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Description of the characteristics of men in hemodialysis treatment with hepatitis B, C virus and HIV

Descrição das características de homens em tratamento hemodialítico com vírus da hepatite B, C e HIV

Descripción de las características de los hombres con hepatitis B, C y sida sometidos a tratamiento de hemodiálisis

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Abstract

Objective: To characterized men in hemodialysis treatment with human immunodeficiency virus and hepatitis B and C. **Method:** Descriptive study, performed along with a questionnaire to 30 patients in the *Real Hospital Português*, from November 2011 to February 2012. **Results:** 36.7% of the patients have over 60 years old, 43.3% are white, 40% malnourished. About 70% carriers hepatitis C virus. Among the risk factors was determined that 63.3% did not receive sexual orientations on risk factors, 73.3% owned more than five sexual partners, and 66.7% were already have undergone some invasive procedure. **Conclusion:** The timely detection of chronic viral infections among patients on hemodialysis is necessary for the due compliance with therapy, as well as to take preventive measures to protect other patients and staff.

Keywords: Renal dialysis; Hepatitis; AIDS Serodiagnosis; Nursing.

Resumo

Objetivo: Caracterizar os homens em tratamento hemodialítico com vírus da imunodeficiência humana e da hepatite B e C. **Método:** Estudo descritivo, realizado com aplicação de questionário junto a 30 pacientes do Real Hospital Português, entre novembro de 2011 a fevereiro de 2012. **Resultados:** Do total, 36,7% dos pacientes possuem idade superior a 60 anos, 43,3% são brancos, 40% com desnutrição. Cerca de 70% têm o vírus da hepatite C, 63,3% não receberam orientações sexuais sobre fatores de risco, 73,3% possuíram mais de cinco parceiros sexuais e 66,7% já se submeteram a algum procedimento invasivo. **Conclusão:** A detecção oportuna das infecções virais crônicas entre pacientes em hemodiálise é necessária para o devido cumprimento da terapia, bem como para tomar medidas preventivas para a proteção de outros pacientes e funcionários.

Palavras-chave: Diálise renal; Hepatite; Sorodiagnóstico da AIDS; Enfermagem.

Resumen

Objetivo: Caracterizar los hombres acometidos por el virus de la inmunodeficiencia humana, hepatitis B y C en tratamiento de hemodiálisis. **Método:** Estudio descriptivo, realizado con un cuestionario a 30 pacientes del Real Hospital Português. Muestra de 30 pacientes en hemodiálisis, en el periodo de noviembre de 2011 hasta febrero de 2012. **Resultados:** El 36,7% de los pacientes son mayores de 60 años; 43,3%, de raza blanca; 40% desnutridos. Cerca de 70% son portadores del virus de la hepatitis C. En cuanto a factores de riesgo, 63,3% no recibió ninguna orientación sexual sobre ello; 73,3% tenía más de cinco parejas sexuales; y 66,7% ya han sido sometidos a un procedimiento invasivo. **Conclusión:** La detección de infecciones virales crónicas entre los pacientes sometidos a hemodiálisis es necesaria para el adecuado cumplimiento de la terapia, así como la tomada de medidas preventivas para la protección de los otros pacientes y del personal.

Palabras-clave: Diálisis Renal; Hepatitis; Serodiagnóstico del SIDA; Enfermería.

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INTRODUCTION

The present study addresses epidemiological aspects about the susceptibility of men with chronic kidney disease (CKD) on hemodialysis (HD) having viral infections. The motivation on the subject arose during the technical visits related to the specialization course of nursing in Nephrology at the Royal Hospital Português, where empirically were higher proportion of men than women with CKD under hemodialysis treatment with hepatitis B virus (HBV) and C (HCV), and human immunodeficiency virus (HIV).

The CKD is a syndromic diagnosis of progressive and irreversible loss of kidney function, which is characterized by accumulation of catabolites (uremic toxins), changes of hydro-electrolytic and acid-base balance, hypervolemia, hyperkalemia, hyperphosphatemia, anemia and hyperparathyroidism[1].

The disease being progressive and silent, makes difficult the early diagnosis that, most of the time, is held at the terminal phase. This fact leads the patient to Renal Therapy Substitution (RTS) of the renal function by continuous ambulatory peritoneal dialysis (CAPD), hemodialysis (HD) and/or kidney transplant[1].

According to Census of Dialysis of the Brazilian Society of Nephrology (BSN) from 2013 the total of chronic kidney patients on dialysis treatment was 50,961, where approximately 34,141 were new patients assisted in 334 reference units in Brazil.

Patients with CKD on hemodialysis are most predisposed to contamination of viral infections by the hematogenous way, by being subjected to a series of invasive procedures and blood transfusions[2]. In this context, the infections by hepatitis B virus (HBV) and C (HCV) and human immunodeficiency virus (HIV) are highlighted.

Study shows that the prevalence of HCV infection among patients with hemodialysis can reach 50% of the cases, as well as showed that 12.6% of individuals in hemodialysis treatment were HIV positive for hepatitis. Thus, hemodialysis patients, show empotencial risk to acquire both HCV and HBV[2].

However, there are progressive reduction of HBV infection among patients in HD due to the adoption of strict vaccination policies. When the hemodialysis treatment starts, the patient under CKD should be vaccinated, but the rates of seroconversion of HB vaccine are low: only 43% to 66% of them reach adequated levels of antibodies, compared to more than 95% of healthy individuals. It is estimated the prevalence of hepatitis B among Brazilian patients in HD in 3.2%[3].

As already mentioned, hemodialysis treatment predisposes the patient to HIV infection. However, kidney disease is also one of the main comorbidities that affect the immunosuppressed individuals. So currently, the number of HIV- positive patients with chronic kidney disease needing dialytic therapy is increasing progressively[4].

The census of dialysis of BSN (2013) also pointed out that 58% of patients on dialysis are male and about the prevalence of positive serology for viral infections, there was 1.4% hepatitis B, 4.2%, hepatitis C and 0.7% HIV.

Given this, also considering that viral infections are problems on human health with CKD in HD and that rates of transmissibility of the virus require reduction to be compatible with the goals of the Ministry of Health, the study aimed to characterize men in hemodialysis with hepatitis B, C and HIV, observing their social, clinical variables and behavioral patterns.

METHOD

It is a descriptive research with quantitative approach, held in a referral Hospital in Nephrology, Royal Hospital Português, in Recife - Pernambuco with patients infected by hepatitis B virus (HBV), or type C (HCV), or human immunodeficiency virus (HIV) under hemodialysis treatment.

The hospital assists the Unified Health System (SUS), covenants and private patients. The institution is also the largest unit of reference in hemodialysis service of the State of Pernambuco, Brazil.

For calculating the probabilistic sample, the specific instrument in the Laboratory of Epidemiology and Statistics (LES) was used. In this, the type of analysis and categorical or dichotomous response for comparison of proportions have been chosen; then a proportion estimation on the basis of the following parameters was held: absolute precision of 10%, significance level of 5% and the proportion in the population of 8.1%. The sample size calculated by LES corresponded to 28 patients.

The value adopted of the proportion in the population was based on the Census of the Brazilian Society of Nephrology Dialysis of 2010, whose total of chronic renal patients on dialysis treatment is 49,077 and the prevalence of positive serology for hepatitis B is 1.1%, 5.8% of hepatitis C and 1.2% of HIV. Then, 8.1% of patients with CKD on dialysis have positive serology for hepatitis B, C or HIV.

The population of the present study was composed of 30 chronic renal patients with active sexual life and over 18 years old, who were willing to participate in the research, during the month of November 2011 to February 2012, data collection period.

The criteria for inclusion in the sample were also: men with chronic kidney disease, who perform hemodialysis and had infection by hepatitis B virus (HBV), or type C (HCV), or human immunodeficiency virus (HIV).

The information of interest for the study were obtained through the interview technique with the selected individuals, record made in the questionnaire, with personal and clinical data of the patients interviewed as: age, weight, race, type of virus, time virus acquired, time performing hemodialysis, quantity of blood transfusions received, use of illicit drugs, treatment with peritoneal dialysis, guidance on safe sex, number of sexual partners, use of tattoos and piercing.

The data were organized, categorized and coded in worksheets in Microsoft® Excel®. The calculations were carried out using the Statistical Package for Social Sciences (SPSS) for Windows, version 13.0. The presentation of results are according to the standards recommended by the Brazilian Association

of Technical Standards, observing the absolute frequency and percentage presented in a descriptive way in tables.

This study followed the ethical and legal principles governing the scientific research with human beings. It has the signing of the informed consent (TFCC) by the subject of the research, which was maintained the anonymity of the subjects involved in accordance with Resolution 196/96, of the National Health Council (NHC). The project was approved by the Ethics Committee in Research of the *Fundação de Ensino Superior de Olinda* - FUNESO, under opinion embodied with registration in CAAE process 1411.1.000.104-11.

RESULTS

During conducting the study, a total of 30 patients were identified, and from them, 93.3% were HIV positive for hepatitis, 70% HIV positive for hepatitis C and 23.3% for hepatitis B and only 6.7% seropositive for HIV. Each individual presented seropositivity to a single virus. Table 1 presents the distribution of the surveyed regarding age, race and Body Mass Index (BMI).

It was observed that the majority was 59 years old (36.7%), followed by 43 to 50 years old (16.7%) and 51 to 58 years old (16.7%).

Table 1. Distribution of hemodialysis men patients with hepatitis B, C and HIV virus, according to age, race and Body Mass Index - BMI (n = 30). Recife - PE, January to April 2012

Characteristics	n	%
Age		
18-25	1	3.3
26-34	4	13.3
35-42	4	13.3
43-50	5	16.7
51-58	5	16.7
59 years old or more	11	36.7
Race		
White	13	43.3
Black	9	30
Brown	8	26.7
BMI (kg/m^2)		
< 16 (thinness degree III/severe malnutrition)	5	16.7
16-16.99 (thinness degree II/moderate malnutrition)	2	6.6
17-18.49 (thinness degree I/light malnutrition)	5	16.7
18.5-24.99 (Eutrophy/appropriate weight)	17	56.7
25-29.99 (overweight)	1	3.3
30-34.99 (obesity I)	0	0
35-39.99 (obesity II/severe)	0	0
Acima de 40 (obesity III/morbid)	0	0

The prevalent race was the white (43.3%), followed by black (30%) and then Brown (26.7%). In table 1 there was also the BMI that 40% of the patients presented malnutrition and 16.7% severe malnutrition, 6.6% moderate and 16.7% light. Most of the subjects had the right weight (56.7%) and only 1 was in situation of overweight (3.3%).

In table 2, there were the distributions clinical variables, time in which they acquired the virus and the time of hemodialysis (HD), according to each type of virus. It is worth mentioning that the patients were detected with positive serology for HBV or HBC or HIV through routine tests performed during the hemodialysis treatment.

When evaluated patients with type C hepatitis, 85.8% acquired infection between 1 to15 years. In relation to the time of use of hemodialitic therapy, 42.6% make use of it for over 16 years.

Among patients with HBV, most of them perform hemodialysis for up to 5 years (71.4%) and acquired viral infection during the same period (71.4%). When observing those with HIV it was noted that all have the virus from 1 to 5 years and perform HD in the same period.

When observing table 3, some risk factors related to viral infections are shown.

Among the risk factors associated with viral infections, most patients needed to receive more than five units of blood (33.3%) during their treatment; 66.7% had some prior surgery; 26.7% underwent peritoneal dialysis; 16.7% made use of illegal drugs; 63.3% did not participate in educational activities and were not instructed about the use of condoms; 73.3% owned more than five sexual partners; 10% had a tattoo on his body; and 6.7% had a piercing.

DISCUSSION

The epidemiological impact of viral infections transmitted by blood in dialysis is a major concern. In the past two decades, the reduction in patients with HBV and HCV virus has been linked to the application of specific preventive recommendations[5]. Therefore, it is necessary to know the characteristics of this population at risk for the planning and implementation of effective preventive measures that control the transmission of viral infections.

Regarding the age and race of patients, there was a likelihood in the data of this study with those in the literature, because the studies also showed that most of the patients of hemodialysis is the white race and age group of 50 to 70 years old[1,6].

According to the literature, age is a factor that influences on survival of patients on dialysis, because the elderly population can get easier co-morbidities and they have higher risk of cardiovascular disease. Advanced age and the level of malnutrition are responsible for the increased risk of death in patients with CKD[7].

Then, a worrying finding was the Body Mass Index of the patients, since 40% of the surveyed were suffering from malnutrition by BMI, and 16.7% in severe malnutrition/thinness type III, and 6.6% in moderate malnutrition/ thinness type II. Some studies show evidence of malnutrition in 23-76% of patients in hemodialysis[8].

Table 2. Distribution of hemodialysis male patients with hepatitis B, C and HIV virus according to clinical variables (n = 30). Recife - PE, January to April de 2012

Variables	Type of virus					
	HIV		HBV		HCV	
Time in which they acqured the virus	n	%	n	%	n	%
1-5 years	2	100	5	71.4	6	28.6
6-10 years	0	0	0	0	6	28.6
11-15 years	0	0	1	14.3	6	28.6
16 or more	0	0	1	14.3	3	14.2
Time of HD	n	%	n	%	n	%
1-5 years	2	100	5	71.4	6	28.6
6-10 years	0	0	0	0	2	9.5
11-15 years	0	0	1	14.3	4	19.0
16 or more	0	0	1	14.3	9	42.6
Total (n = 30)	2	100.0	7	100.0	21	100.0

Protein-caloric malnutrition interferes negatively on the prognosis of chronic renal patients, increasing the rates of morbidity and mortality in this population. It may be related to inadequate nutritional intake, hormonal and gastrointestinal disorders, metabolic acidosis, drugs that interfere with the absorption of foods, nutrient loss during dialysis treatment, inadequate dialysis and inter-current diseases, including viral infections, among other causes[8].

As for the prevalence of viral infections, in table 2 is seen that chronic renal patients have been infected by hepatitis C, with relative frequency by 70% of patints surveyed. In Brazil, the antibody seropositivity is high against the hepatitis virus (anti-HCV) in the population of patients with CKD who perform dialysis treatment, especially in hemodialysis patients[8]. A research shows that the prevalence of anti-HCV positive patients was 14.8%[9].

When compared the infections by hepatitis viruses B and C in patients under hemodialysis treatment, one study showed that HCV infection was of 80% while for HBV was 20%[2]. In accordance with the literature, the data found in this research showed that 23.3% of patients were infected by HBV.

The incidence of HBV among hemodialysis patients (HD) has been decreasing after strict vaccination policies were adopted. Despite the vaccine for hepatitis B, when administered intramuscularly in patients with chronic renal failure stage V, do not confer adequate immunity[3].

In this study only two patients were HIV- positive (6.7%), despite having the same transmission ways of hepatitis B and C. The literature points out that the prevalence of chronic kidney disease in HIV infected patients has been estimated at 5% to 40%. They also claim that an increasing number of these patients will require renal replacement therapy for several factors[10].

Analyzing the distribution of subjects relating to variables risk factors for viral infections, it was observed that 80% of them have sexual intercourse with more than one partner, being 6.7% with more than five sexual partners. Other behavioral patterns of risk were not very expressive, such as the use of illegal drugs (16.7%), tattoos (10%) and Piercings (6.7%).

As for the question regarding vocational guidance on the practice of safe sex, it was obtained that 63.3% of surveyed patient did not receive it. This result is of great value to the nurse, who in the exercise of their profession needs to reflect on the importance of educational activities to sensitize patients to change their lifestyle.

The behavioral aspects here referred, acquired throughout life, and associated with blood and blood products exhibitions are the main mechanisms of transmission of viral infections HBV, HCV and HIV. It is important to note that the largest proportion of cases of co-infection HIV/HCV and HIV/HBV/HCV is related to drug use[11].

As already mentioned, the blood transfusion and/or blood products constitute a potential risk factor for the transmission of HCV and HBV[2]. In this study, 80% of respondents received blood transfusion before acquiring the viral infection, where 33.3% received more than five transfusions. Some Research show up 30% indexes of positivity for anti-HCV in patients who underwent to multiple transfusions[12].

Other risk factors related to treatment are the realization of peritoneal dialysis and invasive procedures like surgery. In this study, 26.7% of chronic kidney patients needed to perform peritoneal dialysis and 66.7% underwent to surgeries prior to viral contamination.

Before this, it is noted the necessity of using strict aseptic technique for health professionals on therapeutic assistance[13] remembering that the greatest responsibility for the control of risks in the workplace, is the professional, who understands them and knows the mechanisms of control.

Table 3. Distribution of hemodialysis male patients with hepatitis B, C and HIV - related to risk factor variables (n = 30). Recife - PE, January to April 2012

Variables	n	%
Number of received transfusions before acquiring the viral infection		
0	6	20
1	6	20
2	3	10
3	3	10
4	2	6.7
5 or more	10	33.3
Use of illegal drugs		
Yes	5	16.7
No	25	83.3
Guidance on safe sex		
Yes	11	36.7
No	19	63.3
Number of sexual partners		
1	6	20
2	0	0
3	2	6.7
4	0	0
5 or more	22	73.3
Tatoos		
Yes	3	10
No	27	90
Piercing		
Yes	2	6.7
No	28	93.3
Had treatment with peritoneal dialysis		
Sim	8	26.7
Não	22	73.3
Had previous surgery to the viral infection		
Yes	20	66.7
No	10	33.3

In this perspective the Nurse has a fundamental role, as in the exercise of his daily activity in the sector of hemodialysis is constantly dealing with the risks that the environment imposes, as well as leads a team that requires continuous education activities to understand the importance of using protective measures to obtain safety and quality on assistance provided in the dialysis procedure[14,15].

It is believed that the fundamental resource for quality control of hemodialysis services is the implementation of prevention and control measures that may reduce or annul the possibility of transmission of viral infections among hemodialysis patients[13].

CONCLUSIONS

The present study has met its goal, regarding the description of the characteristics of men diagnosed with chronic kidney disease on hemodialysis with hepatitis B, C or HIV. It was noted during presentation and discussion of results that the research has shown consistent with the literature.

When comparing the number of patients infected by viruses HBV, HCV and HIV, it was found that HCV infection was more common. The age of the subjects was more than 59 years old most of them, and the white race predominated among the patients surveyed.

The study also found that most respondents were in a situation of light to severe malnutrition, demonstrating the need for a multidisciplinary care on assistance to patients with CKD in HD. Other important found were the risk behaviours for viral infections, among them the multiplicity of sexual partners referred by most of the study subjects.

The timely detection of HBV, HCV and HIV among patients on hemodialysis is necessary for the care of the patient's chronic kidney treatment. It is still important for them to be adopted preventive measures for the protection of other patients, health professionals and general staff.

The multidisciplinary team of health must be attentive to the innovations inherent in know-how, reevaluating and developing rules and routines, and also deploying education in service to qualify for assistance and care.

Viral infections addressed in this research have the same transmission ways, so prevention measures must focus on similar actions, including the practice of safe sex, the use of disposable or sterilized medical-dental-surgical materials, harm reduction, the adoption of strict aseptic technique, providing inputs with male and female condoms, among others.

From this perspective, it is essential to implement educational interventions aimed at reducing risk behavior of patients. It is also essential the use of personal protective equipment (PPE) by the team of health, especially nursing, who performs the procedure of hemodialysis.

The analysis of characteristics of patients who have integrated this research was very important in the sense of providing subsidies to managers, health professionals, researchers and students who work in Nephrology, to elaborate and implement strategies for assistance to qualify this expressive contingent of people with chronic kidney disease. The data surveyed are also relevant to those who act in the basic health network, enabling planning promotional activities, preventive health and early detection of kidney disease, thus, contributing significantly to the teaching, research, and health assistance.

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