Case Report

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Acute Kidney Injury and Quadriparesis Due to Rosuvastatin Induced Rhabdomyolysis- A Case Report

Internal Medicine Section

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ABSTRACT

Statins as lipid lowering drugs, are safe and effective in reducing cardiovascular disease risk, but rarely produce myopathy like myalgia, myositis or rhabdomyolysis. We report the case of Rosuvastatin induced rhabdomyolytic acute renal failure and quadriparesis in a 67-year old male, a known case of type-2 diabetes mellitus and with a history of coronary angioplasty four months back. He was on antihypertensive, oral hypoglycemic and antiplatelet medications with Rosuvastatin 40mg/day. He was admitted with altered sensorium, breathlessness, vomiting, muscle weakness and decreased urine output and had raised serum creatinine, creatinine phosphokinase and myoglobin. After ruling out all other causation for rhabdomyolysis, we stopped Rosuvastatin and started supportive management and hemodialysis. Patient showed gradual recovery in renal function and quadriparesis. Patient was discharged with good urine output and on antihypertensive, hypoglycemic drug and diet restrictions for lipid control. He recovered completely and had normal renal function with well controlled lipid level on follow up of six months after discharge. Thus, prompt diagnosis of Rhabdomyolysis due to Rosuvastatin in absence of other aetiology and the multidisciplinary management can prevent further complication with favorable outcome.

Keywords: Muscular diseases, Acute renal failure, Statin

CASE REPORT

A 67-year-old man, a known case of diabetes and ischemic heart disease, presented with complains of altered sensorium, severe breathlessness, vomiting and decreased urine output since two days. He had generalized weakness, decreased appetite for 10-12 days. He was operated for coronary angioplasty six months ago and was on antihypertensive, oral hypoglycemic and antiplatelet medications. He was taking Rosuvastatin 40mg/ day orally. He was thoroughly examined and investigated and found to have quadriparesis and oliguria for two days. The laboratory investigations showed very high CPK of 37840 u/l, mild leukocytosis with raised serum creatinine of 6.56mg/dl. Other biochemical findings were plasma glucose-196.73mg/dl, serum uric acid-8.22mg/dl, phosphorus-7.63mg/dl, CPK-MB-235.7ng/ml, myoglobin-915.5ng/ml. The electrolytes and liver function tests were normal. Complement fixation test for leptospira was negative. His urine examination showed proteinuria (+2), glycosuria (+2), pus cells 20-25/HPF, RBCs- plenty/HPF and granular casts. ECG and echocardiography were normal. Ultrasonography of abdomen showed bilateral bulky kidneys with increased cortical echo pattern and preserved corticomedullary differentiation. Thus clinical and other findings were suggestive of acute kidney injury due to rhabdomyolysis. Various causes of rhabdomyolysis like trauma, thermal injury, toxins and infections were ruled out and statin was thought to be the aetiology. Accordingly Rosuvastatin was stopped and the patient underwent five cycles of hemodialysis. He was also treated with supportive treatment to maintain hydration and showed gradual increase in urine output from 125 ml to 2800ml within 23 days of hospital course and a decrease in serum creatinine, upto 3.56mg/dl. Clinical improvement was noted with CPK level reduction on serial testing. Patient was mobile and discharged with good urine output [Table/Fig-1]. He recovered completely and the last serum creatinine of 1.3mg/dl after a month. Presently he is on antihypertensive and hypoglycemic drug and advised diet restrictions for lipid control. He had normal renal function with well controlled lipid level and asymptomatic on follow up after six months of discharge.

Days	S. Cr (mg/dl)	CPK U/L	Protein (gm/dl)	Hb (gm%)	WBC cells/cmm	Hemodialysis	Urine output (ml/day)
1	6.56	37840			14800		450
2		33350		11.8			125
3	6.22	2612	5.5	9.6	13800		150
4						YES	225
5		179		8.8	12670		200
6						YES	300
7							250
9	7.79			7.5	11840		600
10	8.31					YES	900
12	7.43					YES	1000
15	6.57					YES	2000
18	5.67	70					2800
23	3.56						2600

[Table/Fig-1]: Investigations during hospitalization

DISCUSSION

Statins, which are used as first-line drugs in the prevention of cardiovascular disease, are usually safe, but in some cases there may be muscular toxicity. Rhabdomyolysis can be caused by diverse drugs such as statins with incidence in 1-5% of patients who ingest this drugs [1]. Statins or 3-hydroxy-3-methylglutaryl coenzyme A (HMG-CoA) reductase inhibitors competitively inhibit HMG-CoA reductase and thus decreasing synthesis of mevalonate, a critical intermediary in the cholesterol synthesis pathway thus reduce cholesterol synthesis. Mild myalgia to severe rhabdomyolysis is less common but serious side effects of all statins. The rosuvastatin induced rhabdomyolysis is probably by CYP2C9 enzyme saturation [2]. Use of high potency statins is associated with an increased rate of diagnosis for AKI in hospital admissions compared with low potency statins. The effect seems to be strongest in the first 120 days after initiation of statin treatment [3]. AKI occurs in 30-50% of patients with rhabdomyolysis and can lead to mortality in some cases. Different mechanisms are associated with AKI due to

rhabdomyolysis such as hypovolemia, intraluminal obstruction by myoglobin, uric acid casts, direct myoglobin toxicity, renal ischemia secondary to muscular vasoconstrictors, and production of free radicals [4-6]. Elevated serum CPK levels are enough to establish the diagnosis of rhabdomyolysis. A five times higher than the normal CPK value confirms the diagnosis of rhabdomyolysis [5,7]. Maximum CPK concentration is usually reached during the first 24 h in 70% of the cases [6]. Serum myoglobin higher than 30µg/mL also confirms rhabdomyolysis [6]. Treatment should be instituted immediately in order to modify the factors that cause AKI, such as volume depletion, tubular obstruction, aciduria, and release of free radicals [4]. The prognosis is usually excellent if the underlying mechanism of rhabdomyolysis can be identified and reversed, whenever it is possible. After 3-30 days of withdrawal of statins the muscular symptoms usually decrease, and the CPK normalizes [8]. If CPK exceeds 5,000 IU/L, it is advisable to institute aggressive venous hydration, prophylactic bicarbonate and mannitol. Similar cases of rhabdomyolysis due to rosuvastatin and other statins have been also reported in literature. Brijesh Patel et al., reported a case of rhabdomyolysis with Simvastatin in BMJ [9]. Ana Moreno et al., also reported a case of severe rhabdomyolysis due to Rosuvastatin in a liver transplant patient [10].

CONCLUSION

We conclude that Rusovastatin can cause rhabdomyolysis leading to AKI with quadriparesis in absence of other aetiology. Timely withdrawal of Rosuvastatin and multi-disciplinary approach can prevent further complications and lead to favorable outcome.

ABBREVIATIONS

AKI- Acute Kidney Injury

CPK- Creatinine phosphokinase

HMG-CoA-3-hydroxy-3-methylglutaryl coenzyme A

ECG-Electrocardiogram

HPF- High power field

RBC-Red blood cell

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