

Hyperkalemia in Intensive Care

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Summary

The incidence of hyperkalemia disorders in intensive care settings is poorly understood. Their etiologies are multiple and often intertwined. The goal of this work is to allow a simple approach to hyperkalemia in the intensive care unit of surgical emergencies of the IBN ROCHD CHU in Casablanca, on the epidemiological, clinical, para-clinical, therapeutic and evolutionary levels.

This is a prospective, descriptive study of hyperkalemia over a 6-month period from January 1, 2015 to June 30, 2015. All patients who stayed in intensive care during the study period were included.

Hyperkalemia was found in 24%. It is mainly due to digestive (49%) and renal (39%) losses. Mortality was 35%.

Hyperkalemia is frequent in our department. Their management includes symptomatic treatment and etiological treatment. Mortality is linked on the one hand to the basic pathology, and to the severity of the ionic disorder.

Introduction

Potassium K⁺ has a key role in the membrane potential of all cells, a potential which influences a large number of biological events. The clinical importance of serum potassium anomalies comes from the fact that the latter expose to cardiac arrhythmias. The kidney is the only organ which ensures K⁺ homeostasis by increasing or decreasing its urinary excretion. Hyperkalemia is defined as a value > 5 mmol / L. It is considered mild between 5 and 5.9 mmol / L, moderate between 6 and 6.4 mmol / L, and severe if it is > 6.5 mmol / L

Material and method

This is a prospective study including 203 patients including 87 women and 116 men, hospitalized in the intensive care unit of the surgical emergencies of the CHU Ibn Rochd in Casablanca, spanning a period of six months from January 1, 2015 to June 30, 2015. We included in the study all patients admitted to the surgical emergency intensive care unit during our study period.

We have not established any exclusion criteria. All patients admitted to the service during the study period were included

Results

Twenty-two patients presented with hyperkalemia. The incidence of hyperkalemia in our population was therefore 22/203 (10.8%). The average age of the patients is 53.8 ± 18.2 years with extremes of 17 and 80 years, including 7 women and 15 men, with a sex ratio of 2.14.

One or more chronic diseases were found in 14 patients (64%). They were represented by: cardiovascular conditions in 6 patients (27%) with hypertension in 3 patients (14%), dilated cardiomyopathy in 1 patient (5%),

Mitral disease with ACFA heart failure in 1 patient (5%), and arteritis in 1 patient. Respiratory terrain in 2 patients (9%). A neurological field in 3 patients (14%). Type 1 diabetes in 3 patients (14%). Renal failure in 4 patients. Thrombocytopenic purpura in 1 patient (5%) surgical history in 2 patients (9%). Toxic habits were found in 2 patients (9%). Drug intakes were found in 8 patients (36%).

32% of patients were admitted for post-op treatment. visceral surgery and neurosurgery, 36% were polytrauma victims, 18% in the context of stroke.

Diuresis disturbances were found in 10 patients (46%): 5 patients (23%) had oliguria, 4 patients (18%) polyuria, and 1 patient presented anuria.

The serum potassium was on average 5.58 mmol / l with extremes ranging from 5.04 to 6.8 mmol / l. 50% of the patients had an increased uremia, 91% had an increased creatinemia which underlines the association of renal failure with hyperkalemia.

Renal failure was the main etiology of hyperkalemia, it involved 4 patients known to be renal failure, one case of acute renal failure complicating an occlusion on volvulus of the transverse colon. 3 cases of functional renal failure.

The excess of endogenous supply by tissue destruction made it possible to explain the occurrence of hyperkalemia in a patient presenting a necrotizing fasciitis, and another patient presenting a mesenteric infarction. In one patient, hyperkalemia was explained by increased cellular catabolism during acute ischemia of the lower limbs.

14 patients required dialysis; 8 episodes of hyperkalemia regressed following filling. The time to correction of hyperkalemia was on average 4 hours.

Among the 22 patients who presented with hyperkalemia during their stay in intensive care, 4 presented no complications, and 18 presented one or more complications which were of a cardio-circulatory nature with arrhythmias in 12 patients, and shock in 6 patients. 8 patients progressed favorably and 14 had a fatal outcome, with a mortality of 64%.

Discussion

Hyperkalemia is a potentially serious fluid and electrolyte abnormality due to its cardiac impact exposing the patient to a risk of cardiac arrest [3]. The incidence of hyperkalemia in hospitalized patients can vary from 1.3%, for serum potassium greater than or equal to 6 mmol / l, to 10%, for serum potassium greater than or equal to 5.3 mmol / l, depending on the definition adopted for hyperkalemia [2].

In a study published in the *British Medical Journal* in April 1983, hyperkalemia was found in 406 patients among 29,063 (1.4%). Mortality was closely related to the severity of hyperkalemia [1]. The latter was directly implicated in 7 deaths out of 58. The rapid onset of hyperkalemia is a factor of poor prognosis [4],[5]. Older men seem to be the most affected by hyperkalemia.

In "Toranomon hospital" in Tokyo, 9117 patients with hyperkalemia were followed between January and October 2005 in order to analyze the factors involved in the occurrence of hyperkalemia. Patients with serum creatinine greater than 5 mg / ml and those on hypokalemic

diuretics were excluded. The average age of the patients was 60 years, the male sex represented 57.7% and 39.6% of the patients were diabetic [6]. Impaired renal function was implicated.

The serum potassium level also increases significantly with the administration of ACE inhibitors, beta blockers, and anti-angiotensin II receptors. The effect of the drugs may be increased by chronic kidney disease, hyperaldosteronism, and diabetic nephropathy [6],[7].

In our series, hyperkalemia was less frequent than hypokalemia, it was encountered in 10.84% of our patients. The average age was 53.8 years, and there was a predominance of men [8], with 15 men and 7 women, for a sex ratio of 2.14. An underlying cardiovascular pathology was found in 27% of patients, and renal failure in 18%.

Conclusion

Hyperkalemia constitutes a potentially serious hydro-electrolyte abnormality because of its cardiac repercussions exposing the patient to a risk of cardio-circulatory arrest. The incidence of hyperkalemia in hospitalized patients can vary from 1.3% for a serum potassium greater than or equal to 6 mmol / l, to 10%, for a serum potassium greater than or equal to 5.3 mmol / l according to the definition restraint of hyperkalemia

True hyperkalemia puts you at risk for a severe heart rhythm or conduction disturbance. The capacities of potassium excretion by the kidney are important, explaining that massive exogenous or endogenous inputs of potassium do not cause hyperkalemia, except in cases of associated renal potassium excretion disorder. The therapeutic management of hyperkalemia depends on its severity and its mechanism. The joint supply of insulin and glucose, and dialysis are the best symptomatic treatments for hyperkalemia.

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