Patient care of chronic kidney injury with electrolyte balance disturbances in the emergency room

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Summary

This work refers to the care of patients with chronic kidney injury with disturbances of the electrolyte balance in the emergency room. The number of patients with chronic kidney disease is increasing, the disturbances of the acid-base equilibrium are the main causes that leads the chronic renal patient to the emergency room. The objective of this study was to verify the main disturbances of the hydroelectrolytic balance that justify the care of the chronic renal patient in the emergency room. Method used integrative literature review available in: Lilacs, Scielo, Bireme and data of the following entities: Brazilian Society of Nephrology (SBN). Brazilian Israeli Charitable Society Albert Einstein. Using the described: chronic kidney injury, renal dialysis, emergency and hydroelectrolytic imbalance. We found 23 articles, we proceeded to check the titles, abstracts and authors with the objective of separating the repeated publications, then we studied all the publications found and selected 17 articles inherent to the subject approached. The results indicate that most chronic renal patients use emergency services due to acid base imbalance or other associated pathology. Thus, it is concluded that in the evolution of the nursing care process, in an analytical and adaptable way the elementary aspects for the care of the client in the emergency room, considering the performance of the professional nurse who will not always be Visible, Tangíveis or mesurable, however it is necessary to emphasize that the nurse professional has beyond scientific basis it is essential that he develop techniques of approach that exceeds the formalism in the care of these clients.

Key words: Chronic kidney injury, renal dialysis, emergency and hydroelectrolytic imbalance.

Introduction

Chronic renal injury is the progressive and gradual slow loss of renal functions. When not identified and
treated, it can lead to kidney stopping. Kidney injury is when kidneys are unable to remove metabolic degradation products from the body or perform regulatory functions. Chronic kidney disease (CKD) presents

Many acute and chronic complications leading their patients to seek emergency care.

The kidneys are organs responsible for the filtration of substances and nutrients present in the organism. The necessary components are absorbed, while the toxins are eliminated by the urine. This balance is essential for the control of blood pressure and to regulate the concentration of calcium and phosphorus in the blood, contributing to the health of the bones and to the maintenance of red blood cells that, in scarce, can lead to anemia.

The development of dialysis continues to considerably increase the life expectancy of patients with end-stage renal disease. According to data from the Brazilian Society of Nephrology (SBN), the prevalence of chronic kidney disease in the world is 7.2% for individuals over 30 years and 28% to 46% in individuals over 64 years. In Brazil, the estimate is that more than 10 million people have the disease. Of these, 90000 are on dialysis (a process of artificial stimulation of kidney function, usually when the organs have 10% of functioning), number that grew more than 100% in the last ten years.

The disturbances of the basic acid balance occur with great frequency causing patients to seek emergency care, in order to be able to reestablish and compensate for these alterations in which we can cite as: alkalosis, acidosis, disturbances Hydrolytic, potassium alteration. Usually patients who seek emergency services are patients who have more than one metabolic alteration (breitsameter, 2014).

Chronic kidney disease is associated with two diseases of high incidence in the Brazilian population: arterial hypertension and diabetes. As the kidney is one of the responsible for blood pressure control, when it does not work properly there is change in pressure levels. The change in pressure levels also overloads the kidneys. Therefore, hypertension may be the cause or consequence of renal dysfunction, and its control is fundamental for the prevention of the disease. According to the SBN, 35% of the patients who needed to have kidney dialysis in 2011 had a diagnosis of arterial hypertension. In the early stages of renal insufficiency, the diagnosis may be suggested by the Association of nonspecific manifestations (fatigue, anorexia, weight loss, pruritus, nausea or hemolysis, hypertension, polyuria, mycoses, hematuria or edema). The main symptoms are Nicturia, polyuria, Liguria, edema, arterial hypertension, weakness, fatigue, anorexia, nausea, vomiting, cramps, pruritus, cutaneous pallor, xerose, myopia, proximal, dysmenorrhea, amenorrhea, atrophy, testicular, impotence, cognitive deficit, attention deficit, confusion, somnolence, obnubilation and Coma (ALVES, 2012).

Some patients have increased susceptibility to CKD and are considered risk groups. They are: 1. Hypertensive: Arterial hypertension is common in CKD, and may occur in more than 75% of patients of any age; 2. Diabetics: Diabetic patients present increased risk for CKD and cardiovascular disease and should be monitored frequently for the occurrence of renal injury; 3. Elderly: The physiological decrease of FG and, the renal lesions that occur with age, secondary to common chronic diseases in patients of advanced age, make the elderly susceptible to CKD; 4. Patients with cardiovascular disease (CVD): CKD is considered a risk factor for CVD and a recent study has shown that CVD is associated independently with a decrease in FG and with the occurrence of CKD; 5. Relatives of patients with CKD: the relatives of patients with CKD have an increased prevalence of arterial hypertension, diabetes mellitus, proteinuria and kidney disease. (Bastos MG et al. 2010).

The clinical history of acute kidney injury is important to establish the underlying cause (decrease in
extracellular volume, drugs, radiological contrasts, sepsis), risk factors (age, previous renal dysfunction, comorbidities) and the severity of Aki. The LRC is based on alterations in the glomerular filtration rate and/or presence of parenchymal lesion maintained for at least three months. Early diagnosis and immediate referral to the nephrologist are essential steps in the handling of these patients, as they enable pre-dialysis education and the implementation of preventive measures that delay or even interrupt the progression to more advanced stages of CKD, as well as decreasing initial morbidity and mortality. (GENTILE, 2010).

Diabetes can damage the blood vessels of the kidneys, interfering in the functioning of these organs, which fail to filter the blood properly. More than 25% of people with type I diabetes. 5 to 10% of patients with type II diabetes develop renal insufficiency. Anemia, defined as hemoglobin levels Anemia is associated with adverse evolution of CKD, including hospitalization, cardiovascular disease, mortality and decreased quality of life of patients. (BASTOS, 2011).

Acute kidney injury (AKI) is the acute reduction of renal function in hours or days. It mainly refers to the decrease in the glomerular filtration rate, but there are also dysfunctions in the control of electrolytic and acidobasal equilibrium. Renal disease can be characterized in two ways: acute kidney injury (AKI) or chronic kidney disease (CKD), acute is characterized by rapid decrease in glomerular filtration rate, an abrupt and continued increase of urea and creatinine, resulting in the impossibility of the kidneys in exercising their basic functions of excretion and maintenance (PACHECO, 2007).

Studies conducted by Bastos report the sad observation that the chance of death of patients with chronic kidney injury exceeds that of initiating treatment as CKD progresses, even when patients receive standard medical care. The interdisciplinary care model, by offering the necessary care in a comprehensive and organized way, seems to be the best way to treat chronic kidney disease.

Renal replacement Therapy (RRT) aims to correct the metabolic abnormalities resulting from renal dysfunction, balance regulation and balances influenced by the kidneys (acidobasal, electrolytic, hydric, volemic and nutritional). In addition, it aims at the management of extracellular fluid in patients with multiple organ failure, preservation and aid in the recovery of organic dysfunctions (H.A. E, 2016).

Hydroelectrolytic Balance

The basic acidobase balance is linked to the balance of fluids and electrolytes, and is usually controlled and maintained by immediate buffer systems through the kidneys and the pulmonary system. Respiratory acidosis and alkalosis are accompanied by retention and compensatory loss of bicarbonate by the kidneys,
respectively; Metabolic acidosis and alkalosis are accompanied by compensatory hyperventilation and hypoventilation, respectively. There may be mixed metabolic disorders (Fava, 2008).

Serum biochemistry disorders can be caused by dietary factors, underlying affections and medical treatments. The resulting imbalances include acidosis (hydrogenionic potential 7.45) and high or low levels of major electrolytes ions, including sodium (Na), potassium (K), calcium (Ca), Magnesium (MG), chloride (Cl), hydrogen phosphate (HPO4) and bicarbonate (HCO3). They may be acute or chronic, may occur with varying degrees of severity and may not be sufficiently fought by the regulatory-compensatory mechanisms of the body (DUTRA et al, 2012).

Hypervolemic hyponatremia: The concern and adapt the treatment of the underlying disease (restrict liquid and excrete excess water, for example: FTAA diuretics and other measures according to the underlying disease, cardiovascular and renal functions and symptomatology). Recently, Vaptans are used, which are inhibitors of the V2 vasopressin receptors, capable of promoting water diuresis free of aquaretic electrolytes. (Gheorghiade, et al, 2007).

Hypernatremia and serum sodium concentration > 145 mmol/L. Develops from a sodium gain or by free water loss, or by combining these factors. Hypokalemia and serum potassium concentration Even occurring in about 50% of patients surviving CPR after ventricular fibrillation. Hyperkalemia is defined as K > 6.0, occurring in about 1.3% of hospitalized patients, reaching 10% when K > 5.3. High indices seem to be associated with bad prognostics and recent studies show that even indices between 4.5 and 5.5 have worse clinical outcomes.

**Materials and methods**

Method used integrative literature review available in: Lilacs, Scielo, Bireme and data of the following entities: Brazilian Society of Nephrology (SBN), Brazilian Israeli Charitable Society Albert Einstein. Using the described: chronic kidney injury, renal dialysis, emergency and hydroelectrolytic imbalance. We found 23 articles, we proceeded to check the titles, abstracts and authors with the objective of separating the repeated publications, then we studied all the publications found and selected 17 articles inherent to the subject approached. 6 articles were discarded because they did not meet the objectives of the study. The texts were selected for analysis. The data will be stored in the Word 2013 computer program and will be discussed in the qualitative approach.

**Results and discussions**

According to the subject matter, the number of publications related to the issue is still deficient. The journals where the articles were found, with a greater number of publications were the journals: Acta Paulista and Revista Brasileira de Clinica Médica with four publications each, and the other journals: Anna Nery, Brazilian Journal of Nursing, Journal of Medicine of Ribeirão Preto and the Brazilian Journal of Nephrology, only one article was found.

The control of primary diseases such as diabetes and hypertension should be treated appropriately involving the patient broadly, providing adequate guidance on the disease, treatment and self-care, is the responsibility of the whole team Multidisciplinary.

Of the main electrolytic disturbances found in emergency are the changes in serum potassium, for the carrier of chronic kidney disease this represents the most serious and potentially risks. The need to adapt
the new routines imposed by the treatment requires the patients greater attention to treatment (LI, 2013).

Electrolytes play an important role in maintaining the homeostasis of the organism. They help regulate myocardial and neurological function, water balance, oxygen release in tissues, acid-base balance and much more.

Sodium is the cation that exists in larger amounts in extracellular liquids and the most important. Sodium ions participate in the maintenance of electrolytic equilibrium (HS), transmission of nerve impulses and muscular contraction. The most severe electrolytic disturbances involve abnormalities in sodium, potassium and/or calcium levels. Other electrolyte imbalances are less common or severe and occur frequently in conjunction with the previous ones. Chronic laxative abuse or severe diarrhea and vomiting may lead to severe electrolyte disturbances in association with dehydration (hy

Phosphorus is a major anion in intravascular fluid, it is necessary for good neural and muscular functioning, besides being present in bone structures. Magnesium occupies the second place, by order of importances, between the cations of the LIC. It is indispensable for the enzymatic and neurochemical activities, as well as for the excitability of the muscles. Their plasmatic levels range between 1.5 and 2.5 meq/L. (Jbn, 2011).

Due to changes in the electrolyte balance in patients with chronic kidney disease, by providing care to these patients in the emergency room, interventions should prioritize the monitoring of vital signs, offer oxygen if necessary, Rigorous control of volemic repositions and assessment of consciousness levels (Fava, et al 2008).

acidotic renal function by the excretion of H + and electrolytes influences the base acid state of the extracellular fluid (LEC), but a period of hours is necessary for this influence to be significant. Another interesting detail of the physiology of the EAB is the evidence that the animal organism, in its evolution, acquired natural defense mechanisms against acidosis more efficient than the mechanisms against Alkalosis (ÉVORA, 2008).

The Isosmolarity law determines that the osmolarity is the same in the liquid compartments of the organism, among which water passes freely. Its normal value is in lathes of 285MOSM/L, and if the number of dissolved particles increases in a compartment, the water will mobilize toward it until a new equilibrium of the osmolarity is established.

Liquids and electrolytes should be in balance to keep your body healthy. Intracellular fluids refer to those located inside their cells, the extracellular ones refer to fluids outside of them. Electrolytes are compounds that ionize in water and work with fluids to maintain homeostasis. That is: When an individual is getting dehydrated, for example, he feels thirsty, causing him to drink water. Dehydration is a primary cause of a hideretrolitic imbalance. But it's just a symptom of the underlying disease that caused the imbalance. Your care plan depends on the underlying condition and the severity of the imbalance. The objective is to regulate and maintain homeostasis, intervening against imbalance.

**Conclusion**

The present study concludes that although the limited number of articles found, this research has the representativeness and relevance of the subject approached, offering contribution to discussion and
subsidies for the growth of the nurse professional in Administration regarding the service of the nursing team, in an analytical way, the elementary aspects are successfully adapted to the care of these patients in the emergency room.

Restoring balance, should restore homeostasis accurately identifying the underlying condition of imbalance and intervene with a care plan. To evaluate the patient's condition, the ability to adapt to intervention and post-intervention processes. Monitor the patient's vital signs (pulse, respiration and blood pressure) and also the "inlet" and "exit" of it. Input is anything ingested orally and the exit is urination and defecation. Vital signs should be monitored every 15 minutes if the patient is stabilized, or continuously if he is experiencing life-threatening problems, such as bleeding or shock. The "entry" and "Exit" must be recorded at least once per shift, depending on the policy or medical directive. Maintain the oral hygiene of the patient, especially if the patient can not have anything in the mouth or if oral ingestion is restricted. Alterations in mucous membranes can be uncomfortable. Monitor the intravenous fluids. IVs should be monitored to assess fluid perfusion into the tissue.

We found that there is a balance between the dimensions: to meet and to meet these renal patients with hydroelectrolytic disturbances in emergency situations. Considering the performance of the nursing team, we know that the performance of the nurse will not always be visible, palpable or measurable. Hydroelectrolytic disturbances constitute extremely common events in medical practice,

Especially in emergency situations, when, depending on the magnitude, they may represent life-threatening or sequelae to the patient. Dehydration, regardless of etiology, has its importance defined by the intensity of net losses. The knowledge of the various mechanisms involved in the metabolism of water and electrolytes is fundamental for the correct understanding, diagnosis and approach of the hydroelectrolytic disturbances in the emergency room.

References


Brazil, Brazilian Society of Nephrology. Guidelines of the Brazilian Medical Association. Diagnosis,


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