WSU Emergency Medicine Journal Club – Block 7

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Clinical Scenario:

Mr. Bones (Yes, Bones) is a 67 yo M with DM, HTN, prior smoker. Known EF 50%. He comes in with chest pain. He's not on a statin. He doesn't have liver or kidney problems.

A) His EKG is non-acute. He's never had chest pain like this before and comes and goes with exertion. Neg troponin. Should we give a statin in ED prior to admission?

B) His EKG is non-acute. Troponin is positive. Should we give a statin in ED prior to admission?

C) STEMI is apparent on EKG & cardiac alert initiated. Should we give a statin in ED prior to admission?

PICO question: In patients presenting to emergency department with ACS, does statin administration in

ED improve outcomes (morbidity/mortality)?

Conversation starters:

http://epmonthly.com/article/acs-start-my-statins/

"What do the AHA/ACC guidelines say about statins in NSTEMI? Buried in 43 pages are these two small sentences:

> "High-intensity statin therapy should be initiated or continued in all patients with NSTE-ACS and no contraindications to its use" – Four references are cited and the Level of Evidence is A. All references were published between 1996 and 2010.

> "It is reasonable to obtain a fasting lipid profile in patients with NSTE-ACS, preferably within 24 hours of presentation." No references are cited. Level of Evidence is C."

http://www.acepnow.com/article/studies-bolster-statin-use-emergency-department-patients-suspected-acute-coronary-syndrome/?singlepage=1

Background Info:

1. Amsterdam, EA, et al. 2014 AHA/ACC Guideline for the Management of Patients With Non–ST-Elevation Acute Coronary Syndromes. Amsterdam, EA, et al. J of Am Coll Card 2014: 64(24), e139-e228

2. Ostadal, P. Statins as first line therapy for acute coronary syndrome? Exp Clin Cardiol 2012: 17(4), 227-236

3. Patti, G et al. Atorvastatin Pretreatment Improves Outcomes in Patients with Acute Coronary Syndromes Undergoing Early Percutaneous Coronary Intervention. Patti, G et al. J of Am Coll Card 2007: 49(12), 1272-1278.

Articles to discuss:

1. Liu, H-L, et al. Administration of a Loading Dose of Atorvastatin Before Percutaneous Coronary Intervention Prevents Inflammation and Reduces Myocardial Injury in STEMI Patients: A Randomized Clinical Study. Clinical therapeutics 35 (3), 2013 261-272

2. Patti, G., et al. Clinical Benefit of Statin Pretreatment in Patients Undergoing Percutaneous Coronary Intervention A Collaborative Patient-Level Meta-Analysis of 13 Randomized Studies. Circulation 2011: 23:1622-1632

3. Benjo, AM, et al. High Dose Statin Loading Prior to Percutaneous Coronary Intervention Decreases Cardiovascular Events: A Meta-Analysis of Randomized Controlled Trials. Benjo, AM, et al. Cath Card Interv 2015: 85:53-60.

Reference Material

Users' guides to the medical literature. II. How to use an article about therapy and prevention. A. Are the results of the study valid? G.H. Guyatt, D.L. Sackett, and D. J. Cook, JAMA, 270:2598-2601 (1993).

Users' guides to the medical literature. II. How to use an article about therapy or prevention. B. What were the results and will they help me in caring for my patients? G.H. Guyatt, D.L. Sackett, and D.J. Cook, JAMA, 271:59-63 (1994).

Journal Club Discussion:

   During discussion we noted some validity for giving statins in ACS to improve outcomes. Notably some of our local cardiologists do this and some do not. The articles have varying degrees of support in a patient oriented manner for this.

   The first article from China, did not really give patient oriented outcomes, as it noted improvement in LVEF of 3-4% in patients with STEMI given statins within 12 hours of presentation of STEMI, and pre PCI in test group and then for several months after at varying doses in all groups. The residents astutely did not feel was clinically significant to the patients, but an interesting finding. Other endpoints were notably biomarkers, again not patient oriented.

   The second article presented in Circulation in 2011 is a meta-analysis of 13 RCTs, including 3341 patients. This was felt to be decent as there was raw data from 11/13 of the included studies and showed risk reduction in MACE (MI, CVA, re-vascularization, death). The issue as with all meta-analysis, different protocols were used, and there was variability of timing for giving the statin in the emergency room (which is what we emergency physicians are interested in) to 7 day pretreatments, variable statins and doses, and also varying in STEMI vs STE-ACS vs stable angina case. Most of the included trials were not in the ED and most excluded STEMI. Based on these trials Risk reduction for peri-procedural MI was 44% and for 30 Day MACE was also 44%. NNT 20:1. This article seemed to have the crowd excited about

giving statins in ED, but I felt there was too little information for ED administration to commit. I expressed concern for mission creep becoming standard of care without data to support the practice.

The third article is also a meta-analysis published in 2015 and included many (8 out of 14) of the same articles as the prior meta-analysis including 3146 patients, but no STEMI articles were included. This article showed 56 % risk reduction of peri-procedural MI, and 41% reduction of MACE. However, was only significant in patients undergoing PCI for NSTE-ACS, not stable angina. Again, notable for variable timing of administration of the statin, variable timing of follow-up and variable dosing. Again this was a favorably received article by the group.

Despite my hesitation for Emergency Department administration of a statin based on these studies due to concern for lack of literature supporting this timing of administration, the group seemed willing to adopt this into practice based on the last 2 articles. This is being practiced by some of our cardiologist in some of our hospitals and I would thus encourage at least a conversation with the cardiologist regarding statin in ED when you know the patient is headed straight to the cath lab.