and tissues suffer its effects. An accumulation of toxic substances occurs in the intern middle, because of deficient excretion or excess of production due to metabolic disturbances. The CRF causes alterations, like anasarca, osseous alterations, mental acuity and sleeping rythim alterations, intra-ocular pressure alterations, cardiac alterations and hypertension^(10, 12).

The CRF could be caused by systemic diseases like diabetes mellitus; chronic glomerulonephritis, pielonephritis; uncontrolled hypertension; obstruction of the urinary tract; hereditary lesions (polycystic kidney disease); vascular disturbances; infections; medications; toxic agents; enviromental and occupational agents (lead, cadmium, mercury and chromium)⁽¹³⁻¹⁵⁾.

The CRF causes ranges from the primary kidney diseases, systemic diseases that attack the kidneys and the urinary tract. The diabetic nephropathy, the hypertension and primary glomerulonephritis are the most common causes of terminal renal failure (TRF) around the world⁽¹⁶⁻¹⁷⁾.

The pacient with CRF presents systemic alterations due to multiple affected renal functions, systemic base diseases and the own complications referring to the RF. Therefore, the treatment must involve it in large scale, embracing psychotherapy, nutritional redirecting, control of the primary diseases like diabetes and hypertension, correction of metabolic disturbances, adapted orientations about the disease, the treatment and self-care, involving a multi-discipline team, and even the adoption of a renal replacement therapy⁽¹⁸⁻²¹⁾.

The objectives of this research were: characterize the patients bearers of CRF in a dialyhtical program of the Nephrology Unit of the Base Hospital of São José do Rio Preto; analyze the causes of CRF on those patients; identify the related diseases to the CRF on those patents and identify the type of treatment and actual access.

METHODS

The research was performed in the Nephrology Unit of the Base Hospital of the Regional Medical School of São José do Rio Preto Foundation, SP, philanthropical and non profitable privacy right institution. It is constituted, through years, in a hospital and medical complex indispensable to the health care of the

population of a region that embodies 560 municipal districts, esteemed in two millions of inhabitants.

The institution renders services with multi-discipline medical, nursing, nutrition, physiotherapy, occupational therapy, phonoaudiology, social work and psychology teams. Is a hospital that attends private and associate patients, as well as patients from the public health care system. Yet, this hospital is considered a reference center of the municipal district and region, and attends patients that come from other states of the country. The hospital is also the most important field for practical teaching of medicine and nursing students, also dedicated to research.

The specific location of the accomplishment of this research was the Nephrology Unit, that attends to 231 patients in dialytical treatment nowadays, with 198 in Hemodialysis, 25 in Continuous Ambulatory Peritoneal Dialysis and 8 in Intermittent Peritoneal Dialysis.

This is a epidemiological descriptive research, in which were searched the principal causes of CRF in the patients of the Hemodialysis (HD), Continuous Ambulatory Peritoneal Dialysis (CAPD) and Intermittent Peritoneal Dialysis (IPD) programs, in May, 2005.

A form structured for data collection through the software Nefro Data, available in the researched hospital's Nephrology Unit was utilized. The research exclusion criterion was to be a non-registered patient in this software.

The obtained data was registered in absolute and relative values, presented afterwards through tables, using the Microsoft Word and Microsoft Excel softwares.

Before the data collection, the research project was submitted to approval by the Ethics in Research Committee of the Medical School of São José do Rio Preto, aiming to respect the ethics procedures in research with human beings. The dismissal of the Agreement Term was asked for and approved.

RESULTS

Patients characterization

After the data collection period, 217 patients registered on a dialytical program in the researched unit. Of these patients, it can be verified in the Table 1 that 25.3% had age between 40 and 49 years, 19.8% between 50 e 59 years, and 23,1% had age superior to 60. Regarding gender, it was verified that 59,4% are male. Regarding etnos, 73.7% were caucasian, 14.3% were afro-descendant, 9.7% had mixed ancestry and 2.3% were Asian.

CRF causes

Analyzing the base disease, can be verified in the Table 2 that the patients present previous diseases,

Hipertensive Nephrosclerosis (31,3%), Diabetes Mellitus (25,3%) and Glomerulonephritis (24,5%), mostly.

Table 1 – Characterization of the assisted patients in the Dialytical Program of the Nephrology Unit of the Base Hospital of São José do Rio Preto, São Paulo - May 2005

Variables	n	%
Gender		
Male	129	59.4
Female	88	40.6
Total	217	100.0
Etnos		
Caucasian	160	73.7
Afro-descendant	31	14.3
Mixed Ancestry	21	9.7
Asian	5	2.3
Total	217	100.0
Age		
20 to 29	24	11.1
30 to 39	45	20.7
40 to 49	55	25.3
50 to 59	43	19.8
60 to 69	29	13.4
70 to 79	15	6.9
80 to 89	5	2.3
90 to 99	1	0.5
Total	217	100.0

Table 2 – Patients in treatment in the Dialytical Program of the Nephrology Unit of the Base Hospital of São José do Rio Preto, São Paulo; may 2005, according to base disease - May 2005

Base disease	n	%
Hipertensive Nephrosclerosis	68	31.3
Diabetes Mellitus	55	25.3
Glomerulonephritis	53	24.5
Systemic lupus erythematosus	8	3.7
Obstructive Uropathy	8	3.7
Autosomal Polycistical Renal Disease	7	3.2
Pielonephritis	2	0.9
Cystic Kidney Diseases	2	0.9
Others	14	6.5
Total	217	100.0

CRF related diseases

Regarding related diseases, 42.4% of the patients had SAH, 12.9% of had DM, 19,8% had both SAH and DM and 24.9% have any of the comorbidities (Table 3).

Type of treatment and current access

In the study, it was observed that 188 of the 217 patients (86.6%) were registered in the hemodialysis program and 29 (13%) were registered in the peritoneal dialysis program. Regarding type of access utilized by the patients who were in hemodialysis treatment, most of them (70.5%) have arteriovenous fistula.

Table 3 – Patients on treatment in the Dialyثical Program of the Nephrology Unit of the Base Hospital of São José do Rio Preto, São Paulo; may, 2005, according to related diseases

Related diseases	n	%
Systemic Arterial Hipertension	92	42,4
Diabetes Mellitus	28	12,9
Systemic Arterial Hipertension + Diabetes Mellitus	43	19,8
None	54	24,9
Total	217	100.0

Table 4 – Patients on treatment in the Dialyثical Program of the Nephrology Unit of the Base Hospital of São José do Rio Preto, São Paulo. According to dialysis and access type. May, 2005

Dailysis type	n	%
Hemodialysis	188	86.6
Intermittent Peritoneal Dialysis	9	4.2
Continuous Ambulatory Peritoneal Dialysis	20	9.2
Total	217	100.0
Access type	n	%
Tenckhoff catheter	29	13.3
Double-lumen catheter	21	9.7
Arteriovenous fistula	153	70.5
Fistula with PTFE prosthesis*	14	6.5
Total	217	100.0

*Politetrafluoetileno

Treatment Beginning Time

Most of the patients (86.6%) were under treatment for a period between one to five years.

Table 5 – Patients on treatment in the Dialyثical Program of the Nephrology Unit of the Base Hospital of São José do Rio Preto, São Paulo; according to treatment beginning time. May 2005

Beginning Time	n	%
Less than a year	60	27.7
One to three years	83	38.2
Four to five years	45	20.7
Six to eight years	23	10.6
Nine to eleven years	6	2.8
Total	217	100.0

DISCUSSION

The predominance of the male gender in the study population is similar to the results presented in the 2004 census, in which 57.7% of the hemodialysis patients were male⁽²²⁾.

The predominant age in this research was above 40 years, represented by 68.2% of the sample. The research also realized in the countryside of the São Paulo State shows that 68% of the hemodialysis patients are adult. In the literature, the glomerular filtration drop 0.08 ml

per year from the age 40. This way, the vulnerability of the renal system increases and the patient loses the capacity of maintain the renal homeostasis facing the stress. In the senior patients, there is an important decrease in the renal flow due to the increase of the intra-renal resistance, loss of auto-regulating capacity that causes inefficiency, both in the hypertension and hypotension⁽¹⁹⁻²¹⁾.

In this research, the principal causes of CRF were Hipertensive Nephrosclerosis, DM and Glomerulonephritis, identical data to that found in the literature in which⁽²⁴⁾. The most prevalent associated diseases in the studied population were SAH and DM. In the literature, more than 30% of all patients that initiate the hemodialysis are diabetic. The morbidity and mortality are substantially larger in diabetic patients than the non-diabetic ones, and the cardiovascular diseases and the infections were the main causes of death. The SAH is also a important cause of morbidity and mortality that accelerates the atherosclerosis and precipitates complications related to the blood pressure increase⁽⁸⁻¹⁷⁾.

In this reasearch, 87% of the patients were in hemodialysis program; the choice of the dailyثical method is between the hemodialysis and peritoneal dialysis. In terms of peritoneal dialysis, the choice is between Continuous Ambulatory Peritoneal Dialysis (CAPD) and Continuous Cyclic Peritoneal Dialysis. The percentage of patients in chronic peritoneal dialysis is 20% in the United States and 40% in Canada. The main contraindication for the peritoneal dialysis is an inadequate peritone due to the presence of adherences, fibrosis or malignant disease⁽¹⁹⁻²¹⁾.

The predominant vascular access was the FAV, which allows the extrarenal depuration in a periodic and continuous way, which constitutes one of the main goals of the hemodailyثical treatment⁽⁸⁻²¹⁾.

Regarding the time at beginning of the hemodailyثical treatment, the data discovered in this research are suitable with the Kusumota's studies⁽²³⁾, that verified the life quality related with the health of patients in hemodialysis, in which the average time was two and half years.

CONCLUSION

The results enabled the following conclusions:

- Most of the studied patients were male, with age of 40 or more and which did hemodialysis for three years, at least.

- The predominant causes of CRF were Hipertensive Nephrosclerosis, DM and Glomerulonephritis.

- The HA and DM were the related diseases with CRF in this patients, and the FAV was the most used access.

This research will give subsidies for a best planning of nursing assistance, contributing to improve the life conditions of these patients.

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