Introduction:

The statins are the most effective and best-tolerated agents for treating dyslipidemia. These drugs are competitive inhibitors of 3-hydroxy-3-methylglutaryl coenzyme A (HMG-CoA) reductase, which catalyzes an early, rate-limiting step in cholesterol biosynthesis. Higher doses of the more potent statins (*e.g.,* atorvastatin and simvastatin) also can reduce triglyceride levels caused by elevated VLDL levels. The efficacy of rosuvastatin across its dose range of 10 to 40 mg is superior to that of other statins across their dose range,although the safety is similar.

Case Report:

A 53 year old gentleman was admitted to emergency dept. with chief complaints of dizziness and vomiting for 1 day, B/L lower limb pain for 3 days. He had one episode of syncope in the morning. He was a known case of type2 DM, Hypertension, CAD, old AWMI with TVD, mild LV dysfunction. PTCA with stent to LAD & Left Circumflex artery was done on Oct 2013. The patient was on cardiac medications including Rosuvastatin. Immediately in emergency – Oxygen by Mask at 6L/min, 18 G cannula, 12 lead ECG, RBS, ABG, CBC/KFT/LFT done. Hb 8.8 g/dl, TC 10.5×10^3/cumm , Platelet 150 x10^3/cumm, Ceatinine 1.50 mg/dl, BUN 42mg/dl, Na 126mmol/l, K 7.62mmol/l , Ca 9 mg/dl, Mg 1.4 mg/dl, RBS 295 mg/dl, Total Bilirubin 0.25 mg /dl, SGOT 232 IU/l, SGPT 185 IU/l, Alk. Phosphatase 114 IU/l, Total protein 8.3 g/dl, Albumin 3.1 g/dl, Trop I 0.255ug/L, CPK 6520 IU/L, S.Myoglobin 646 ng/dl, pH 7.317, PaCO2 16.6, PaO2 90, HCO3 8.3, BE -17.3. .ECG:Bradycardia with episodic VT. ECHO:Mild LV dysfunction . CXR:Normal.

The patient had ongoing bradycardia, so he was immediately shifted to cath lab and TPI (Temporary pacing) was done.He was shifted to ICU. His potassium and creatinine phosphokinase(CPK) both were very high. Hemodialysis was done. After that he was maintained on aggressive intravenous hydration and IV insulin. Provisional diagnosis was Rhabdomyolysis, which was supported by increase level of serum Myoglobin. He was on Tab Rosuvastatin 40mg once daily at bed time along with other medications.So it was Rosuvastatin induced rhabdomyolysis. His CPK decreased from 6520IU/L to 503 IU/L within 4 days.TPI was removed and patient was discharged under stable condition.

Discussion:

Rosuvastatin is a relatively new cholesterol-lowering drug ; although highly efficacious, this new statin has generated considerable controversy regarding its safety. In Canada as well as United States, many cases of rosuvastatin induced rhabdomyolysis have been reported. The incidence of rosuvastatin- induced rhabdomyolysis is not known exactly but it was presumed to be low, and similar to atorvastatin, pravastatin, and simvastatin ; Although statin induced rhabdomyolysis has been reported at rates of 1 death per 6.6million prescriptions, no deaths related to rosuvastatin induced rhabdomyolysis were reported in the literature . Heerey *et al.* estimated that approximately 30% of all users of statins have concomitant prescribed drugs that can inhibit statin metabolism by hepatic cytochrome P450 (CYP) system, potentially leading to rhabdomyolysis. The factors that increase the risk of rosuvastatin induced myopathy or rhabdomyolysis include increased age, renal impairment, hypothyroidism, personal or family history of hereditary muscular disorders, previous history of muscular toxicity with another statin or fibrate, consumption of grapefruit juice (more than 1 L per day), alcohol abuse, being of Chinese or Japanese descent, concomitant use of fibrates. This group of patients should be given rosuvastatin with caution. Rosuvastatin should be discontinued in patients with a creatine kinase level of more than 10 times the ULN(upper limit) with or without muscle symptoms. Liver transaminase levels should be assessed at baseline, at 12 weeks after the start of therapy or an increase in dose, and at 6-month intervals thereafter. The dosage should be reduced or therapy withdrawn if liver transaminase levels exceed 3 times the ULN. Because of the potential for rosuvastatin to increase liver transaminase levels, it should be used with caution in patients with a history of liver disease or alcohol abuse Overall, persistent elevations in liver transaminase levels are reported in 0.1-0.4% of patients taking rosuvastatin 5-40 mg. Although the exact mechanism of statin-induced rhabdomyolysis is unknown, the implicated mechanisms include the followings: first, the cholesterol synthesis blockage; which makes the skeletal muscle-cell membranes unstable due to low cholesterol content. Second, prenylated protein abnormalities causing imbalances in intracellular protein messaging. Third, coenzyme Q10 deficiency causing abnormal mitochondrial respiratory function . Rosuvastatin induced rhabdomyolysis in this patient is supported by the following: first, among the drugs used by the patient, there was no drug that known to cause rhabdomyolysis; second: myoglobin and CPK were washed out from the blood and returned towards normal within few days after discontinuation of rosuvastatin.

Conclusion:

Although highly efficacious, rosuvastatin has generated considerable controversy regarding its safety; clinicians should maintain an increased level of awareness of the potential for muscle toxicity and rhabdomyolysis, which associated with this new drug even with low dose. Accordingly, Emergent myalgias in patients under rosuvastatin necessitate immediate testing of creatine kinase and myoglobin to exclude life threatening rhabdomyolysis even with low dose.

Reference:

1. Antons KA, Williams CD, Baker SK, Phillips PS. Clinical perspectives of statin-induced rhabdomyolysis. Am. J. Med. 2006; 119: 400-9.
2. Association of Crestor (rosuvastatin) with rhabdomyolysis [Dear Health Care Professional letter]. Mississauga (ON): Astra Zeneca Canada Inc.; 2004 June 15. Available: http: //napra.ca/pdfs/advisories/ crestorhc.pdf [accessed 2008 July 28].
3. Astra Zeneca Pharmaceuticals LP. Crestor (rosuvastatin calcium) prescribing information: Wilmington, DE; 2003.
4. Brewer HB Jr. Benefit-risk assessment of rosuvastatin 10 to 40 milligrams. Am. J. Cardiol. 2003; 92: 23-29
5. Thompson PD, Clarkson P, Karas RH. Statin-associated myopathy. JAMA 2003; 289: 1681-90.

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