

Clinical-epidemiological profile of patients with chronic kidney disease under hemodialysis in a university hospital in Southern Brazil

Perfil clínico-epidemiológico dos pacientes com doença renal crônica em hemodiálise em hospital universitário do Sul do Brasil

Daniela Lourenço de Souza¹, Maitê Peres de Carvalho², Beatris Maria Vidales Braz³, José Luís Silveira da Costa⁴, Franklin Corrêa Barcelos⁵, Maristela Böhlke⁵, William Peres⁶

¹Biologist, Pelotas-RS, Brazil; ²Physiotherapeutic, Pelotas-RS, Brazil; ³Nurse, Pelotas-RS, Brazil; ⁴Math Department, Catholic University of Pelotas, Piratini-RS, Brazil; ⁵Health School, Catholic University of Pelotas, Pelotas-RS, Brazil; ⁶Chemical Sciences, Pharmaceutical and Food Center, Federal University of Pelotas, Pelotas-RS, Brazil.

Abstract

Objective – This study aimed to delineate the epidemiological profile of patients with chronic kidney disease treated by hemodialysis in a university hospital in Southern Brazil between 2005 and 2009. **Methods** – This is a retrospective study, which analyzed the medical records of 67 patients treated in the dialysis center between May and August of 2009. **Results** – In the sample, there was a predominance of white people (74.6%), male (61%), and the diagnosis of the most frequent disease was nephropathy associated with hypertension, which occurred in 50.8% of cases, followed by diabetic nephropathy in 20.9% of cases. **Conclusion** – The main etiologies were hypertension and diabetes. It was observed this disease affects all ages, but it is prevalent among the elderly, male and predominantly white people.

Descriptors: Renal dialysis; Renal insufficiency, chronic; Epidemiology

Resumo

Objetivo – Este estudo objetivou delinear o perfil epidemiológico dos pacientes com doença renal crônica tratados por hemodiálise em hospital universitário do Sul do Brasil durante o período entre 2005 e 2009. **Métodos** – Trata-se de um estudo retrospectivo, com análise dos prontuários de 67 pacientes tratados nesse centro de diálise no período entre maio e agosto de 2009. **Resultados** – Na amostra analisada houve um predomínio da raça branca (74,6%), do sexo masculino (61%), e o diagnóstico da doença de base mais frequente foi nefropatia associada à hipertensão arterial sistêmica, que ocorreu em 50,8% dos casos, seguido de nefropatia diabética em 20,9% dos casos. **Conclusão** – Na presente amostra, as principais etiologias foram hipertensão e diabetes. Observa-se que esta patologia, afeta todas as idades, porém apresenta prevalência acentuada entre a população idosa, do sexo masculino e com predominância da raça branca.

Descritores: Diálise renal; Insuficiência renal crônica; Epidemiologia

Introduction

Worldwide, chronic kidney disease (CKD) is considered a relevant problem of the public health because of its high morbimortality. It is a slow and progressive loss of the kidney function, and most of the times irreversible, which leads to the patient's physical limitations¹⁻³.

The clinical features for CKD are deterioration of the biochemistry and physiological functions from the hydroelectric and acid-base imbalance (metabolic acidosis, hyperkalemia, hypophosphatemia, among others) to the hormonal disorders such as anemia, growth disorders, etc⁴.

The most common treatment for patients with CKD is the hemodialysis. This therapy replaces the kidney function; it eliminates solutes and liquids from the blood⁴⁻⁵.

The CKD provides an accumulation of toxic substances in the blood, which causes symptoms like fatigue, mental losses, peripheral circulatorious deficit, sensitiveness alteration, and muscular dysfunctions. Besides these symptoms, the neurological loss is one of the most relevant affected systems, as well as the cardiovascular and digestive ones⁶⁻⁷.

However, hemodialysis provides a higher life expectation for the patients, it doesn't avoid some damages of the pathology and of the treatment itself⁸.

In Brazil, only 33% of the patients with chronic kidney insufficiency are under treatment; the 67% left, about 100 thousand people, dies before starting dialysis⁹. According to the Brazilian Nephrology Society (SBN), there are 684 centers for dialysis, 150 (21,9%) of them are in Southern of Brazil¹⁰.

The CKD is asymptomatic and its stages are advanced. It might

take months or years for the patient with this pathology to need dialysis, when the glomerular filtration rate is under 10 mL/min/1,73m²¹¹.

According to the National Kidney Foundation in Kidney Disease Outcomes Quality Initiative (K/QODI), there are 5 stages of CKD: I – kidney lesion with normal or increase rhythm of glomerular filtration rate (≥ 90 mL/min/1,73m²); II – kidney lesion with low decrease rhythm of glomerular filtration rate (60-89 mL/min/1,73m²); III – kidney lesion with moderate decrease rhythm of glomerular filtration rate (30-59 mL/min/1,73m²); IV – kidney lesion with high decrease rhythm of glomerular filtration rate (15-29 mL/min/1,73m²); V – kidney failure or therapy for replacing kidney function (<15 mL/min/1,73m²)¹².

Commonly, the signs and the symptoms of the kidney disease are the urine color changes (coffee color or hematuria), polyuria, anemia, nocturia, lombar pain, nauseas and morning vomits, weakness, and constant unwillingness, hypertension, orbicular region or ankle edema¹³.

Several organs and systems might suffer a loss because of CKD, therefore it demands an integrated action in its assessment and treatment to preserve its biological balance¹⁴⁻¹⁵.

However, despite the advances in the dialysis treatment to increase life expectation of the CKD patients, the negative impact of the disease and its treatment affects the patient's perception regarding the life quality and health¹⁴. Wherefore, the kidney disease interferes in the physical and mental health and in the well being, affecting the social convivence^{5,16}.

The CKD patients need an effective replacing therapy through hemodialysis (HD), peritoneal dialysis (PD) or kidney transplant¹¹.

Methods

It is an analytical research based on secondary data of personal and clinical information from 67 patients' prontuarie who are under hemodialytic treatment at University Hospital São Francisco de Paula in Pelotas/RS. The data is from patients' under hemodialytic treatment between January 11th of 2005 and May 22nd of 2009, and it was collected and analyzed between May and August of 2009.

The variables assessed were sex, race, time of dialysis treatment and base disease.

The data was presented as number and percentage for the categorical variables and as median (minimum and maximum) for the quantitative variables. The relation between the categorical variables was assessed by the Qui-Square test with the Fisher test. For quantitative variables, it was used the Mann-Whitney test. It was adopted a level of significance of 5% ($\alpha = 0,05$), i.e., it was considered significant the results with p-value lower or equal to 5% ($p \leq 0,05$). And to have an accurate reading of the results, it was used a table representation and analyses.

Results

The main etiologies for CKD were systemic arterial hypertension (SAH), diabetes *mellitus* (MD) and glomerulonephritis. The most frequent diagnosis was the nephropathy associated with the SAH with 50,8% of the cases, the diabetes with 20,9%, non-defined etiology with 11,9%, Glomerulonephritis with 9,0%, polycystic kidney disease, contracted kidneys, multiple myeloma and kidney calculi with 1,5%. The dialysis therapy was used in the acute kidney insufficiency in 1,5% of the cases.

All of the 67 patients with CKD in hemodialysis were adults with an average age of 62,5 years old and the median age of 63 years old for women; and an average age of 64 years old and the median of 65 years old for men. There were 26 women between 41 years old and 87 years old, i.e. 38,8% of the patients. There were 41 men between 21 years old and 93 years old, i.e. 61,2% of the patients (Table 1).

Table 1. Age (frequency and percentage) related to the male and female patients with CKD under hemodialysis treatment at University Hospital São Francisco de Paula in Pelotas (RS)

Ages	Male		Female	
	n	%	n	%
21 f — 33	3	7,32	0	0,00
33 f — 45	1	2,44	2	7,69
45 f — 57	8	19,51	7	26,92
57 f — 69	12	29,27	8	30,77
69 f — 81	11	26,83	6	23,08
81 f — 93	6	14,63	3	11,54
Total	41	100	26	100

The predominant race was the white for women and men in 50 patients, i.e. 74,6% of them (Table 2).

Table 2. Frequencies and percentages for males and females related to the race of chronic kidney insufficiency (CKI) patients under hemodialysis at University Hospital São Francisco de Paula in Pelotas (RS)

Races	Male		Female	
	n	%	n	%
White	33	80,49	17	65,38
Black	8	19,51	9	34,62
Total	41	100	26	100

Another relevant factor was the statistical data of the occurrence number from 2005 to 2009. 7,5% of the patients under hemodia-

lytic treatment started it in 2005, 13,4% of them started it in 2006, 29,9% of them started it in 2007, 34,3% of them started it in 2008 and 14,9% of them started it to May of 2009.

The etiologies for CKD can be seen at Table 3.

Table 3. Percentual of etiological incidence of CKD patients at University Hospital São Francisco de Paula in Pelotas (RS)

Etiology	%
SAH	50,8
Diabetes <i>mellitus</i>	20,9
Glomerulonephritis	7,5
Not defined	11,9
Others	8,9
Total	100

Discussion

The CKD has been reported in different studies. Nevertheless, some aspects are still under assessment and discussion, such as: clinical manifestation, etiopathogeny and better therapeutic options. On the other hand, statistical and epidemiological data are variables of extreme importance in several centers around the world. It can be also taken into consideration regional characteristics influenced by nutritional, genetic, environmental and socioeconomic factors¹⁷.

In Brazil, the statistical data regarding the chronic kidney disease are concerning, once about 70 thousand people are under hemodialytic treatment, i.e. 400 out of 1 million people are under replacing kidney therapy, which worsens the public health problem in Brazil¹¹.

The data presented in this study shows an increase of the incidence in people over 60 years old. This phenomenon might be related to the Brazilian population aging, with a higher number of elderly people under replacing kidney therapy and mortality decrease regarding other diseases such as myocardial infarction and cerebral vascular accident¹⁸.

It was observed the average age of patients under hemodialysis treatment is similar in several studies. In this study, it was found an average age of 62,5 years old for women, and 64,7 years old for men, similar to those found by Lehmkuhl *et al.*¹⁹ (2009) whose average age was of 64,7 years old in his study. It is also similar in both studies the male prevalence for the hemodialysis treatment, 61,2% at University Hospital São Francisco de Paula for this study and, 52,9% at "Clínica de Doentes Renais de Tubarão" (SC), for Lehmkuhl *et al.*¹⁹ (2009).

When it is considered the sex and the race for men, it was found the white men totalized 80,49% of the patients, while the black men 19,51%. When it is considered the sex and the race for women, it was found the white women totalized 65,38% of the patients, while the black women 34,62%. So, it was concluded in this study the CKD was more prevalent in white men, however the CKD prevalence is more common in black people. A study carried out by another nephrology service also from the city of Pelotas/RS found similar results for white men: a prevalence of 70% of the patients under hemodialysis treatment²⁰.

Regarding the most prevalent pathologies, systemic arterial hypertension (SAH), the diabetes and the glomerulonephritis were the main causes which led the patients to the hemodialysis treatment; therefore, it is necessary for this population more effective preventive programs¹⁸. In a cohort study about CKD in the city of Santa Maria (RS), it was found similar results when it was relevant the diabetic nephropathy with 24%, the hypertensive nephrosclerosis with 17% and the chronic glomerulonephritis with 15%²¹.

The SAH presence, during the diagnosis or the disease progress, seems to be related to the bad prognostics. Nevertheless, it is not clear if the hypertension is a independent prognostic factor or, according to some authors, if the patient develops it when there is a serious kidney insufficiency²².

It was significant the number of patients with CKD who were in-

formed as indeterminate or as non-defined cause, (11,9%). It makes more difficult the etiology survey for CKD²³. Azevedo²⁴ (2009), found that among the causes of the CKD the non-defined ones are 4,4%, the hypertensive nephropathy are 48,1%, the chronic glomerulonephritis are 23,7% and the diabetic nephropathy are 14,4%.

The hemodialysis is the most common method for CKD treatments in the final stage, therefore this discussion is relevant. This study aimed to assess and describe the clinic-epidemiological profile of patients with chronic kidney disease treated by hemodialysis at University Hospital São Francisco de Paula in the city of Pelotas (RS). It was also aimed to identify the main base diseases for CKD.

Conclusion

The analysis of 67 patients with CKD under hemodialytic treatment assessed by the professionals from the Hemodialysis Center at University Hospital São Francisco de Paula in the city of Pelotas (RS) between 2005 and 2009 showed the clinic-epidemiologic characteristics did not differ from those found in other dialysis centers in Brazil. Nevertheless, the Brazilian results differed from those of developed countries in the etiology of the kidney disease and in the average age of the population. In this study, the main etiologies were hypertension and diabetes. It was also observed the CKD was prevalent among the elderly, male and white people.

References

1. Marques BA, Pereira CD, Ribeiro R. Motivos e frequência de internação dos pacientes com IRC em tratamento hemodialítico. *Arq Ciênc Saúde*. 2005;12(2):67-72.
2. Madeira EPQ, Lopes GS, Santos SFF. A investigação epidemiológica na prevenção da insuficiência renal terminal. Ênfase no estudo da agregação familiar. *Medonline [periódico online]* 1998;1(2). [acesso 20 abr 2010] Disponível em: http://www.medonline.com.br/med_ed/med2/epidemio.htm
3. Unruh MI, Hartunian MG, Chapman NM, Jaber BI. Sleep quality and clinical correlates in patients on maintenance dialysis. *Clin Nephrol*. 2003;59(4):280-8.
4. Schor N, Srougi M. *Nefrologia e urologia clínica*. São Paulo: Sarvier; 1998.
5. Medeiros RH, Pinent CEC, Meyer F. Aptidão física de indivíduo com doença renal crônica. *J Bras Nefrol*. 2002;24(2):81-7.
6. Costa MC, Yu L. Insuficiência renal aguda. *Ars Curandi*. 1997;30:115-21.
7. Schor N, Santos OFP, Boim MA. Insuficiência renal aguda. *In: Guia prático de urologia*. Rio de Janeiro: Sociedade Brasileira de Urologia; 2000. p.65-71.
8. Soares A, Zehetmeyer M, Rabuske M. Atuação da fisioterapia durante a hemodiálise visando a qualidade de vida do paciente renal crônico. *Rev Saúde UCPEL*. 2007;1(1):7-12.
9. Vale PK, Santos ES. Perfil socioeconômico de hemodialíticos do Setor de Nefrologia do Hospital de Clínicas Dr. Alberto Lima de Macapá/AP. *J Bras Nefrol*. 2007;29(3)Supl. 3:29-34.

10. Sociedade Brasileira de Nefrologia. Censo de Diálise da SBN. 2008. [acesso 12 jul 2010] Disponível em: <http://198.106.86.84/Censo/2008/censoSBN2008.pdf>
11. Riella MC, Pecoits Filho R. Insuficiência renal crônica: fisiopatologia da uremia. *In: Riella MC. Princípios de nefrologia e distúrbios hidroeletrólitos*. Rio de Janeiro: Guanabara Koogan; 2003. p.661-90.
12. National Kidney Foundation (NKF). *Kidney Disease Outcomes Quality Initiative (K/DOQI) – clinical practice guidelines for chronic kidney disease: evaluation, classification and stratification*. *Am J Kidney Dis*. 2002;39(2 Suppl. 1):S1-266.
13. Liga Acadêmica de Prevenção das Doenças Renais. Uma visão geral sobre a saúde. UFJF. 2007. [acesso 12 ago 2010] Disponível em: <http://www.prerenal.ufjf.br/leigos/insufrenal.htm>
14. Duarte OS, Ciconelli RM, Sesso R. Cultural adaptation and validation of the “kidney disease and quality of life – Short Form (KDQOL-SF™1.3)” in Brazil. *Braz J Med Biol Res*. 2005;38(2):261-70.
15. Moe SM. Equilíbrio entre fósforo e cálcio na insuficiência renal crônica: implicações e tratamento. São Paulo: Genzyme do Brasil; 2001.
16. Martins MRI, Cesarino CB. Qualidade de vida de pessoas com doença renal crônica em tratamento hemodialítico. *Rev Latinoam Enferm*. 2005;13(5):670-6.
17. Diz MCE, Sherer P, Kirsztajn GM. Perfil clínico-epidemiológico de glomerulopatia membranosa primária em brasileiros (71 casos). *J Bras Nefrol*. 2007;29(2):71-9.
18. Moura L, Schmidt MI, Duncan BB, Rosa RS, Malta DC, Stevens A *et al*. Monitoramento da doença renal crônica terminal pelo subsistema de Autorização de Procedimentos de Alta Complexidade – Apac – Brasil, 2000 a 2006. *Epidemiol Serv Saúde*. 2009;18(2):121-31.
19. Lehmkühl A, Maia AJM, Machado MO. Estudo da prevalência de óbitos de pacientes com doença renal crônica associada à doença mineral óssea. *J Bras Nefrol*. 2009;31(1):10-7.
20. Nunes DL, Kitamura CM, Andrade MM, Gysel MPOV, Marini SS, Böhlke M. Estudo comparativo da qualidade de vida em pacientes renais crônicos. *Rev Saúde UCPEL*. 2004;2(1):12-6.
21. Silva LAM, Mezzomo NF, Pansard HM, Arantes LC, Rempe W, Argenta LC *et al*. Sobrevida em hemodiálise crônica: estudo de uma coorte de 1.009 pacientes em 25 anos. *J Bras Nefrol*. 2009;31(3):190-7.
22. Reichert LJ, Koene RA, Wetzels JF. Prognostic factors in idiopathic membranous nephropathy. *Am J Kidney Dis*. 1998;31(1):1-11.
23. Ribeiro WL. Análise do perfil epidemiológico dos pacientes candidatos a transplante renal em Santa Catarina. 2008. [acesso 12 ago 2010] Disponível em: <http://www.bibliomed.ccs.ufsc.br/SP0171.pdf>
24. Azevedo DF, Correa MC, Botre L, Mariano RM, Assis RR, Grossi L *et al*. Sobrevida e causas de mortalidade em pacientes hemodialíticos. *Rev Méd Minas Gerais*. 2009;19(2):117-22.

Corresponding author:

Maitê Peres de Carvalho
Rua Coronel Alberto Rosa, 560
Pelotas-RS, CEP 96010-770
Brazil

E-mail: maite_carvalho@yahoo.com.br

Received January 27, 2011
Accepted March 14, 2011