

MORPHINE VERSUS FENTANYL FOR CHEST PAIN

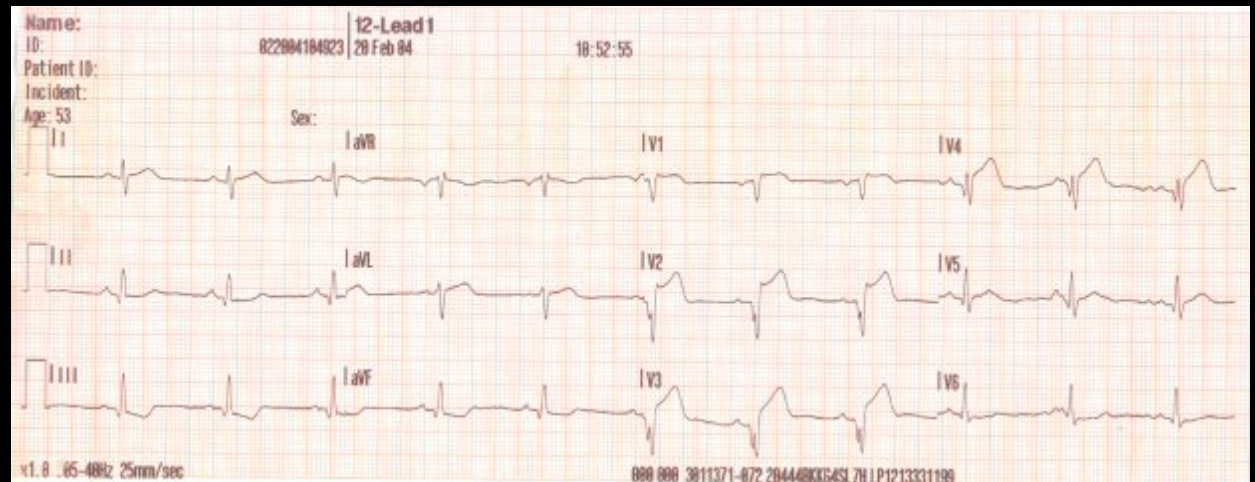
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CHEST PAIN

- Monitor
- Oxygen
- EKG
- NTG
- Morphine
- ASA
- Diesel

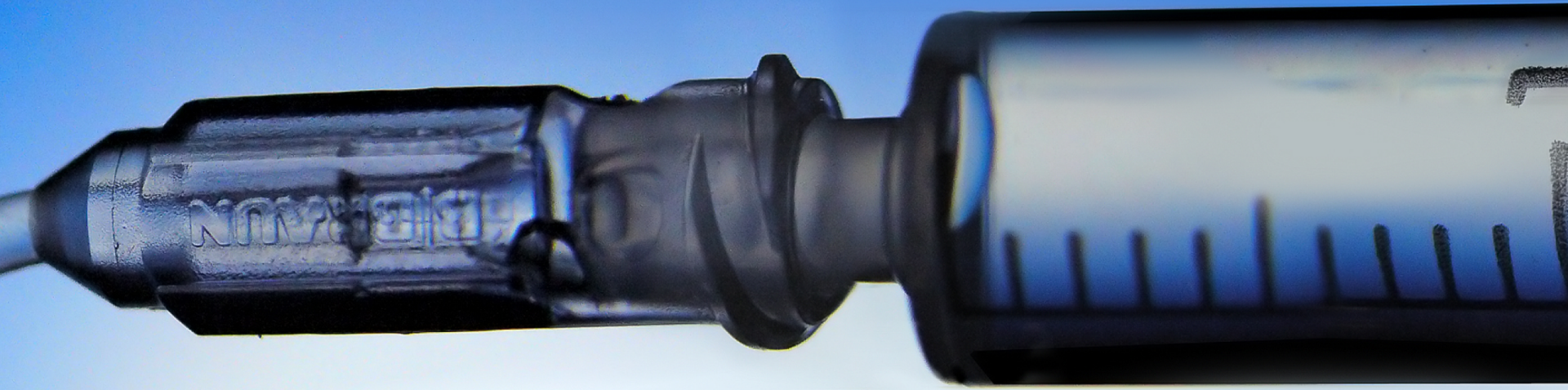


MONA

- ✓ Morphine
- ✓ Oxygen
- ✓ Nitroglycerin
- ✓ Aspirin



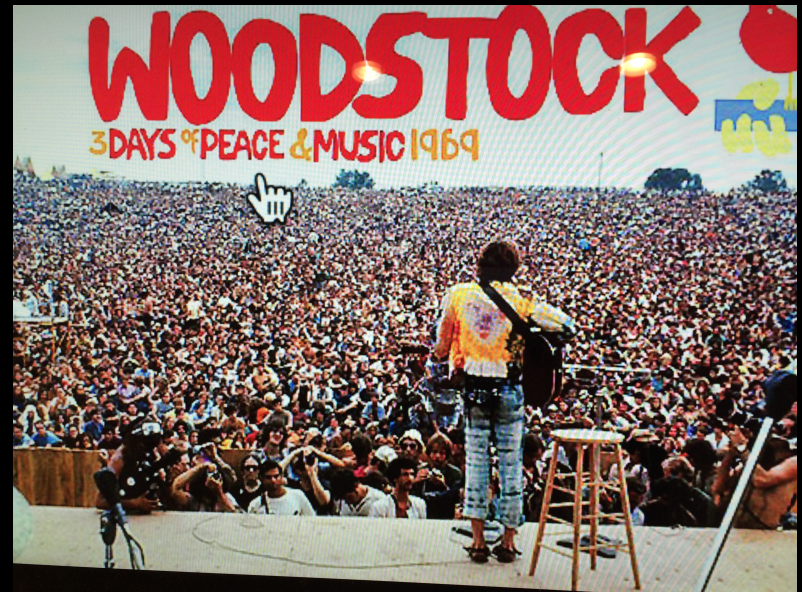
The Death of MONA in ACS: Part I - Morphine



R.E.B.E.L. *EM*

MORPHINE IN HEART FAILURE

- Rationale
 - 1960s
 - Vasodilatory properties
 - Decreased venous tone
 - Increased venous pooling
 - Decreased cardiac filling pressures
 - Anxiolytic effects
 - Reducing sympathetic nervous system activity
 - Lowering preload and afterload



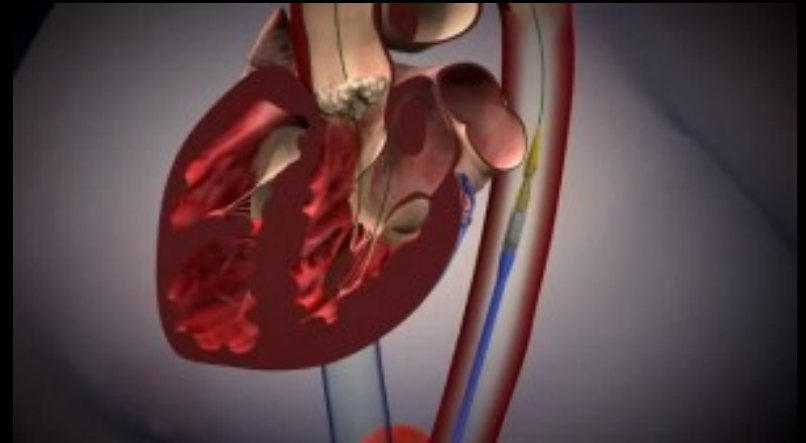
MORPHINE IN CHEST PAIN

- Rationale
 - Reduction of
 - Sympathetic stress
 - Catecholamine release



MORPHINE HARM

- Depressed myocardium
 - Riggs et al
 - Circ Shock, 2016
- Respiratory depression
 - Radke et al
 - Clin Rev Allergy Immunol, 2014



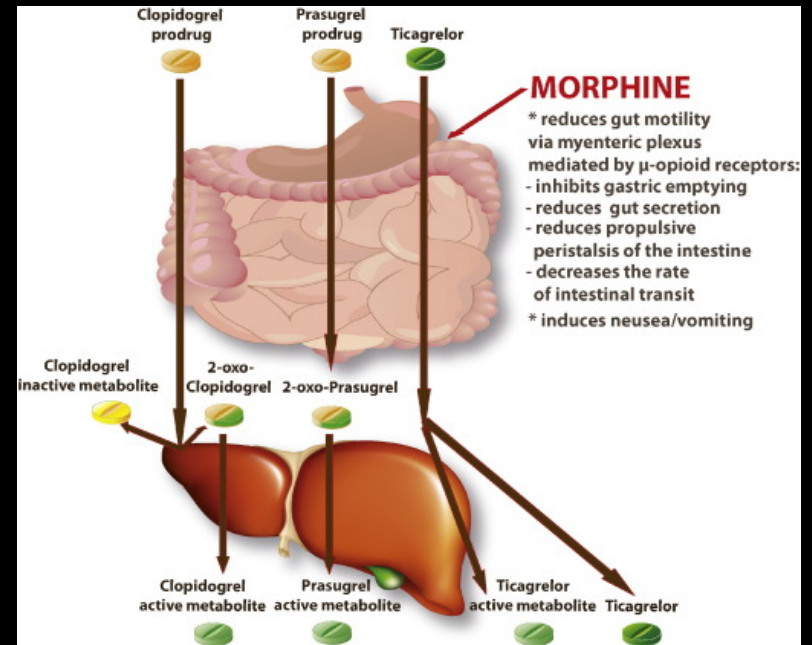
MORPHINE HARM

- Nausea/vomiting
 - 1/5 to 1/3
 - Smith et al
 - Eur J Pharmacol, 2014
- Attenuated platelet inhibition
 - Kubica et al
 - Eur Heart J, 2016



MORPHINE HARM

- Morphine may impair the absorption of anti-platelet and other oral drugs by inhibiting normal gastric activity
- 5-fold increased likelihood of high platelet reactivity
 - Parodi, et al
 - Circ Cardio Interv, 2015



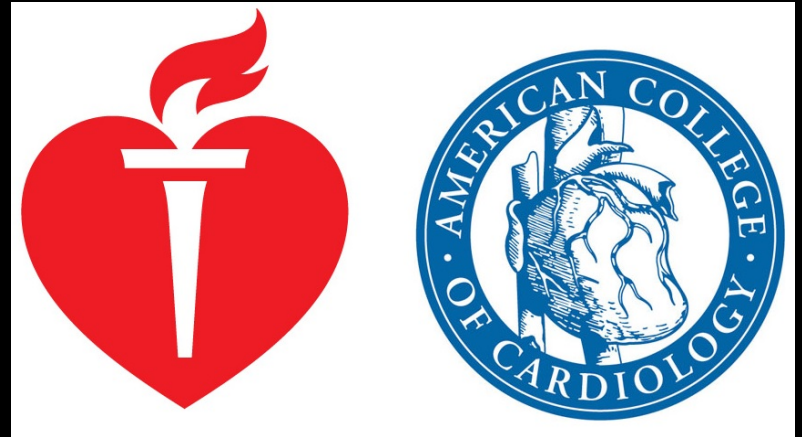
MORPHINE IN HEART FAILURE

- Morphine increased the 30 day mortality when used in acute heart failure patients in the ED
 - At every time point
 - Miro et al, Chest 2017



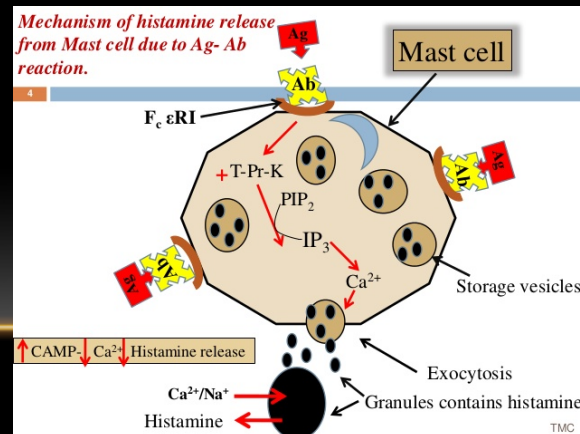
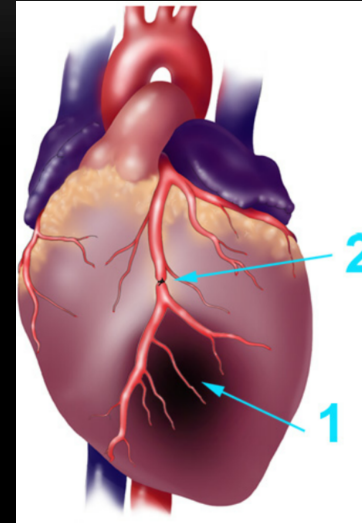
MORPHINE IN HEART FAILURE

- AHA/ACC 2013 Guidelines
 - Do not recommend opiates



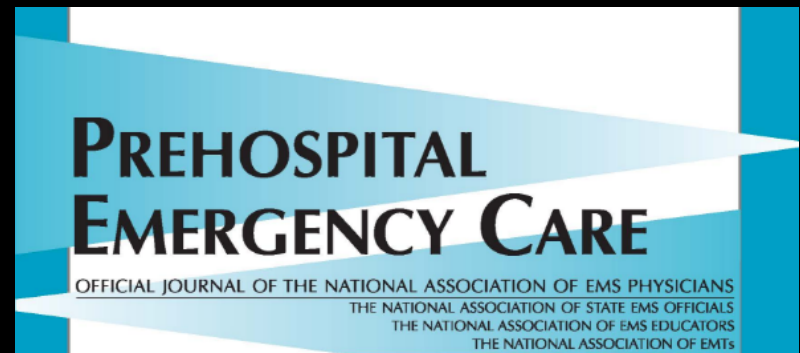
MORPHINE HARM

- ACS
 - Increased infarct size
 - Increased mortality
 - Meine et al (CRUSADE)
 - Am Heart J, 2005
- Histamine release
 - Barke et al
 - Life Sci, 1993
 - Shapiro et al
 - Crit Care Med 1995



FENTANYL

- Highly lipophilic
 - Crosses blood-brain barrier rapidly
 - Onset is around 30 seconds
 - Off in 20 minutes
- Less side effects
 - Fleischman et al
 - Prehospital Emerg Care, 2010



FENTANYL VERSUS MORPHINE FOR CHEST PAIN

- Fentanyl
 - Comparable to morphine in providing analgesic effect
 - Less nausea and 1/2 emesis
 - Hypotension seen with morphine but not fentanyl
 - Safe and effective alternative to morphine
 - Weldon et al
 - Prehospital Emerg Care 2016

COMPARISON OF FENTANYL AND MORPHINE IN THE PREHOSPITAL TREATMENT OF ISCHEMIC TYPE CHEST PAIN

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ABSTRACT

In the treatment of acute coronary syndromes, reduction of sympathetic stress and catecholamine release is an important therapeutic goal. One method used to achieve this goal is pain reduction through the systemic administration of analgesia. Historically, morphine has been the analgesic of choice in ischemic cardiac pain. This randomized double-blind controlled trial seeks to prove the utility of fentanyl as an alternate first-line analgesic for ischemic-type chest pain in the prehospital setting. Successive patients who were treated for suspected ischemic chest pain in the emergency medical services system were considered eligible. Once chest pain was confirmed, patients received oxygen, aspirin, and nitroglycerin therapy. If the ischemic-type chest pain continued the patient was randomized in a double-blinded fashion to treatment with either morphine or fentanyl. Pain scale scores, necessity for additional dosing, and rate of adverse events between the groups were assessed every 5 minutes and were compared using t-testing, Fisher's Exact test, or Analysis of Variance (ANOVA) where appropriate. The primary outcome of the study was incidence of hypotension and the secondary outcome was pain reduction as measured by the visual analog score and numeric rating score. A total of 207 patients were randomized with 187 patients included in the final analysis. Of the 187 patients, 99 were in the morphine group and 88 in the fentanyl group. No statistically significant difference between the two groups with respect to hypotension was found (morphine 5.1% vs. fentanyl 0%, $p = 0.06$). Baseline characteristics, necessity for additional dosing, and other adverse events between the two groups were not statistically different. There were no significant differences between the changes in visual analog scores and numeric rating scale scores for pain between the two groups ($p = 0.16$ and $p = 0.15$, respectively). This study supports that fentanyl and morphine are comparable in providing analgesia for ischemic-type chest pain. Fentanyl appears to be a safe and effective alternative to morphine for the management of

chest pain in the prehospital setting. **Key words:** chest pain; prehospital; morphine; fentanyl; acute pain

PREHOSPITAL EMERGENCY CARE 2015;Early Online:1-7

INTRODUCTION

Ischemic-type chest pain is the most common chief complaint resulting in transport to hospital.^{1,2} Currently, both fentanyl and/or morphine may be carried by EMS systems with morphine being predominantly used to treat suspected ischemic-type chest pain. Given the large patient volume, there are operational and patient safety-related advantages of utilizing a single narcotic agent.

In acute coronary syndromes (ACS), sympathetic stress and catecholamine release is associated with myocardial irritability, arrhythmia, and infarct size.³ As a result, analgesia is an important therapeutic goal, which is achieved with either fentanyl or morphine. Historically morphine has been the analgesic of choice in ischemic cardiac pain.⁴ Morphine is endorsed by the American Heart Association in ST segment elevation myocardial infarction with a class 1 indication; however, its use in acute coronary syndromes may be associated with increased mortality.⁵

The modern era of cardiac care creates the demand for rapid diagnostic and treatment times involving all aspects of ACS care.⁶ First medical contact to treatment is a well-established time for benchmarking, quality improvement, and most importantly patient outcomes. It follows that a rapid onset of action of any cardiac treatment including analgesia is ideal. Because of its immediate onset of action and lower histamine release, allowing for more hemodynamic stability, intravenous fentanyl may be a better option than morphine in the pre-hospital setting.⁷

The goal of this study was to evaluate the utility of fentanyl as a superior alternate first line analgesic for ischemic chest pain in the pre-hospital setting. We tested the hypothesis that the administration of fentanyl in this setting would result in a lower incidence of hypotension compared with morphine.

METHODS

Case Identification

This was a prospective double-blind randomized controlled trial of morphine vs. fentanyl in the treatment

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TAKE HOME

- If you use opiates for chest pain, switch to fentanyl if you have not already!





"That's all Folks!"