Regional STEMI Transfer Systems: the Mayo and NC RACE Experiences Webinar – Participant Questions

May 3, 2010

(1) What are your thoughts on loading a patient with Prasugrel early in a primary PCI procedure to take advantage of faster therapeutic level, then switching to Plavix for maintenance?

CG: This approach has not been studied and is not supported by the evidence. The benefits of prasugrel vs clopidogrel, including for patients undergoing primary PCI, occurred both early (likely related to rapid and consistent onset) and later (related to continued effects).

JJ: Talking with Dr. Antman after the call, he indicated that the data support continuing prasugrel for appropriate patients. The question would be of interest in a trial.

(2) Patient's EKG was initially read by the ER physician as RBBB not STEMI. Cardiology consulted 20 minutes later and STEMI diagnosed, transferred to the cath lab. Does this patient fall into the door to balloon category?

JJ: For patients with right bundle branch block, ST segment elevation can still be diagnosed in the limb leads and precordial leads V4-V6. If the initial ECG showed 1 mm of ST segment elevation in 2 leads other than V1-V3, this would be considered diagnostic of ST elevation myocardial infarction and the time interval for door to device would start when the patient entered the hospital.

(3) ACTION & CathPCI (ACC/NCDR) have different inclusion criteria and thus provide varying outcome reports.which should be followed?

JJ: ACTION includes all ST elevation MI patients, while CathPCI would only include those who undergo cath. ACTION is the registry recommended by NCDR and MissionLifeline for improving ST elevation myocardial infarction care.

(4) With respect to UFH & LMWH in the presence of STEMI, any further thoughts as to the use of one over the other?

CG: With fibrinolytic therapy, the EXTRACT trial showed clear benefits of reducing death and reMI with enoxaparin vs unfractionated heparin. With primary PCI, the most common heparin in the US in unfractionated heparin. There are ongoing trials evaluating the effects of enoxaparin vs clopidogrel.

JJ: I've provided some strategies and dosing below used in our system, but suggest that you confirm all dosing with your pharmacist. The fastest systems select a single drug strategy for all STEMI's according to a consensus of the entire medical staff, rather than tailor strategies according to the person on call.

For patients treated with primary PCI who are being transferred to a cath. lab, a heparin (UFH) bolus in transfer to the cath. hospital is fairly simple to implement on a systematic basis (60 to 70 IU/kg bolus). With rapid transfer, we avoid continuous infusions of heparin as the extra resources for infusions (change in tubing, pumps, EMS support) may delay transport and reperfusion. Bivalirudin is used by many PCI labs starting administration in the lab, dosed as follows: bolus 0.75 mg/kg IV (if prior UFH administered, start 30 minutes after last bolus), (5 minutes after bolus, measure ACT and if <225, give additional 0.3 mg/kg bolus); infusion 1.75 mg/kg/h, not titrated to ACT; if creatinine clearance is less than 30, reduce the infusion to 1.0 mg/kg/hr and if dialysis dependent reduce to 0.25 mg/kg/hr. Terminate at procedure end unless prolonged antithrombin needed (0.25 mg/kg/hr infusion).

For patients treated with fibrinolysis, we treat with either enoxaparin (LMWH) or heparin, with a general preference for enoxaparin.

Enoxaparin dosing:

Age < 75
• Normal renal function
(Creatinine clearance ≥ 30 ml/min):
30 mg IV plus 1 mg/kg SC, followed by 1 mg/kg SC q 12 hours (maximum 100 mg for the first two doses only)
• Impaired renal function
(Creatinine clearance < 30 ml/min)
30 mg IV plus 1 mg/kg SC, followed by 1 mg/kg SC daily

Age ≥ 75
• Creatinine clearance ≥ 30 ml/min
No initial bolus, 0.75 mg/kg SC every 12 hours
• Creatinine clearance < 30 ml/min
No initial bolus, 0.75 mg/kg SC daily

(5) Has there been any noted differences between states that have hospital-based paramedics v. community based paramedics in respect to STEMI identification / cath lab activation?

JJ: I do not know of any data. Almost all of the paramedics in the 540 EMS systems in North Carolina are community based. With protocols (including patients for whom the lab should not be activate), training, and feedback, they perform well in diagnosing STEMI, diverting patients, and activating cath. labs directly, with an 82% rate of patients undergoing emergent cath for paramedic activation. This rate is higher is some areas with better training.

(6) For thrombolytic cases transfered to PCI centers--in which departments do you suggest they arrive at the PCI center ED,CCU or Cath Lab. Also, are CL teams called in for all these cases? What is being done out there?

JJ: The best systems should establish a protocol. According to trials and the guidelines, the following patients are best suited for transfer to PCI centers : Patients best suited for transfer for PCI are STEMI pts: Presenting with high-risk features (shock, systolic pressure 90 or less, congestive heart failure, pulmonary edema), high bleeding risk from fibrinolytic therapy, and late

presenters-->4 hrs after onset of symptoms. For other patients who receive fibrinolysis, one of two plans are reasonable to adopt 1) transfer all patients to PCI Centers for urgent angiography (within 3 hours of presentation), or 2) urgent transfer of patients who have evidence of failure to reperfuse (persistent chest pain, and / or ST segment elevation that does not resolve by 50%).

If the cath. lab is open, staffed and ready to receive the patient, this is the ideal destination. If the cath. lab is not able to directly receive the patient, provisions should be made for the patient to be observed in the ED or ICU while awaiting lab availability.

(7) Thoughts on taking pts directly to the cath lab from the field, with confirmation by EKG transmission?

JJ: As above, if the cath. lab is staffed and ready to receive the patient, this is the ideal destination. If the paramedics have diagnosed a definite STEMI, ECG transmission may not be needed.

(8) If pt pauses in the ED for 5 minutes for quick eval confirms EKG then when should the plavix be given? In CCL before procedure or can it be given after procedure but before they leave the CCL room?

CG: This is not known, and the most important issue may be for each hospital to have a standardized approach that is consistently applied. It is common for clopidogrel to be given in the first emergency room to which the patient presents.

JJ: If the diagnosis of STEMI is definite, as soon as possible without delaying reperfusion. For transferred patients, to avoid slowing the patient down in the emergency department, most of our hospitals treat at cath. lab arrival. If there is a delay requiring extended stay in the emergency department (for example the patient comes in by EMS within 10 minutes of diagnosis and must wait in the ED 20 minutes before the lab is ready, clopidogrel can be administered in the emergency department.

(9) In your view what is an acceptable false calldown rate then?

JJ: ED physician, 1 in 10 cath. lab activations cancelled. EMS paramedic 1 in 20. If the rates are higher, additional feedback and training including case review, ECG training, and protocol clarification including when not to activate (severe dementia, active bleeding, patient refusal, DNR) will improve.

(10) If pt. with STEMI has complete pain relief (no S&S of HF or shock) within minutes of arrival, is it reasonable to defer PCI in next few hours as opposed to emergent PCI?

JJ: As above, this is a reasonable strategy for lower risk patients who have clinical evidence or reperfusion.

(11) Are there CEU's?

JJ: We have not offered continuing education unit to date but will consider.

JJ: Dr. James Jollis
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