Clinical update no. 506
10 January 2018

Times change. Although further provocative testing was in the Guidelines for evaluation of patient presenting to ED with chest pain, evidence to support any benefit in the current era of high sensitivity troponins is lacking.

Provocative testing (e.g. EST, MIBI, stress echo) were historically part of the workup for *established* coronary artery disease. When biomarkers were less sensitive they identified a small group at higher risk. Guidelines advocated further testing within 72 hours.

Amsterdam EA, et al.
2014 AHA/ACC NSTE-ACS Guideline

2014 AHA/ACC Guideline for the Management of Patients With Non–ST-Elevation Acute Coronary Syndromes

3.5. Immediate Management

3.5.1. Discharge From the ED

Class IIa 2. It is reasonable for patients with possible ACS who have normal serial ECGs and cardiac troponins to have a treadmill ECG (200-202) (*Level of Evidence: A)*, stress myocardial perfusion imaging (200), or stress echocardiography (203, 204) before discharge or within 72 hours after discharge. *(Level of Evidence: B)*

Research

JAMA Internal Medicine | Original Investigation | LESS IS MORE

Noninvasive Cardiac Testing vs Clinical Evaluation Alone in Acute Chest Pain
A Secondary Analysis of the ROMICAT-II Randomized Clinical Trial

INTERVENTIONS Clinical evaluation plus noninvasive testing (CCTA or stress test) vs clinical evaluation alone.

CONCLUSIONS AND RELEVANCE In patients presenting to the ED with acute chest pain, negative biomarkers, and a nonischemic ECG result, noninvasive testing with CCTA or stress testing leads to longer LOS, more downstream testing, more radiation exposure, and greater cost without an improvement in clinical outcomes.

JAMA Intern Med. doi:10.1001/jamainternmed.2017.7360
Published online November 14, 2017.

EST or CT-coronary angio after initially –ve workup in ED led to overdiagnosis and more intervention with no patient outcome benefit.

Meaning Noninvasive testing to rule out acute coronary syndromes in low- and intermediate-risk patients who present to the ED with chest pain seems to provide no clinical benefit over clinical evaluation alone.

(may consider) …following patients with low-risk chest pain and reserving noninvasive testing if indicated by subsequent events.

Editorial

Less is more: chest pain pathways in clinical care

Jonathan Christiansen

The significant benefits for patients and hospitals of reduced testing can be achieved without compromising safety

EST has limited utility

- Does not reduce representations
- False +ve leading to inappropriate interventions

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In stable angina, reperfusion does not necessarily benefit, with a study showing that stenting of single vessel high grade stenosis gives no improvement in exercise capacity over medical management in an innovative study using a sham procedure as control.

Percutaneous coronary intervention in stable angina (ORBITA): a double-blind, randomised controlled trial

www.thelancet.com Vol 391 January 6, 2018

This British study enrolled 230 patients with angina and severe (≥70%) single-vessel stenoses who received 6 weeks of optimum medical therapy, and were then randomised to PCI or a placebo procedure. The primary outcome was exercise time.

	PCI	Placebo	p value
Pre-randomisation to follow-up	..	..	0·633
Patients assessed	105	91	..
No change or deterioration	51 (49%)	50 (55%)	..
1 class improvement	27 (26%)	22 (24%)	..
≥2 class improvement	27 (26%)	19 (21%)	..

Data are n (%) unless otherwise specified. PCI=percutaneous coronary intervention. CCS=Canadian Cardiovascular Society.

Table 4: **Changes in CCS angina grade**

Half the patients undergoing stenting improved; half of those not stented improved. Medical management works, with invasive procedures better reserved for when it doesn't

Last nail in the coffin for PCI in stable angina?

Trials of PCI have shown no reduction in death or MI in stable angina, and it is often done before optimisation of medical therapy. "*The ORBITA data put PCI in the category of other abandoned therapies for cardiovascular disease*"; it gives no benefit in stable angina, and is not without procedural complications.

Available at http://www.heti.nsw.gov.au/programs/emergency-medicine-training/emergency-medicine-training-test/educational-resources/em-clinical-updates/

Clinical Policy: Emergency Department Management of Patients Needing Reperfusion Therapy for Acute ST-Segment Elevation Myocardial Infarction

724 Annals of Emergency Medicine Volume 70, no. 5 : November 2017

http://www.annemergmed.com/article/S0196-0644(17)31743-2/pdf

Not a whole lot new, but a sobering lack of evidence. STEMI, guidelines recommend a first medical-contact-to-device time of less than 120 minutes for patients who need transfer to a PCI-capable hospital. What are the implications of delays, and what is the role of fibrinolysis when there are delays.

CRITICAL QUESTIONS

1. **In adult patients having a STEMI, are there patients for whom treatment with fibrinolytic therapy decreases the incidence of MACE when PCI is delayed?**

Level B recommendations. Fibrinolytics may be administered to patients when door-to-balloon (D2B) time is anticipated to exceed 120 minutes.

Level C recommendations. A dose reduction should be considered when administering fibrinolytics to patients aged 75 years or older.

Given possible delays, fibrinolytics followed by PCI may be considered in select circumstances. Interpretation of data is difficult due to a lack of agreed definitions of adverse events (MACE) with measures not always detailing patient related functional outcomes. Local practice varies including arrangements in place for transfer.

2. **In adult patients having a STEMI, does transfer to a PCI center decrease the incidence of MACE?**

Level B recommendations. To decrease the incidence of MACE, patients with STEMI should be transferred to a PCI-capable hospital as soon as possible.

202 articles were identified, 45 were further reviewed, and 2 studies informed the final recommendation. 200 studies did not.

How long can a patient wait before PCI loses its advantage over fibrinolytics?

Outcomes are improved provided there is intervention with balloon insufflation <120 minutes from first medical contact. *No studies exist to inform as to the exact interval after symptom onset when the benefits of emergent transfer dissipate*. Studies vary in definitions used and are difficult to compare. Standardised prospective studies are needed to better inform practice.

3. **In adult patients undergoing reperfusion therapy, should opioids be avoided to prevent adverse outcomes?**

Level C recommendations. Because safety has not been established, clinical judgment should be used in deciding whether to provide or withhold morphine in patients undergoing reperfusion therapy.

Opioids alleviate pain but can potentially result in less salvageable myocardium if administered to patients having an MI.

Largely opinion based Guidelines recommend IV morphine as the drug of choice. However a retrospective imaging study reported an association of IV morphine administration with larger infarct size, larger extent of microvascular obstruction and less salvageable myocardium. Other evidence relates to the pharmacology of P2Y12 receptor inhibitors (prasugrel, ticagrelor, clopidogrel) with delayed GI absorption and drug activity after morphine has been given. Studies suggested increased mortality associated with morphine use, but study quality was poor.

There is lack of evidence to recommend for or against the use of opiates in STEMI patients. Adequately powered prospective trials are needed to answer the question.

If the effect is related to GI absorption, then intravenous preparations of P2Y12 inhibitors may provide alternatives.

It is of note that clopidogrel is a prodrug that must be metabolised to its active form, and some delay in GI absorption may not impact time to pharmacological effect. Loading doses are used with that in mind, with the 80% platelet inhibition at 5 hours after a 300mg loading dose, and even more rapid onset with 600mg. The added impact of delayed absorption on top of that may not be large.

Clopidogrel: 300-mg or 600-mg loading dose, then 75 mg daily
Evidence: B)

There is little good evidence to recommend against the use of morphine for patients in pain; if concerned fentanyl is an alternative.