



IL CONTROLLO DEL DOLORE IN AMBIENTE EXTRA-OSPEDALIERO

Paolo Beccaria
Aiut Alpin Dolomites
9° Corso Terra Aria
Solda / Val Gardena
1-7 giugno 2008

IL DOLORE: LA SUA STORIA E LA STORIA DELL'UOMO



© Original Artist
Reproduction rights obtainable from
www.CartoonStock.com

VISIONE PRIMITIVA:

**PRESENZA DI SPIRITO
MALVAGIO NEL SOFFERENTE**

**RAZIONALIZZAZIONE
IMPERFETTA CHE ATTENUA
L'ANSIA PER FENOMENO
IGNOTO**

**CURANTE SCIAMANO PRATICA
FERITE PER FAR FUORIUSCIRE
LO SPIRITO MALIGNO**

IL DOLORE: LA SUA STORIA E LA STORIA DELL'UOMO



GRECIA 400 A.C. circa

PER IPPOCRATE ALTERAZIONE DI EQUILIBRIO NATURALE DOVUTO A FATTORI ESTERNI (alimentazione, clima, umori)

PER ARISTOTELE E PLATONE E' EMOZIONE

DOLORE E IL SUO OPPOSTO PIACERE SONO PERCEPITI DAL CUORE

IL DOLORE: LA SUA STORIA E LA STORIA DELL'UOMO



GALENO 131-210 d.c.

UN VERO SCIENZIATO...

**DOLORE E' UNA SENSAZIONE LOCALIZZATA
NEL CERVELLO**

IL DOLORE: LA SUA STORIA E LA STORIA DELL'UOMO

.... SUPERATO IL MEDIOEVO, OLTRE MILLE ANNI DI OSCURANTISMO SCIENTIFICO IN OCCIDENTE, DURANTE I QUALI IL DOLORE ERA PIU' EVOCATO CHE STUDIATO



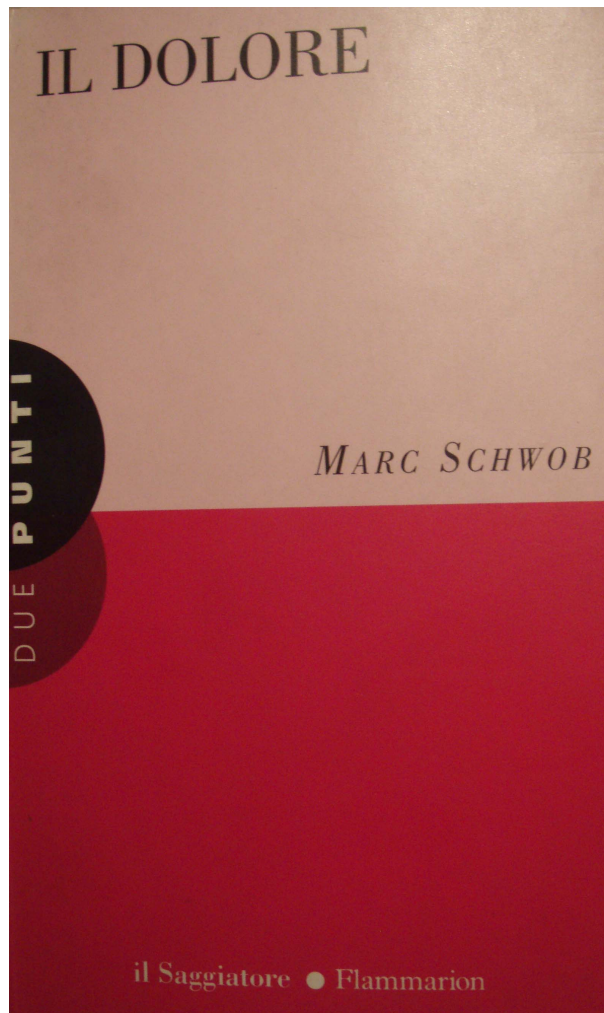
IL DOLORE: LA SUA STORIA E LA STORIA DELL'UOMO

A PARTIRE DAL RINASCIMENTO IN POI NASCE LA VISIONE ANATOMICA E FISIOLOGICA MODERNA:

IL DOLORE E' UNA SENSAZIONE TRASMESSA DAL SISTEMA NERVOSO



IL DOLORE: LA SUA STORIA E LA STORIA DELL'UOMO



OGGI:

**SENSAZIONE NERVOSA DALLE
PRECISE CARATTERISTICHE DI
CAMMINO E DI FUNZIONAMENTO
NEUROLOGICO, NEUROBIOLOGICO E
NEUROBIOCHIMICO**

IL DOLORE: LA SUA STORIA E LA STORIA DELL'UOMO

LA LOTTA CONTRO IL DOLORE FA PROGRESSI:

OPPIO GIA' NOTO AI TEMPI DEGLI EGIZI 1500 a.c.

IPNOSI MESMER 1810

N2O HICKMANN 1828

CLOROFORMIO SOUBERAIN 1831

ETERE MORTON 1864

ASPIRINA HOFFMANN 1897

VERONAL (BARBITAL BAYER) 1903

IL DOLORE: LA SUA STORIA E LA STORIA DELL'UOMO



**NON BASTA AVERE A DISPOSIZIONE STRUMENTI
EFFICACI PER ALLEVIARE IL DOLORE/SOFFERENZA**

L'EVOLUZIONE DELL'ANESTESIA PASSA ATTRAVERSO:

**SCETTICISMO DEI MEDICI PER L'ELIMINAZIONE DI UN
FONDAMENTALE SINTOMO DIAGNOSTICO**

IL DOLORE: LA SUA STORIA E LA STORIA DELL'UOMO

.. E LA STRENUA OPPOSIZIONE DEI CHIRURGHICI PER I QUALI IL DOLORE E' PARTE INTEGRANTE ED INELUTTABILE DELLE OPERAZIONI



" LA PERDITA DI COSCIENZA OTTENUTA CON UN'EBBREZZA PASSEGGERA E' QUALCOSA DI DEGRADANTE ED AVVILENTE CHE QUALSIASI UOMO DOTATO DI UN PO' DI CORAGGIO NON DOVREBBE ACCETTARE"

Francois Magendie 1783-1855

....quello del foro

IL DOLORE: LA SUA STORIA E LA STORIA DELL'UOMO

Da www.laciviltacattolica.it/giornali/2004/2690/Articolo%20Mucci%20.htm

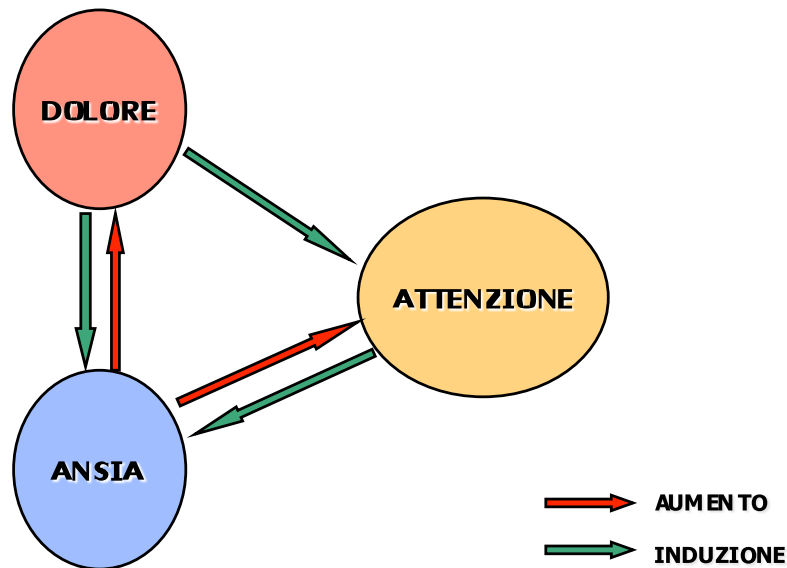


**ORA PER NON MANCARE L'OBIETTIVO
DELLA PRESENTAZIONE**



... PASSIAMO AL DOLORE EXTRAOSPEDALIERO

E' NECESSARIO TRATTARE IL DOLORE?



PSICHISMO DEL DOLORE

OGNI DOLORE COMPORTA FOCALIZZAZIONE DELL'ATTENZIONE CHE AUMENTA L'ANSIA CHE AUMENTA A SUA VOLTA IL DOLORE

VIENE ATTIVATA UNA COMPONENTE EMOTIVA E PSICOAFFETTIVA PER CUI IL DOLORE SI TRASFORMA IN SOFFERENZA

FISIOPATOLOGIA DEL DOLORE

- **AUMENTO FC**
- **AUMENTO CO**
- **AUMENTO PA**
- **AUMENTO FR**
- **RIDUZIONE FRC**
- **IPOSSIEMIA**
- **VASOCOSTRIZIONE PERIFERICA E SPLANCNICA**
- **AUMENTO CONSUMO O₂**
- **AUMENTO TRASPIRAZIONE**
- **NAUSEA**
- **DILATAZIONE PUPILLARE**

**ATTEGGIAMENTO DI FUGA, IPERMOBILITA',
ACCELERAZIONE PROCESSI DI DIFESA**

E' NECESSARIO IL CONTROLLO DEL DOLORE SUL TERRITORIO?

PAIN MANAGEMENT

0749-0704/99 \$8.00 + .00

PAIN MANAGEMENT AND PULMONARY DYSFUNCTION

Pankaj M. Desai, MBBS, FRCA

Pain and pulmonary dysfunction (PD) co-exist in a number of clinical scenarios, including burns, trauma, and a variety of acute abdominal diseases (e.g., pancreatitis).¹ The two conditions are, however, encountered with the greatest frequency in the postoperative setting. This setting has given us much information on the possible mechanisms by which the two are related. The nature of PD can range from transient aberrations in arterial blood gases (ABG), to overt lobar pneumonia or pulmonary thromboembolism (PTE), both severe enough to cause significant morbidity and, not infrequently, mortality.

This article examines the extent to which pain contributes to PD in each of these common scenarios; it also discusses options available to attenuate the extent of this contribution. Owing to the larger body of published literature on this subject, postoperative pulmonary dysfunction (PPD) will be addressed separately.

- CONTRAZIONE DELLA MM ADDOMINALE E RESPIRATORIA, RIDUZIONE VOLUMI POLMONARI
- AUMENTO IAP
- RIDUZIONE FRC
- ATELETTASIA
- AUMENTO SHUNT
- IPOSSIEMIA

E' NECESSARIO IL CONTROLLO DEL DOLORE SUL TERRITORIO?



The Journal of Emergency Medicine, Vol. 25, No. 5, pp. 441-447, 2007
Copyright © 2007 Elsevier Inc.
Printed in the USA. All rights reserved.
0736-4670/07 \$-see front matter

doi:10.1016/j.jemermed.2007.05.041



*Selected Topics:
Prehospital Care*

PREHOSPITAL TRAUMA ANALGESIA

Stephen H. Thomas, MD, MPH^{*†} and Sanjay Shewakramani, MD^{*}

^{*}Harvard Affiliated Emergency Medicine Residency, Boston, Massachusetts and [†]Boston MedFlight, Boston, Massachusetts

Reprint Address: Stephen H. Thomas, MD, MPH, Department of Emergency Services, MGH Clinics Building, Room 115, 55 Fruit Street,
Boston, MA 02114-2090

Physiological Reasons to Relieve Pain

Pain, associated with many untoward effects, is physiologically "bad" (1,8). Anxiety can be counterproductive to diagnostic and therapeutic processes. Cardiac effects of pain include dysrhythmias and ischemia. Immune function and wound healing are impacted. Pain also can be associated with diagnosis-specific adverse impact (e.g., blood pressure elevation in head-injured patients) (9). When considering analgesia's risks, one must keep in mind the risks attendant to pain non-treatment.

E' NECESSARIO IL CONTROLLO DEL DOLORE SUL TERRITORIO?



The Journal of Emergency Medicine, Vol. 33, No. 5, pp. 333, 2007
Copyright © 2007 Elsevier Inc.
Printed in the USA. All rights reserved.
0736-4670/07 \$-see front matter

doi:10.1016/j.jemermed.2007.05.041



Selected Topics: Prehospital Care

PREHOSPITAL TRAUMA ANALGESIA

Stephen H. Thomas, MD, MPH*† and Sanjay Shewakramani, MD*

*Harvard Affiliated Emergency Medicine Residency, Boston, Massachusetts and †Boston MedFlight, Boston, Massachusetts
Reprint Address: Stephen H. Thomas, MD, MPH, Department of Emergency Services, MGH Clinics Building, Room 115, 55 Fruit Street
Boston, MA 02114-2696

Clinical Benefits of Prehospital Pain Relief

Higher levels of patient satisfaction (demonstrated to result from better prehospital pain care) are likely to facilitate the diagnostic and therapeutic process (6). The administration of prehospital analgesia can be associated with an “up-triaging” upon arrival at the Emergency Department (ED)—a patient who has received analgesia is often perceived as being of higher acuity (10). Anecdotal experience also suggests that prehospital administration of pain therapy increases the likelihood of timely ED analgesia.

In practice, time benefit reaped by prehospital analgesia far exceeds the duration of the transport. This is



Emergency Medicine (2002) 14, 261–266

ORIGINAL RESEARCH

Emergency
Medicine

BREAK

Factors influencing prehospital and emergency department analgesia administration to patients with femoral neck fractures

John Vassiliadis,¹ Kerry Hitos² and Celine T Hill³

¹Department of Trauma, ²Division of Surgery and ³Orthopaedics and Trauma, Westmead Hospital, Westmead, NSW, Australia

Abstract

- Objectives:** To assess the analgesia practices of ambulance personnel and emergency department staff treating patients with fractured neck of femur.
- Methods:** This is a retrospective analysis of 176 patients with an admission diagnosis of fractured neck of femur, who presented to a major western Sydney teaching hospital, between January and November 1999.
- Results:** One hundred and twenty-eight patients met the inclusion criteria. The median age was 82, there were more female than male subjects. Ambulance officers made a clinical diagnosis of fractured neck of femur in 68% of cases. In 49% of cases no analgesia was given. Patients were given a higher triage category and pain relief faster if they had been given analgesia by ambulance officers, $P = 0.0018$ and $P = 0.002$, respectively. The median time to analgesia was 2 h 48 min.
- Conclusions:** Only a modest proportion of patients with fractured neck of femur received prehospital analgesia and delays to analgesia in the emergency department are considerable. Strategies to address the delivery of appropriate analgesia to this group of patients should be developed.

MA IL DOLORE ACUTO VIENE TRATTATO?

Am J Emerg Med. 1989 Nov;7(6):620-3.

Oligoanalgesia in the emergency department.

[Wilson JE](#), [Pendleton JM](#).

Department of Emergency Medicine, Akron City Hospital, OH.

A review of the charts of 198 patients who were admitted through the emergency department with a variety of acutely painful medical and surgical conditions revealed that 56% received no analgesic medication while in the emergency department. In the 44% of patients who received pain medication, 69% waited more than 1 hour while 42% waited more than 2 hours before narcotic analgesia was administered. In addition, 32% initially received less than an optimal equianalgesic dose of narcotic when compared with morphine. This study demonstrates that narcotic misuses, in the form of oligoanalgesia, is prevalent and is the shared responsibility of both emergency physicians and housestaff consultants.

INTRODUCTION: Pain is a common occurrence in trauma victims that provokes harmful effects on the body. However, there is a gap in the literature about this problem, which is still underevaluated and undertreated in Brazil, especially concerning the use of opioids.

OBJECTIVES: To estimate pain intensity and the use of analgesia in traffic accident victims.

MATERIALS AND METHODS: A prospective study, involving 100 accident victims (traffic accidents), who were interviewed at 2 separate posttraumatic moments, in a reference hospital of the city of São Paulo. All the medications used for these victims were recorded. All patients displayed a Glasgow Coma Scale (ECGI) of 15, had stable hemodynamic parameters, and were brought directly from the scene of the accident.

RESULTS: Pain of moderate and severe intensity (in 90% of cases) was the most noted. After a 3-hour period, a significant number of patients with pain (48%) continued without analgesia, and few opioids were used.

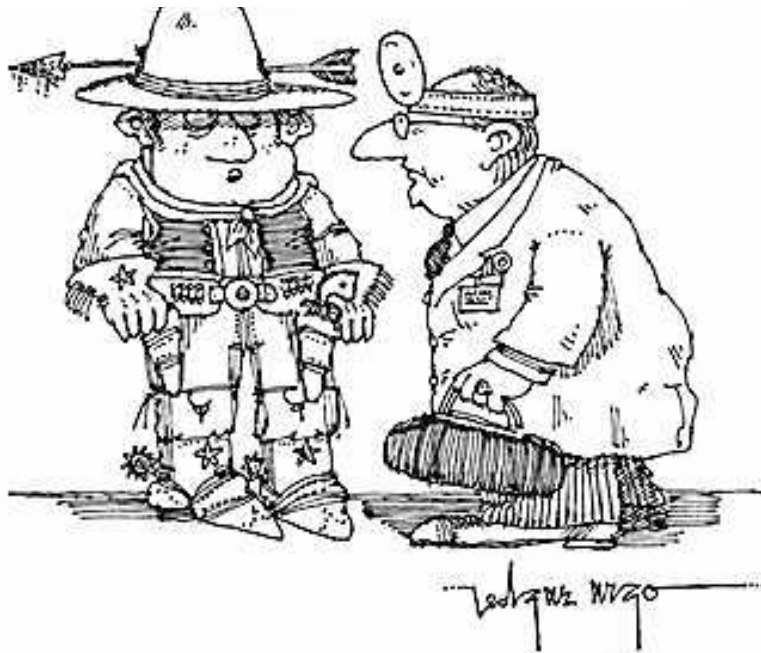
CONCLUSION: Pain is a common event associated with trauma. It is still underevaluated and undertreated in Brazil, and the use of opioids for administratively very severe pain is not frequently employed in the Emergency Service even in hemodynamically stable patients.

KEY-WORDS: Pain. Emergency care. Analgesia. Traffic accidents. External causes.

LE RAGIONI DELL'OLIGOANALGESIA

INTERFERISCE CON LA VALUTAZIONE NEUROLOGICA
DEL TRAUMA CRANICO

EMERGENCY



"THE PAIN ISN'T TOO BAD... BUT I CAN'T TAKE MY
HAT OFF!"

**E' FORSE L'ARGOMENTAZIONE PIU'
VALIDA, ESAME NEUROLOGICO E'
ELEMENTO DIAGNOSTICO
FONDAMENTALE**

**MA ANCHE EVIDENZE SUI RISCHI
DEL NON TRATTAMENTO**

*Trullier E, Aschman C. Prehospital management of patients with
craniocervical injuries. Ann N Y Acad Sci. 2004;1024:27-35.*

**INDICAZIONE DI BUON SENSO:
IMIPEGO PRUDENTE E COMPETENTE
DI ANALGESICI A BREVE EMIVITA
ED ANTAGONIZZABILI NO PROBLEM
SE INTUBATO**

PREHOSPITAL TRAUMA ANALGESIA

Stephen H. Thomas, MD, MPH and Sergey Shadrin, MD

LE RAGIONI DELL'OLIGOANALGESIA

INTERFERISCE CON LA VALUTAZIONE DI ALTRI DISTRETTI

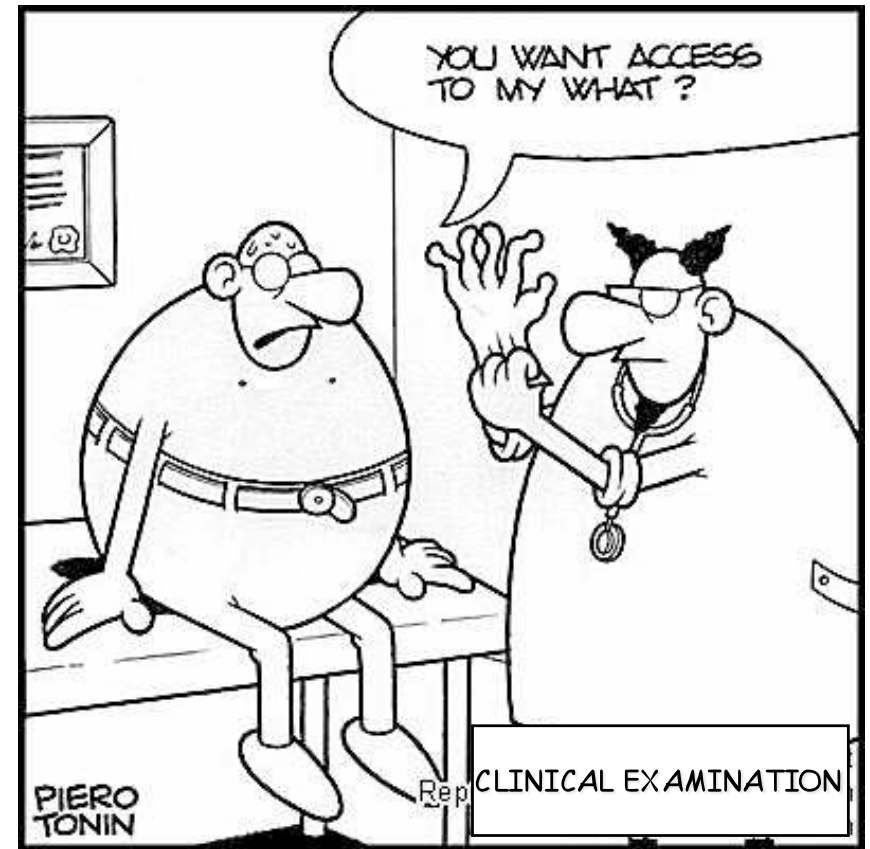
**DATI DI LETTERATURA
EVIDENZIANO CHE L'ANALGESIA
NON PORTA A SOTTOVALUTAZIONE
DELLE LESIONI ADDOMINALI**

Thomas S, Saba W, Chavira F. Effects of analgesic analgesia on diagnostic accuracy in Emergency Department patients with abdominal pain: a prospective, randomized trial. J Am Coll Surg 2003;196:15-24.

**IN PARTICOLARE NEL TRAUMA LA
DIAGNOSTICA STRUMENTALE
RIDUCE LA NECESSITA' DI
MONITORAGGIO CLINICO PUR
NON SOSTITUENDOLO**

PREHOSPITAL TRAUMA ANALGESIA

Stephen H. Thomas, MD, MPH and Sergey Shadrin, MD



LE RAGIONI DELL'OLIGOANALGESIA

POSSONO DETERMINARE DEPRESSIONE RESPIRATORIA ED EMODINAMICA



"Dial 911. And change that to a table for three."

LA SICUREZZA DEGLI OPIOIDI AUMENTA CON LA TITOLAZIONE

DOSI ADATTATE ALLE CONDIZIONI DEL PAZIENTE

IN LETTERATURA EVIDENZA DI SICUREZZA

Dickinson E, Wurster F, Mechem C, et al. Prehospital utilization and effectiveness of morphine [abstract]. *Prehosp Emerg Care* 2004;8:103.

Thomas S, Beaevell W, Brown D, et al. Safety of fentanyl for analgesia in adults undergoing air medical transport from trauma scenes. *Air Med J* 1996;15:57-9.

Ricard-Hibon A, Chollet C, Belpomme V, et al. Epidemiology of adverse effects of prehospital sedation analgesia. *Am J Emerg Med* 2003;21:461-6.

Harrison T, Thomas S, Wedel S. End-tidal carbon dioxide monitoring in nonintubated patients during helicopter transport [abstract]. *Ann Emerg Med* 2000;36:S53.

Silvast T, Saarnivaara L. Comparison of alfentanil and morphine in the prehospital treatment of patients with acute ischaemic-type pain. *Eur J Emerg Med* 2001;8:275-8.

DeVellis P, Thomas S, Wedel S, et al. Prehospital fentanyl analgesia in air-transported pediatric trauma patients. *Pediatr Emerg Care* 1998;14:321-3.

LE RAGIONI DELL'OLIGOANALGESIA

PREHOSPITAL PAIN MANAGEMENT

Hector M. Alonso-Serra, MD, MPH, Keith Hodges, MD,

for the National Association of EMS Physicians Standards and Clinical Practices Committee

PREHOSPITAL EMERGENCY CARE OCTOBER / DECEMBER 2003 VOLUME 7 / NUMBER 4

DISCUSSION

Pain Assessment

Adequate pain control is not provided for a variety of reasons. The

most common reason is under-estimation of the patient's needs.¹

SUMMARY

TABLE 1. This paper has presents a discussion regarding prehospital pain management and reviewed the current literature supporting the use of prehospital analgesics. EMS systems should evaluate the potential value of instituting protocols for the appropriate treatment of pain suffered by its patients. System medical directors should take a leading role in the development of such protocols and the oversight of their use.

Numerical rating scale (NRS)

(patients verbally requested to rate their pain)

Rate your pain from 0 (no pain) to 10 (unbearable pain)

Verbal rating scale (VRS)

(five pain levels are indicated in large print on a sheet given to the patient: no pain, mild pain, moderate pain, severe pain, unbearable pain)

Choose the adjective best corresponding to your pain level.

Visual analog scale (VAS)

(A 100-mm rule with a movable cursor: "no pain" is written at the left end of the horizontal line along which the cursor is moved, and "maximal pain" at the right end)

Move the cursor along the line to indicate the intensity of your pain. The left end of the line represents "no pain" and the right end the most intense pain imaginable, i.e., excruciating and unbearable pain.

LE RAGIONI DELL'OLIGOANALGESIA

ALTRE RAGIONI CONTRO L'UTILIZZO:

NECESSITA' DI VIA VENOSA

I PAZIENTI NON LA RICHIEDONO

**SOMMINISTRAZIONE DI DOSI
INADEGUATE DI ANALGESICO**

**L'USO DI ANALGESICI PRECLUDE
LA POSSIBILITA' DI OTTENERE IL
CONSENSO INFORMATO**

McLachlan C, Smead B, Sengco D, et al. Opioid analgesia for patients's perspective [abstract]. Pain Management. 2004;4:100.

**3/4 DEI PZ CON FRATTURE ALLE
ESTREMITA' SENZA ANALGESIA
HANNO DOLORE MODERATO-SEVERO**



TECNICHE DI ANALGESIA

NON FARMACOLOGICHE

PREHOSPITAL PAIN MANAGEMENT

Hector M. Alvarez-Soria, MD, MEd, Keith Hodges, MD,

for the National Association of EMS Physicians Standards and Clinical Practice Committee

PREHOSPITAL EMERGENCY CARE OCTOBER / DECEMBER 2003 VOLUME 7 / NUMBER 4

IMMOBILIZZAZIONE DELLE FRATTURE

CONTATTO VERBALE E COMUNICAZIONE SUL TRATTAMENTO

PRESENZA CONFORTANTE DEI GENITORI PER I BAMBINI

VARIE:

**AGOPUNTURA
DIGITOPRESSIONE
MUSICOTERAPIA
IPNOSI
RAFFREDDAMENTO**



TECNICHE FARMACOLOGICHE



"That must be the new miracle drug."

IL FARMACO IDEALE:

SICURO, EFFICACE, PREVEDIBILE

ONSET RAPIDO

BREVE EMIVITA

ANTAGONIZZABILE

SCARSI EFFETTI AVVERSI

SEMPLICE DA PREPARARE

PREHOSPITAL PAIN MANAGEMENT

Hector M. Alvarez-Soria, MD, MPH, Keith Hodges, MD,

for the National Association of EMS Physicians Standards and Clinical Practice Committee

PREHOSPITAL EMERGENCY CARE OCTOBER / DECEMBER 2003 VOLUME 7 / NUMBER 4

QUALI VIE DI SOMMINISTRAZIONE?

ORALE ED INTRAMUSCOLARE

Poco adatta per latenza di effetto

ENDOVENOSA

INTRAOSSEA

Indicata solo per analgesia?

NASALE

Utile per oppioidi

INALATORIA

O₂/N₂O non disponibile in Italia



QUALI VIE DI SOMMINISTRAZIONE?

ANALGESIA LOCOREGIONALE



Volume 14 Number 3
Summer 2004

TraumaCare

The Official Publication of ITACCS

International Trauma Care

Regional Analgesia and Anesthesia

Regional blocks may also be useful in the prehospital setting. Epidural and spinal analgesia are not used, since there are few situations in which they are warranted and they are difficult to perform, especially in terms of the need for aseptic technique and for careful monitoring of hemodynamics.

Isolated peripheral troncular nerve blocks may prove useful in some situations. This technique can provide very effective analgesia to a part of the body with very few complications and no effect on patient consciousness and hemodynamic. This type of block has been used in various circumstances in a number of small studies.⁵ For example, peripheral troncular neural blockade, such as a femoral nerve block or an infraclavicular block (with carbocaine, 1.5%, or ropivacaine, 0.475%, 0.3 ml.kg⁻¹) may be proposed for femoral shaft fracture and arm trauma, following usual anaesthesia patient safety guidelines.^{15,16} A take-away nerve simulator helps locate the nerve. This technique is associated with high success rates, fewer side effects, and reduced doses.¹⁶

QUALI FARMACI?

MORFINA

STARTING DOSE

0.1-0.15 mg/Kg⁻¹

7-10 mg totali

ONSET 5-10 min

PEAK 15-20 min

DURATA 3-4 h

PRO E CON

**DI SCELTA PER IL DOLORE
MIOCARDICO ISCHEMICO**

ESPERIENZA NELL'UTILIZZO

ELEVATI DATI IN LETTERATURA

RISCHI TIPICI DEGLI OPPIOIDI

NAUSEA

**ANTAGONIZZABILE CON
NALOXONE**

QUALI FARMACI?

FENTANYL

STARTING DOSE

50-100 μ

1-3 μ g/Kg⁻¹

ONSET 1-2 min

PEAK 3-10 min

DURATA 30-60 min

PRO E CON

ELEVATA POTENZA (100 VOLTE MORFINA)

FACILMENTE TITOLABILE

MINIMO RILASCIO DI ISTAMINA

SCARSO RISCHIO EMODINAMICO

**MAGGIOR RISCHIO DI RIGIDITA'
EMODINAMICA SE SOMM RAPIDA**

ANTAGONIZZABILE

ALFENTANIL

EUROPEAN JOURNAL OF EMERGENCY MEDICINE, 2001, 8, 275–278

Comparison of alfentanil and morphine in the prehospital treatment of patients with acute ischaemic-type chest pain

T. SILFVAST* and L. SAARNIVAARA

Department of Anaesthesiology and Intensive Care Medicine, Helsinki University Central Hospital, FIN-00029 Helsinki, Finland

Patients with acute myocardial ischaemic pain would benefit from rapid pain relief. The clinical usefulness of alfentanil, which has a rapid onset of action, was therefore assessed as the initial pain relieving opioid in patients suffering from acute myocardial ischaemic pain. The effects of alfentanil were compared with those of morphine in the prehospital treatment of 40 haemodynamically stable patients suffering from acute ischaemic-type chest pain. After initial assessment, the patients were given either 0.5 mg alfentanil or 5 mg morphine intravenously in a randomized double-blind fashion. The dose was repeated 2 minutes later if severe pain persisted. Arterial pressure, heart rate, respiratory rate and pain expressed on a visual analogue scale was measured before and at 2, 4, 6, 10 and 15 minutes after administration of drugs. After randomization, four patients were excluded. Sixteen patients received alfentanil and 20 patients morphine. Pain relief was faster ($p < 0.005$) in the alfentanil group than in the morphine group. Alfentanil was found to provide effective analgesia during the follow-up period of 15 minutes. No haemodynamic or respiratory side effects occurred. It is concluded that alfentanil is an effective analgesic in the prehospital treatment of myocardial ischaemic pain.



SUFENTANIL

Da www.clinicaltrials.gov

A Randomized, Double-Blind Comparison of Morphine and Sufentanil for Prehospital Traumatic Severe Acute Pain

This study is currently recruiting participants.
Information provided by University Hospital, Toulouse

Please refer to this study by its ClinicalTrials.gov identifier: NCT00656773

Contacts

Contact: DUCASSE Jean-Louis, MD 05 61 772 490. ext 33 ducasse.jl@chu-toulouse.fr

Locations

FranceU H Toulouse Samu 31 Recruiting TOULOUSE, France, 31059 Contact:
DUCASSE Jean-Louis, MD 05 61 77 24 90 ext 33 ducasse.jl@chu-toulouse.fr Contact:
BOUNES Vincent, MD 0561 772 490 ext 33 bounes.v@chu-toulouse.fr Principal
Investigator: DUCASSE Jean-louis, MD Sub-Investigator: BOUNES Vincent, MD

Sponsors and Collaborators

University Hospital, Toulouse

Investigators

Principal Investigator: DUCASSE Jean-louis, MD UH Toulouse

QUALI FARMACI?

KETAMINA

ANALGESIC DOSE

0.1-0.2 mg/Kg⁻¹

Ketamine

ONSET ENTRO 1 min

PEAK 1-5 min

DURATA 10-30 min

VANTAGGI

**ELEVATO POTERE ANALGESICO
(>MORFINA)**

EFFETTO SEDATIVO ED AMNESICO

**STABILITA' EMODINAMICA
(↑CO, ↑HR, ↑PA, =SVR)**

SCARSA DEPRESSIONE RESPIRATORIA

EFFETTO BRONCODILATATORE

**SOMMINISTRABILE ev, im, os,
rettale, nasale**

BASSO COSTO

**UTILE SE SCARSITA' DI RISORSE IN
RELAZIONE ALLE NECESSITA'**

QUALI FARMACI?

KETAMINA

SVANTAGGI

Sabine Himmelseher, MD*, and Marcel E. Durieux, MD, PhD†
APNEA TRANSITORIA SE INFUSIONE RAPIDA

AUMENTO SECREZIONI

utile atropina 0.5 mg

ALLUCINAZIONI

nel 30% se bolo ev, sprtt donne

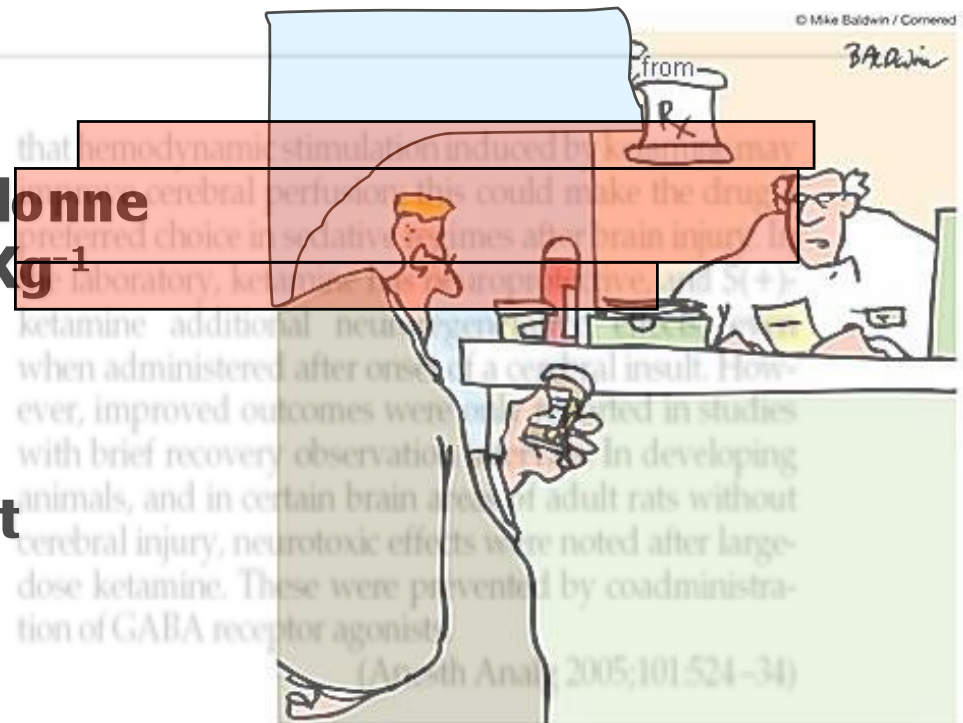
utile midazolam 0.05 mg/Kg⁻¹

AUMENTO TONO MUSCOLARE

sprtt giovani muscolosi

utile midazolam, fentanest

E NEL TRAUMA CRANICO?



“Side effects may include loss of appetite, job, home and family.”

ALTRI FARMACI

KETOROLAC

**EFFICACE NELLE COLICHE RENALI E BILIARI
SCONSIGLIABILE NEI TRAUMI MAGGIORI PER GLI
EFFETTI SULL'AGGREGAZIONE PIASTRINICA
SOMMINISTRABILE EV, IM, OS, UTILE NELLE LESIONI
MINORI**

TRAMADOLO

**ONSET 15-20 min DURATA 4-6 ORE
POTENZA INFERIORE AGLI OPPIOIDI
SIMILI EFFETTI COLLATERALI
30% NAUSEA**

CONCLUSIONI

**MOLTEPLICI EVIDENZE DELLA NECESSITA' DI UNA
EFFICACE TERAPIA ANTALGICA SUL TERRITORIO**

BASSO RAPPORTO RISCHIO/BENEFICIO

**MOLTEPLICI OPZIONI RENDONO L'ANALGESIA
OTTIMAMENTE ADDATTABILE ALLE NECESSITA' ED AL
TIPO DI PAZIENTE**

**NECESSITA' DI IMPLEMENTARE L'EFFICIENZA
APPLICANDO STRUMENTI DI VALUTAZIONE E
PROTOCOLLI OPERATIVI**

FOTORESEARCH