ORIGINAL ARTICLE

Prevalence of Hyperkalemia in Myocardial infarction

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ABSTRACT

Aim: Increased potassium level in cardiac patient is extremely dangerous. It should be controlled strictly in myocardial infarction patients with precautions.

Methods: Total 3340 patients with hyperkalaemia history were collected from Mayo hospital Lahore. Majority of patients are hospital admitted. Mean age 49±5 years, 59% males and 41% females. We assess the incidence and influencing factors on potassiu level in myocardial infarction patients. Patients were classified as : <4 mEg/L, 4 to <4.8 mEg/L, 4.8 to <5.5, 5.5 to <6.0 mEg/L, and ≥6.0 mEg/L. Linear regression analysis were applied on multivariate variables. The association between the increased risk of hyperkalemic in hospital admitted patients and mortality rate were also assessed.

Results: From 3340 patients with hyperkalemia with or without myocardial infarction. The hyperkalemia rate (potassium <4.8 mEg/L) was 19.3% in patients with chronic cardiac diseases. Mild to moderate hyperkalemia potassium rate (potassium 5.5 to <6.0 mEg/L) had in 11.3% of patients. The most high rate of hyperkalemia (potassium ≥ 6.0 mEg/L) in patients was in 23%. There were unreasonable high mortality risk were noted in high rate of hyperkalemia in patients. There is strong relationship with early diagnosed patients and excellent prognosis.

Conclusion: Hyperkalemia is very dangerous in cardiac disease patients. Higher levels of potassium in patients are directly coupled with increased mortality rate in hospitals, with increased risks of hyperkalemia adverse outcomes were noted even at mild rate of hyperkalemia. It is concluded that more aggressive and quick treatment of hyperkalemia may improve patient health and prognosis.

Keywords: Hyperkalemia, myocardial infarction, Cardiac disease.

INTRODUCTION

Increase rate of potassium in human body can progress to grim and vitally fatal cardiac rhythm irregularities. Earlier research data has strongly suggested the influence of hyperkalemia on dangerous cardiac results[1]. With the advancement in medical sciences, it is becomes prominent that incidence of chronic kidney disease and diabetes both increases in hyperkalemic patients[2]. Moreover, most of the acute myocardial infarction cases has increased hyperkalemia with or without happening of heart failure[3].

The high rate of using beta-blockers and rennin angiotensin aldosterone system antagonists has been associated with increase rate of hyperkalemia in patients and become major cause of hospitalization and deaths[4]. Moreover, there is many surgical intervention like coronary artery bypass grafting and percutaneous procedures of myocardial infarction may circuitously leading to risk of hyperkalemia through damaging of nephropathy and acute kidney injury[5].

On the other hand earlier studies have measure the direct relationship between the potassium level in blood and rate of mortality following acute myocardial infarction, no one describe the existing prevalence and prognostic value of many factors of hyperkalemia in patients[6]. Furthermore, it is totally undefined the role of hyperkalemia results in enhancing the patient outcomes[7]. Additional describing the risk linked with hyperkalemia on all body health, and with associated other diseases, may lead to improve patients health with many benefits[8].

PATIENTS & METHODS

Total 3340 patients with high serum potassium history were collected from Mayo hospital Lahore. Patients hospitalized between June 2015 to June 2017. Majority of patients are hospital admitted. Data were sort out according to demographic characteristics, complete medical history, laboratory tests, surgical procedures , medication and complications. All the documentation of hyperkalemic patients were categorize after diagnosis by the cardiac physicians. All the patients who had whole blood potassium increases with the serum potassium values for this study. Patients barred from participation in study were those admitted from hospice or with history of trauma.

Mean age 49±5 years, 59% males and 41% females. We assess the incidence and influencing factors on potassium level in myocardial infarction

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patients. Patients were classified as : <4 mEg/L, 4 to <4.8 mEg/L, 4.8 to <5.5, 5.5 to <6.0 mEg/L, and ≥6.0 mEg/L. Linear regression analysis were applied on multivariate variables. The association between the increased risk of hyperkalemic in hospital admitted patients and mortality rate were also assessed. The association between higher K and high mortality risk were persisted with multivariate variables. In addiation patients with high hyperkalemic values expreiced high rate in hospital admission.

RESULTS

From 3340 patients with hyperkalemia with or without myocardial infarction. The hyperkalemia rate (potassium <4.8 mEg/L) was 19.3% in patients with chronic cardiac diseases. Mild to moderate hyperkalemia potassium rate (potassium 5.5 to <6.0 mEg/L) had in 11.3% of patients. The most high rate of hyperkalemia (potassium ≥ 6.0 mEg/L) in patients was in 23%. Continuity of variables were compared using a straight trend test while categorical variables were measured using mantel trend test. There were unreasonable high mortality risk were noted in high rate of hyperkalemia in patients. There is strong relationship with early diagnosed patients and excellent prognosis. In addition, patients with late diagnosis and higher rate of hyperkalemia shows high mortality rate in mayo hospital lahore. The high number of patients with maximum potassium per patients were classified according to their complication and shows much variations in concluding of results.

Table 1: Hospital mortality rate by number of hyperkalemic values.

Hyperkalemia Values	Mortality Rate	P-Value
0 value ≥ 5	3.2%	<0.01
1 value ≥ 5	12.6%	<0.01
2 values of ≥ 5	15.4%	<0.01
3 values of ≥ 5	21.9%	<0.01

DISSCUSSION

In this study, we analyze that hyperkalemia found in estimately more than twenty percent of patients on dialysis and more than 66% were found in non-dialysis patients. There were high mortality rate observed with higher potassium level , specifically in patients with secondary diseases. Moreover , patients admitted in hospital was more in percentage with high potassium than any other cardiac issue(9). To our information, this study is among the very first to describe the prevalence of hyperkalemia , the increasing rate of inpatients mortality linked with other cardiovascular diseases(10).

In past studies, results of the hyperkalemia in cardiovascular diseases have much most variations. Goyal et al, examined the relationship of potassium levels with hospital admitted patients with ventricular arrhythmias, cardiac arrest and searching an increase risk of hospital admitted patients among high potassium level patents[11]. An older previous study including 956 patients with myocardial infarction and presented relationship between hyperkalemic patients and early post infarction ventricular events[12].

Many researchers have concluded increased hyperkalemic events coupled with common adaption of medications including beta blockers , angiotensin converting enzyme and aldosterone receptors blockers[13]. Our study describe the earlier precautions to decrease the mortality rate with association of varying degrees of potassium in patients[14]. While treatment values are not evaluated in this study, but it is significant that diagnosis of hyperkalemia within time and its preventive measure give better opportunity to improve prognosis then persistent hyperkalemia[15].

We noticed that late or poor diagnosis linked with hyperkalemia may give clinicians tough time in evaluation of patients for modifiable factors that are linked with hyperkalemia and following any secondary diseases[16]. In the methods of management point of view. Several new products for management are in development, which may provide proper intime treatment of patients with better outcomes[17].

Although these novel treatment modalities may ultimately change the way hyperkalemia is managed in the hospital, they are still undergoing investigation in the acute and outpatient settings[18]. Our study is particularly timely in light of development of new medications for the management of hyperkalemia, and highlights an opportunity to investigate the heterogeneity of treatment benefit of hyperkalemic patients[19].

CONCLUSION

Hyperkalemia is very dangerous in cardiac disease patients. Higher levels of potassium in patients are directly coupled with increased mortality rate in hospitals, with increased risks of hyperkalemia adverse outcomes were noted even at mild rate of hyperkalemia. It is concluded that more aggressive and quick treatment of hyperkalemia may improve patient health and prognosis.

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