DOES ANALGESIA MASK ABDOMINAL PAIN?

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21.05.2016

Does analgesia mask abdominal pain?

EVIDENCE BASED MEDICINE

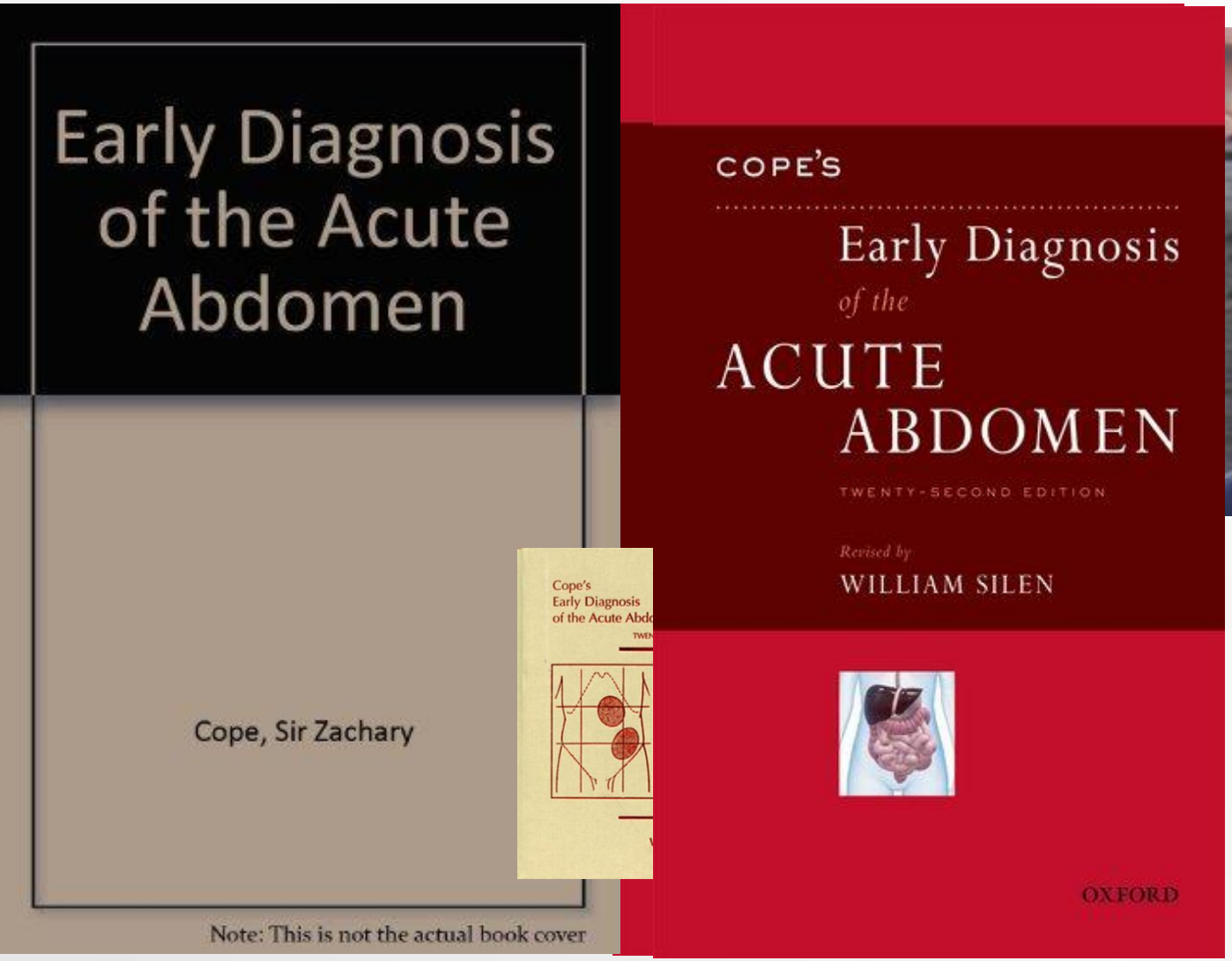
- YES / NO
- If yes---When?
- What about your routine clinical practice?

History

- In 1921, when Zachery Cope first made his warning of withholding morphine, he was justified.

HISTORY
Abdominal Pain vs Pain Relief

- Surgical tradition
- Withholding the use of analgesics in patients with acute abdominal pain until a diagnosis and management plan---by a surgeon.
- ***COPE's Early Diagnosis of the Acute Abdomen.***
- Cope claimed that analgesia would mask signs and symptoms, delay diagnosis, and lead to increased morbidity and mortality.



[Carlos Manterola](#) MD, PhD

1. The principles of diagnosis in acute abdominal disease

Before entering on the detailed consideration of the various forms of acute abdominal pain, it is well to lay down certain principles that form the basis of all successful diagnosis in urgent abdominal disease.

Necessity of making a diagnosis

The first principle is that of the *necessity of making a serious and thorough attempt at diagnosis, usually predominantly by means of the history and physical examination.*

Abdominal pain is one of the most common conditions that calls for prompt diagnosis and treatment. Usually, though by no means always, other symptoms accompany the pain, but in most cases of acute abdominal disease pain is the main symptom and complaint. The very terms "acute abdomen" and "abdominal emergency," which are constantly applied to such cases, signify the need for prompt diagnosis and

The realization, likely erroneous, that narcotics can obscure the clinical picture has given rise to the unfortunate dictum that these drugs should never be given until a diagnosis has been firmly established.

With the numerous layers of triage nurses, medical students, residents. and attending physician in modern emergency units, and with the addition of time-consuming tests often done before an adequate history and physical examination. The suffering patient is sometimes forced to wait for many hours before any relief is ordered.

This cruel practice is to be condemned. But I suspect that it will take many generations to eliminate it because the rule has become so firmly ingrained in the minds of physicians.

The ideal solution to this problem is for **a responsible surgeon** to evaluate the patient at the earliest possible time.

Totally—923 patients---477 patients w. analgesic / 446 placebo patients

All—randomized,

Prospective placebo controlled.

8 STUDIES AND 1 COCHRANE REVIEW

1

Safety of early pain relief for acute abdominal pain

Alex R Attard, Michael J Corlett, Nigel J Kidner, Apsara P Les

1992, BMJ
Randomized
Double-blinded
100 patients
20 mg papaveretum

Abstract

***Objectives*—(*a*) to determine the efficacy of papaveretum in treating pain when administered early to patients presenting with acute abdominal pain and (*b*) to assess its effect on subsequent diagnosis and management.**

***Design*—Prospective, randomised, placebo controlled study.**

***Setting*—Walsgrave Hospital, Coventry.**

***Subjects*—100 consecutive patients with clinically significant abdominal pain who were admitted as emergencies to a surgical firm.**

***Interventions*—Intramuscular injection of up to 20 mg papaveretum or an equivalent volume of saline.**

***Outcome measures*—Pain and tenderness scores, assessment of patient comfort, accuracy of diagnosis, and management decisions.**

***Results*—Median pain and tenderness scores were lower after papaveretum (pain score 8·3 in control group and 3·1 in treatment group, p<0·0001; tender-**

patients with
clusions can b
The purpo
efficacy of pa eretum given early to patients with acute abdom pain and to look at its effect on subsequent diagnosis and management decisions.

Patients and methods

Patients admitted as emergency cases with acute (<48 hours' duration) abdominal pain sufficiently severe to warrant opiate analgesia were approached for entry into the study. Those under 16 years old and those with a suspected leaking abdominal aortic aneurysm were excluded from the study. Ethical approval was obtained from the Coventry research and ethical committee. All who participated in the study gave valid consent.

Patients were first seen by the admitting house officer, who assessed their abdominal pain and tenderness by asking them to complete a linear analogue scale (score 1). The scale ranged from 0 for no pain to 10 cm

Attard and coworkers performed a randomized double-blind study and found that the early administration of opiate analgesics to patients with acute abdominal pain relieved discomfort without compromising diagnosis or treatment.

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ACADEMIC EMERGENCY MEDICINE DEC 1996 VOL 3/NO 12

1996, Academic Emerg. Med.
Randomized
Double-blinded
71 patients
Morphine

SCIENTIFIC ADVANCES

Intravenous Morphine for Early Pain Relief in Patients with Acute Abdominal Pain

Steven Pace, MD, Thomas F. Burke, MD

ABSTRACT

Objective: To determine whether morphine affects evaluation or outcome for patients with acute abdominal pain.

Methods: Prospective, double-blind, placebo-controlled administration of morphine sulfate (MS) or normal saline (NS) in the setting of acute abdominal pain. The study was performed at a military ED with an annual census of 60,000 visits. Patients ≥18 years old who had abdominal pain for ≤48 hours were included. Patients who were allergic to MS or who had systolic blood pressures <90 mm Hg were excluded. The physicians indicated a provisional diagnosis, a differential diagnosis, and a provisional disposition. Study solution was titrated to the patient's assessment of adequate analgesia (up to a volume equivalent of 20 mg of MS); pain response was monitored using a visual analog scale (VAS). The patients were followed until diagnosis occurred or symptoms resolved.

Results: Of 75 patients enrolled, 71 completed the study; 35 patients received MS and 36 received NS. More than half (44; 62%) of the patients were admitted from the ED; 28 patients underwent surgery. The VAS pain

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The Journal of Emergency Medicine, Vol 15, No 6, pp 775–779, 1997

ELSEVIER

PII S0736-4679(97)00183-2

1997, J of Emerg. Med.
Randomized
blinded
48 patients
Morphine

Original Contributions

THE USE OF ANALGESICS IN PATIENTS WITH ACUTE ABDOMINAL PAIN

Frank LoVecchio, DO,*† Neill Oster, MD,†‡ Kai Sturmann, MD, FACEP,§ Lewis S. Nelson, MD,¶ Scott Flashner, MD,†‡ and Ralph Finger, MD†‡

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☐ **Abstract—Analgesics in patients with acute abdominal pain are often withheld for fear that they may change**

of these patients. In the 1987 edition of Cope's Early Diagnosis of the Acute Abdomen, it is warned

LoVecchio and associates---The use of morphine was associated with some change in tenderness and localization in half the patients but led to no delays in care or eventual morbidity.

Bernard Vermeulen, MD
Alfredo Morabia, MD
Pierre-François Unger, MD
Catherine Goehring, MD
Christian Grangier, MD
Igor Skljarov, MD
François Terrier, MD

1999, Radiology
Randomized
Double-blinded
340 patients
Morphine

Acute Appendicitis: Influence of Early Pain Relief on the Accuracy of Clinical and US Findings in the Decision to Operate—A Randomized Trial[1]

PURPOSE: To determine the influence of early pain relief on the diagnostic performance of ultrasonography (US) and on the appropriateness of the surgical decision.

MATERIALS AND METHODS: A prospective randomized, double-blind placebo-controlled trial with morphine was conducted. A visual analog scale was used to evaluate pain in 340 patients aged 16 years or older. US was performed with a standardized protocol. Diagnosis was confirmed at histologic analysis or, in the patients released without surgery, at follow-up.

RESULTS: One hundred seventy-five patients were injected with morphine, and 165 were injected with the placebo. Pain relief was stronger in the morphine group. In the morphine group, US had lower (71.1%) sensitivity (difference, −9.5%; 95% CI, −18.5%, −0.5%) and higher (65.2%) specificity (difference, 11.4%; 95% CI, 1.0%, 21.8%). This group had also a higher positive predictive value (64.6%) and a lower

[1] From the Emergency Department (B.V., P.F.U.), Clinical Epidemiology Division (A.M., C. Goehring), and the Radiology Department (C. Grangier, I.S., F.T.), Hôpitaux Universitaires de Genève, Rue Micheli-de-Crest 24, CH-1211 Genève 14, Switzerland. From the 1997 RSNA scientific assembly. Received March 19, 1998; Revision requested June 17; revision received July 16; accepted September 8. **Address reprint requests to**

In a study by Vermeulen and colleagues---The use of morphine improved pain compared with that of placebo and was not found to change the appropriateness of the surgeons' decision making.

not influence the appropriateness of the decision. The appropriateness to discharge

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AMERICAN JOURNAL OF EMERGENCY MEDICINE ■ Volume 18, Number 7 ■ November 2000

2000, AJEM
Randomized
Double-blinded
68 patients
Tramadol

Prospective Randomized Study of Analgesic Use for ED Patients With Right Lower Quadrant Abdominal Pain

MALCOLM MAHADEVAN, MD AND LOUIS GRAFF, MD

Giving an analgesic to patients with right lower quadrant (RLQ) pain causes greater alteration of abdominal signs predictive of appendicitis than placebo. A randomized double-blinded controlled trial of 68 patients who received either tramadol or placebo. Absence or presence of seven abdominal signs (tenderness on light and deep palpation, tenderness in the RLQ and elsewhere, rebound, cough, and percussion tenderness) and pain (100 mm Visual Analog Scale [VAS]) at 0 and 30 minutes were recorded. The predictive value of each physical finding (PF) was measured using an 11-point PF score weighted by likelihood ratios. There was significant reduction in mean VAS of 14.2 mm (95% CI 5.6 to 22.8) in analgesic group versus 6.5 mm (95% CI 1.6 to 11.4) in placebo group. The analgesic group had less normalization of signs as measured by the PF score in all patients [32 of 154 (20.8%) versus 40 of 121 (33.1%) (P = .031)] and in those with proven appendicitis [4 of 33 (12.1%) versus 10/22 (45.5%) (P = .014)]. Parenteral use of tramadol in emergency department patients with RLQ pain resulted in significant levels of pain reduction without concurrent normalisation of abdominal examination findings indicative of acute appendicitis. (Am J Emerg Med 2000;18:753-756.

clinical diagnosis,[6-8] diagnostic confidence,[8] and management or disposition decisions.[6-8] Although abdominal signs are vital to the diagnostic process in patients with abdominal pain, no study has in the past attempted to evaluate which and how much abdominal signs change with the administration of analgesics.

Our study was thus designed to examine whether an intravenously administered analgesic would significantly alter the number and quality of seven predetermined abdominal physical examination findings. Our hypothesis was that the administration of an intravenous analgesic (tramadol hydrochloride) would normalize more abdominal signs indicative of acute appendicitis than would placebo.

METHODS

The study was conducted in Singapore at the National University Hospital, which provides urban tertiary care with an annual ED census of 85,000. A convenience sample of

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Effects of Morphine Analgesia on Diagnostic Accuracy in Emergency Department Patients with Abdominal Pain: A Prospective, Randomized Trial

Stephen H Thomas, MD, MPH, William Silen, MD, FACS, Farah Cheema, MD
Sohail Aman, MD, Joshua N Goldstein, MD, PhD, Alan M Kumar, MD, Tho

2003, *J Am Coll Surg*
Randomized
Double-blinded
74 patients
Morphine

BACKGROUND: Because of concerns about masking important physical findings, t
ing whether it is safe to provide analgesia to patients with undiffere
purpose of this study was to address the effects of analgesia on t
diagnostic accuracy for patients with abdominal pain.

STUDY DESIGN: The study was a prospective, double-blind clinical trial in which a t Emergency Department (ED) patients with undifferentiated abdominal pain were randomized to receive placebo (control group, n = 36) or morphine sulphate (MS group, n = 38). Diagnostic and physical examination assessments were recorded before and after a 60-minute period during which study medication was titrated. Diagnostic accuracy and physical examination changes were compared between groups using univariate statistical analyses.

RESULTS: There were no differences between control and MS groups with respect to changes in physical or diagnostic accuracy. The overall likelihood of change in severity of tenderness was similar in MS (37.7%) as compared with control (35.3%) patients (risk ratio [RR] 1.07, 95% confidence interval [CI] 0.64–1.78). MS patients were no more likely than controls to have a change in pain location (34.0% versus 41.2%, RR 0.82, 95% CI 0.50–1.36). Diagnostic accuracy did not differ between MS and control groups (64.2% versus 66.7%, RR 0.96, 95% CI 0.73–1.27). There were no differences between groups with respect to likelihood of any change occurring in the diagnostic list (37.7% versus 31.4%, RR 1.20, 95% CI 0.71–2.05). Correlation with

Randomized Clinical Trial of Morphine in Acute Abdominal Pain

E. John Gallagher, MD
David Esses, MD
Conroy Lee, MD
Michael Lahn, MD
Polly E. Bijur, PhD

From the Department of Emergency Medicine, Albert E
Medical Center, Bronx, NY.

2006, Annals of EM
Randomized
Double-blinded
160 patients
Morphine

Study objective: Administration of analgesia to patients with acute abd nal pain is controversial. We test the hypothesis that morphine given to emergency department (ED) patients with acute abdominal pain will reduce discomfort and improve clinically important diagnostic accuracy.

Methods: Pain was measured with a standard 0- to 100-mm visual analog scale. ED patients with acute abdominal pain were randomized in a double-blind fashion to 0.1 mg/kg intravenous morphine or placebo. The primary endpoint was the difference between the 2 study arms in clinically important diagnostic accuracy. Clinically important diagnostic accuracy was defined a priori by its complement, clinically important diagnostic error, using 2 independent, blinded investigators to identify any discordance between the provisional and final diagnoses that might adversely affect the patient's health status. The provisional diagnosis was provided by an ED attending physician, who examined the patient only once, 15 minutes after administration of the study agent. The final diagnosis was obtained through follow-up at least 6 weeks after the index ED visit.

Results: We randomized 160 patients, of whom 153 patients were available for analysis, 78 patients in the morphine group and 75 patients in the placebo group. Baseline features were similar in both groups, including initial median visual analog scale scores of 98 mm and 99 mm. The median decrease in visual analog scale score at 15 minutes was 33 mm in the morphine group and 2 mm in the placebo group. There were 11 instances of diagnostic discordance in each group, for a clinically important diagnostic accuracy of 86% (67/78) in the morphine group and 85% (64/75) in

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Morphine analgesia in patients with acute appendicitis: a randomised double-bl

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Accepted 3 March 2008

ABSTRACT

Background: The administration of analgesics to patients with acute abdominal pain due to acute appendicitis is controversial. A study was undertaken to assess the analgesic effect of morphine in patients with acute appendicitis.

Methods: A randomised double-blind clinical trial was conducted in Sina hospital, a general teaching hospital, from January 2004 to March 2005. Patients scheduled for appendectomy were randomised to receive 0.1 mg/kg morphine sulfate or saline (0.9%) to a maximum dose of 10 mg over a 5 min period. Patients were examined by surgeons not involved in their care before and after drug administration and their pain intensity and signs were recorded at each visit. The physicians were also asked to indicate their own treatment plan. The main outcome measures were pain intensity using a visual analogue scale (VAS) and signs of acute appendicitis. A favourable reduction in VAS score was defined as a change of >13 mm.

Results: Of the 71 patients enrolled in the study, 35 were allocated to receive morphine and 36 to receive placebo. One patient left the hospital before receiving morphine. No significant differences were seen between the two groups with regard to age, sex and initial VAS score. A more favourable change in VAS score was reported in the morphine group with a significantly greater reduction in the median VAS score than in the placebo group. Morphine administration did not cause significant changes in patients' signs or in the physicians' plans or diagnoses. No adverse events were seen in either group.

Conclusion: Morphine can reduce pain in patients with acute appendicitis without affecting diagnostic accuracy.

Trial registration number: NCT00477061.

diagnosis of acute
this purpose.

A randomised
conducted to eva
pain reduction an
with a diagnosis
the ED of Sina Ho , Tehran, a general teaching hospital and a ref surgical centre in the south of Tehran, between January 2004 and March 2005.

METHODS

Participants

Patients who presented to the ED with clinical signs of acute appendicitis and were scheduled to undergo appendectomy but had to wait for at least 1 h in the ED before the operation were enrolled in the study.

The decision to perform an appendectomy was made by 4th year surgical residents or the on-call attending surgeon. Exclusion criteria included suspicion of perforated appendicitis, age <13 years, pregnancy (according to history and β-HCG result), opium addiction, systolic blood pressure <90 mm Hg, known cases of chronic obstructive pulmonary disease, known sensitivity to morphine, a history of sickle cell disease, self-administration of analgesics before enrolment and refusal to participate in the study. The trial was carried out in accordance with the Declaration of Helsinki and subsequent revisions and approved by the Sina Surgery and Trauma Research Center and Institutional Review Board at Tehran University of Medical Sciences. Written informed consent was obtained before entering to the study.

2008, Emerg Med J
Randomized
Double-blinded
71 patients
Morphine

Manterola C, Vial M, Moraga J, Astudillo P.
Analgesia in patients with acute abdominal pain.
Cochrane Database of Systematic Reviews 2011, Issue 1. Art. No.: CD005660.
DOI: 10.1002/14651858.CD005660.pub3.

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Cochrane Library

Cochrane Database of Systematic Reviews

Analgesia in patients with acute abdominal pain (Review)

Manterola C, Vial M, Moraga J, Astudillo P

Manterola C, Vial M, Moraga J, Astudillo P. Analgesia in patients with acute abdominal pain. Cochrane Database of Systematic Reviews 2011, Issue 1. Art. No.: CD005660. DOI: 10.1002/14651858.CD005660.pub3.

What about elderly patients with acute abdominal pain?

Turkish Journal of Trauma & Emergency Surgery
Original Article

Ulus Travma Acil Cerrahi Derg 2012;18 (5):397-404
Klinik Çalışma
doi: 10.5505/tjtes.2012.62534

Randomized controlled trial of morphine in elderly patients with acute abdominal pain

Akut karın ağrısı olan yaşlı hastalarda morfinin randomize kontrollü bir çalışması

Faruk GÜNGÖR,[1] Mutlu KARTAL,[2] Fırat BEKTAŞ,[2] Secgin SÖYÜNCÜ,[2] Özlem YİĞİT,[2] Ayhan MESCİ[3]

BACKGROUND

The objective of this study was to determine the clinically important change in diagnostic accuracy and physical examination in the morphine *vs.* placebo group.

METHODS

Subjects were randomized in a 1:1 ratio to receive a single dose intravenous morphine or placebo in a blinded fashion. Primary outcome measure was to determine if there was a clinically important change in diagnostic accuracy and physical examination in the morphine *vs.* placebo group.

AMAÇ

Bu çalışmanın amacı, morfin ve plasebo gruplarındaki klinik olarak önemli tanısal doğruluk ve fizik muayenedeki değişiklikleri belirlemektir.

GEREÇ VE YÖNTEM

Hastalar 1:1 oranında kör olarak morfin veya plasebo almak için randomize edildi. Çalışmanın birincil takip verisi, morfin ve plasebo gruplarındaki tanısal doğruluk ve fiziksel incelemede klinik olarak önemli değişiklikler olup olmadığını belirlemektir.

RECENT STUDIES

2015, Patient Controlled Analgesia

PAin SoluTions In the Emergency Setting (PASTIES)—patient controlled analgesia versus routine care in emergency department patients with non-traumatic abdominal pain: randomised trial

Jason E Smith,[1,2,3] Mark Rockett,[1,3] Siobhan Creanor,[4] Rosalyn Squire,[1,3] Chris Hayward,[5] Paul Ewings,[6] Andy Barton,[6] Colin Pritchard,[6] Victoria Eyre,[5] Laura Cocking,[5] Jonathan Benger[7] on behalf of the PASTIES research team

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[4]Centre for Biostatistics, Bioinformatics and Biomarkers, Plymouth University Peninsula Schools of Medicine and Dentistry, Plymouth, UK

[5]Peninsula Clinical Trials Unit, Plymouth University Peninsula

ABSTRACT

OBJECTIVE

To determine whether patient controlled analgesia (PCA) is better than routine care in providing effective analgesia for patients presenting to emergency departments with moderate to severe non-traumatic abdominal pain.

DESIGN

Pragmatic, multicentre, parallel group, randomised controlled trial

SETTING

Five English hospitals.

PARTICIPANTS

200 adults (66% (n=130) female), aged 18 to 75 years, who presented to the emergency department requiring intravenous opioid analgesia for the treatment of

study period asleep, length of hospital stay, and satisfaction with pain management.

RESULTS

196 participants were included in the primary analyses (99 allocated to PCA and 97 to treatment as usual). Mean total pain experienced was 35.3 (SD 25.8) in the PCA group compared with 47.3 (24.7) in the treatment as usual group. The adjusted between group difference was 6.3 (95% confidence interval 0.7 to 11.9). Participants in the PCA group received significantly more morphine (mean 36.1 (SD 22.4) *v* 23.6 (13.1) mg; mean difference 12.3 (95% confidence interval 7.2 to 17.4) mg), spent less of the study period in moderate or severe pain (32.6% *v* 46.9%; mean difference 14.5% (5.6% to 23.5%)), and were more likely to be perfectly or very satisfied with the management of their pain

Last Study for Analgesia in Patients with Acute Abdominal Pain

KETAMIN / MORPHiNE FOR ACUTE ABDOMINAL PAIN

Intravenous Subdissociative-Dose Ketamine Versus Morphine for Analgesia in the Emergency Department: A Randomized Controlled Trial

Sergey Motov, MD*; Bradley Rockoff, MD; Victor Cohen, PharmD; Illya Pushkar, MPH; Antonios Likourezos, MA, MPH; Courtney McKay, PharmD; Emil Soleyman-Zomalan, MD; Peter Homel, PhD; Victoria Terentiev, BA; Christian Fromm, MD

*Corresponding Author. E-mail: smotov@maimonidesmed.org, Twitter: @smotovmd.

Study objective: We assess and compare the analgesic efficacy and safety of subdissociative intravenous-dose ketamine with morphine in emergency department (ED) patients.

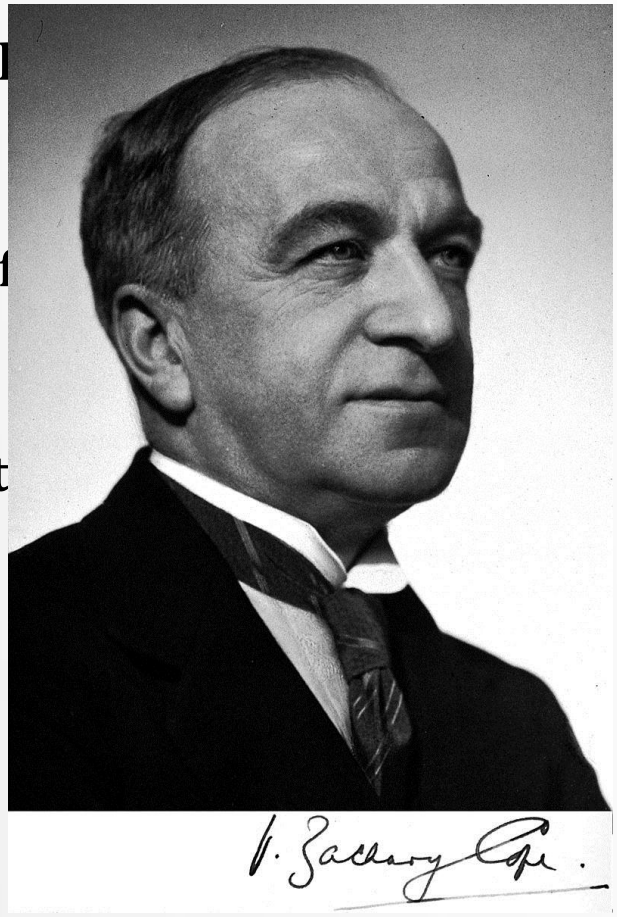
Methods: This was a prospective, randomized, double-blind trial evaluating ED patients aged 18 to 55 years and experiencing moderate to severe acute abdominal, flank, or musculoskeletal pain, defined as a numeric rating scale score greater than or equal to 5. Patients were randomized to receive ketamine at 0.3 mg/kg or morphine at 0.1 mg/kg by intravenous push during 3 to 5 minutes. Evaluations occurred at 15, 30, 60, 90, and 120 minutes. Primary outcome was reduction in pain at 30 minutes. Secondary outcome was the incidence of rescue analgesia at 30 and 60 minutes.

Results: Forty-five patients per group were enrolled in the study. The primary change in mean pain scores was not significantly different in the ketamine and morphine groups: 8.6 versus 8.5 at baseline (mean difference 0.1; 95% confidence interval −0.46 to 0.77) and 4.1 versus 3.9 at 30 minutes (mean difference 0.2; 95% confidence interval −1.19 to 1.46; P=.97). There was no difference in the incidence of rescue fentanyl analgesia at 30 or 60 minutes. No statistically significant or clinically concerning changes in vital signs were observed. No serious adverse events occurred in either group. Patients in the ketamine group reported increased minor adverse effects at 15 minutes post–drug administration.

Conclusion: Subdissociative intravenous ketamine administered at 0.3 mg/kg provides analgesic effectiveness and apparent safety comparable to that of intravenous morphine for short-term treatment of acute pain in the ED. [Ann Emerg Med. 2015;66:222–229.]

Conclusion

- **Early and appropriate pain relief for p abdominal pain is humane.**
- **Use of analgesia does not adversely af accuracy or clinical decision making.**
- **Analgesics should be considered part management of every such patient.**



CONTRIBUTIONS?

QUESTIONS?