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Inappropriate dosing of eptifibatide in renally insufficient, cardiology patients

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Introduction

The American College of Cardiology and the American Heart Association (ACC/AHA) recommend that antiplatelet therapy be utilized for patients with acute coronary syndrome. The glycoprotein (GP) IIb/IIIa inhibitor, eptifibatide has renal dosing recommendations in the package inserts, as well as dosing recommendations in a variety of guidelines. We conducted a retrospective analysis to determine the incidence of inappropriate dosing of eptifibatide in cardiology patients with decreased renal function and adverse effects.

Methods

After IRB approval, we performed a historical cohort study which included all adult cardiology patients with serum creatinine of 1.3 mg/dL or more and received eptifibatide between January 1, 2007 and April 1, 2010 (n=59). The electronic medical records were reviewed to collect dating including patient demographics, medication dosage, and data related to bleeding complications. Excessive dosing was defined as dosing > 1 mcg/kg/min in patients whose creatinine clearance was calculated to be < 50 ml/min per Crockcoft-Gault equation

Results

There was no difference in baseline demographics. The percentage of patients excessively dosed on eptifibatide was 44.1% (26 out of 59 patients).

The baseline demographics were similar (mean +/- SD). The serum creatinine was 1.83 +/- 0.6 mg/dL for excessively dosed patients (ED) and 1.91 +/- 0.55 mg/dL for appropriate dosing (AD). The rate of infusion for the excessively dosed patients was 1.93 +/- 0.3 mcg/kg/min.

Table 1. Patient baseline demographics for N = 59

	AD (N = 33)	ED (N = 26)
Male	27 (82%)	18 (69%)
Mean Age (years)	73.2 (42 - 90)	68.4 (42 - 88)
Weight (kg +/- SD)	81.4 (+/- 10)	89.9 (18.2)
Past Medical History (N)		
Atrial Fibrillation	16	13
Cancer	6	3
Coronary Artery Disease	2	2
CHF	3	3
Diabetes	15	12
Hyperlipidemia	16	13
Hypertension	24	19
Renal Insufficiency	12	4
Laboratory (+/- SD)		
Hemoglobin	12.5 (+/- 6.3)	12.7 (+/- 2.1)
Hematocrit	36.4 (+/- 18)	37.1 (+/- 5.2)
Platelet	243.7 (+/- 90.7)	268.7 (+/- 101.6)
BUN	37.7 (+/- 0.5)	31.5 (+/- 10.1)
Creatinine (mg/dL)	1.91 (+/- 0.55)	1.83 (+/- 0.6)

Table 2. Primary and Secondary Outcomes

Primary Outcome	AD	ED
Correct dose (N, %)	33 (55.9%)	26 (44.1%)
Secondary Outcomes	**AD**	**ED**
Length of stay (hours +/- SD)	92.4 (+/- 17)	74.3 (+/- 52)
Major or Minor Hemorrhagic Complication (per TIMI Criteria)	14	13
Overt Bleeding	4	5
Death	0	2

Results

The patients experienced similar rates of hemorrhagic complications (42.4% AD vs 50% ED). Most common adverse effect was a decrease in hemoglobin of > 2 g/dL. The number of patients experiencing overt bleeding was 4 in AD and 5 in ED patients. Two of the ED patients ultimately died.

Conclusion

Patients with renally insufficiency are often excessively dosed with eptifibatide. This dosing did not appear to increase the risk of hemorrhagic complications.

References

1. Kushner FG, Hand M, et al. 2009 focused updated: ACC/AHA guidelines for the management of patients with ST-elevation myocardial infaction (updating the 2004 guideline and 2007 focused updated) and ACC/AHA/SCAI guidelines on percutaneous coronary intervention (updating the 2005 guideline and 2007 focused updated): a report of the ACC Foundation/AHA Task Force on Practice Guidelines. J Am Coll Cardiol. 2009;54:2205-41.
2. Anderson JL, Adams CD, et al. ACC/AHA 2007 guidelines for the management of patients with unstable angina/non-ST-elevation myocardial infarction: a report of the ACC/AHA Task Force on Practice Guidelines (Writing Committee to Revise the 2002 guidelines for the management of patients with unstable angina/non-ST-elevation myocardial infarction). J Am Coll Cardiol. 2007:50:e1-157.
3. Integrilin [package insert]. Kenilworth, NJ: Schering-Plough Corporation; 2009.