The Pentagon Papers: The Five Most Important Publications of the Past Year

EAGLES 2015

Corey M. Slovis, M.D.
Vanderbilt University Medical Center
Metro Nashville Fire Department
Nashville International Airport
Nashville, TN
Conference Links

- CME Conference
- Grand Rounds
- Research Committee Meeting
- Case of the Week
- Conference Handouts
Conference Handouts

Shira Kansas 2014

- **Expert Treatment of Anaphylaxis**
  Handout for a Presentation by Corey Slovis, MD for the Shira Kansas Memorial Lectures
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- **Acid Base Made Easy**
  Handout for a Presentation by Corey Slovis, MD for the Shira Kansas Memorial Lectures
  Download

Nashville Fire Department 2014

- **The Gold Standard in Emergency Care**
  Handout for a Presentation by Corey Slovis, MD for the Metro Nashville Fire Department
  Download
5 EAGLES Topics

- Valsalva
- Morphine in AMI
- Epi + Calcium in CPR
- Hands-on Defibrillation
- STEMI ECGs
- Living Forever
Valsalva For PSVT
Valsalva’s effectiveness in PSVT is variable.

- Works 17 - 54% of the time
- Usually 10 – 20% effective
- “Usual way” not optimal
- Article discusses way to increase efficacy
Impact of a modified Valsalva manoeuvre in the termination of paroxysmal supraventricular tachycardia

S Walker, P Cutting

Abstract

Paroxysmal supraventricular tachycardia (SVT) is a relatively common problem presented to the emergency department. Most sources advocate the use of vagal manoeuvres as first-line management, including Valsalva manoeuvre. Despite this, there is lack of re-entry tachycardias: atrioventricular nodal re-entry tachycardia and atrioventricular re-entry/reciprocating tachycardia. If the tachycardia involves the atrioventricular node as part of the re-entry circuit, then methods to increase atrioventricular nodal blockade, that is, vagal manoeuvres,

- Response improved from 5.3% to 31.7%
- Sitting up increases sympathetic tone
- Lie patient flat or in reverse Trendelenburg
- Patient to bear down maximally
- At least 15 seconds (not 5 seconds)
Is morphine really no longer the best analgesic in STEMI patients?
300 PCI patients with STEMI

95 patients (32%) received morphine

Evaluated incidence of vomiting

Measured platelet inhibition
Vomiting With and Without Morphine

Circ Cardiovasc Inter 2015;8 epub Jan

P = 0.001
High Residual Platelet Activity (P2Y$_{12}$ > 208)

- Morphine: 53%
- No Morphine: 29%

$P = 0.0001$
Morphine in AMI
Take Homes

• Morphine increases vomiting in AMI
• Decreases platelet inhibitor absorption
• Platelet aggregation affected by morphine
• Try to use fentanyl and antiemetics
• If you use morphine – less and antiemetics
• Does Epinephrine use have true benefits in CPR?

• Meta analysis, 14 RCTs, 12,246 patients

• Studies were:
  • Epi vs placebo (1) n = 534
  • Epi vs high does Epi (6) n = 6,174
  • Epi vs Vasopression (1) n = 336
  • Epi vs Epi + Vasopression (6) n = 5,202
Results

- **Epi vs placebo (1) n = 534**  ▲ROSC
  - No differences in survival or neuro outcome

- **Epi vs High dose Epi (6) n = 6,174**
  - No differences in survival or neuro outcome

- **Epi vs Epi + Vasopressin (6) n = 5,202**
  - No differences in ROSC, admit, survival or neuro

- **Epi vs Vasopressin (1) n = 336**
  - No differences in ROSC, admit, survival or neuro
Benefits of Epinephrine in CPR

Conclusions and Take Homes

• Very hard to prove efficacy

• Very hard to stop using it

• Epi + Vasopressin + steroids??

• Future studies will hopefully help us define its role or lack thereof
Is Calcium Beneficial in Cardiac Arrest?

- Systematic Review Snapshot
- 14 studies, 10 reported ROSC/Survival
- Only 2 were blinded
- 70% were human trials
“There is no conclusive evidence that administration of calcium during CPR improves survival”
**Take Homes**

**Calcium in CPR**

- Do not use routinely
- Consider if hyperkalemia a possibility
- Wide QRS, Renal Failure
- Heart Block/Bradycardia with peaked T waves
• Is hands-on defibrillation safe?

• Cadaver study; 6 cadavers used

• Used A-P defibrillator pad placement

• Defibrillated cadavers at 360 joules
Fig. 1. The red dots denote anatomic sites that the defibrillation voltage measurements were obtained. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of the article.)
Fig. 6. The rescuer-received dose is noted at the various measurement points using published rescuer skin resistances for both 5% and 50% population thresholds. The horizontal line at 1 J indicates the minimum energy level that is able to cause ventricular fibrillation in a susceptible individual. On the anterior chest wall, where contact would be made with HOD, the energy level is 6–10 times the level needed to cause fibrillation.
Conclusions

Based on this study, hands-on defibrillation is dangerous and should not be done

Or

Based on this study, cadavers should not defibrillate themselves
This is the first hands-on defibrillation study not to use hands-on defibrillation.
Take Homes on Hands-On Defibrillation (HOD)

- The safety of hand-on defibrillation (HOD) is not fully known
- Use gloves if you do HOD
- Do not put your hands on the pad(s)
- Large “real life” study needed
- HOD or not, minimize pre-shock pause
How often does a prehospital STEMI arrive with a resolved ECG?

- 83 prehospital ECGs with STEMI
- 217 EMS agencies; UPMC Medical Control
- All patients went to cath lab
STEmI Resolution

Prehosp Emerg Care 2014;18:174-179

n = 83

78.3% (65)

21.6% (18)

Total AMI

ED STEMI

ST Resolution
• 1 in 5 prehospital STEMIs have ECG changes that resolve prior to ED arrival

• There was no difference in % occlusion in those with and without ST resolution of STEMI ECG changes

• Patients without STEMI resolution are more likely to have multivessel disease
ST segment resolution of a STEMI still equals a STEMI and mandates rapid transport to coronary catheterization.

ST Segment Resolution ≠ NO STEMI
Take Homes
EMS 12 Leads

• Prehospital ECGs are essential to decrease D₂B and to improve survival

• Decrease D₂B by 21 – 78 minutes and decreased mortality by 39%

• My bias is paramedic + machine read + ED MD read to minimize false activations

• All benefits are lost if systems wait for ED MD read in the ED to activate at night/weekends
Living Forever
Living Forever

• Eat more fish, less red meat
• Drink 1 – 2 glasses of wine or ETOH
• Consume less saturated fats and fried foods
• Eat more nuts
• Exercise?
Runners vs Non-Runners
Death Rate (Deaths/yr/10,000 patients)

Non-Runners

Runners

<table>
<thead>
<tr>
<th>Cause</th>
<th>Non-Runners</th>
<th>Runners</th>
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<tbody>
<tr>
<td>All Cause</td>
<td>45.9</td>
<td>31.7</td>
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<tr>
<td>Card</td>
<td>17.8</td>
<td>8.0</td>
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</tbody>
</table>

JACC 2014;64:472-81
Take Homes

- Running reduces all cause mortality by 30%
- Running reduces cardiac mortality by 45%
- Findings consistent even if running just 51 min/week
- Can run 1-2x/week slowly for benefits (< 10 min miles)
Benefits overcame smoking, HT, HL, obesity

Average ↑ in lifespan = 3 years
Summary

Lie flat for Valsalva

No morphine for STEMI

Epi and CaCl1 unproven in arrest

EMS STEMI may “resolve”

Exercise saves lives – yours!