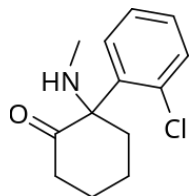


3° Edizione

Area Critica in Medicina Interna

12 Aprile 2025



**Sedazione
Analgesia
Urgenza**

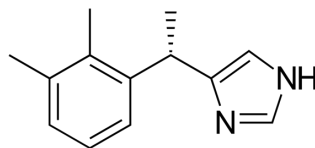
Em* SIMEU
società italiana medicina
d'emergenza-urgenza

Alessandro Riccardi

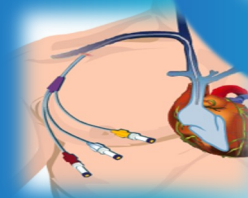
Direttore SC Pronto Soccorso e Medicina d'Urgenza,
Ospedale Santa Corona, Pietra Ligure

Ventilazione non invasiva nel paziente critico: quale
ruolo per la terapia sedativa

 **Asl2**
Sistema Sanitario Regione Liguria



Savona
Nh Darsena
Hotel



il punto non è la
sedazione, ma la
TOLLERANZA
ALLA NIV

REVIEW

Open Access

Sedation in non-invasive ventilation: do we know what to do (and why)?

Dan Longrois^{1*}, Giorgio Conti², Jean Mantz³, Andreas Faltlhauser⁴, Riku Aantaa⁵ and Peter Tonner⁶

Is sedation *per se* a factor contributing to the success or failure of NIV?

Patient acceptance and compliance are essential to the success of NIV [13]. Achieving patient acceptance and compliance is a multifaceted exercise, with staff proficiency and competence being one major influence [25]. However, acceptance/compliance also relate directly to sedation since neither can be expected from an insensate patient; nor are they likely to be forthcoming if the patient is anxious, agitated or disoriented. The necessity of a sedation regimen that brings the patient to a state of calm, alert cooperation is clearly implied by these considerations.

LA SEDAZIONE IN UNA NIV COSTITUISCE L'ULTIMA FASE DI UN **BUNDLE OF CARE AMPIO**

Scelta e adattamento appropriato dell'interfaccia (maschera)

Gestione delle perdite

Impostazioni del ventilatore adeguate

Trattamento del dolore

Riduzione dell'ansia e della paura

Gestione della febbre

Correzione dell'ipossia

Comunicazione e supporto del personale

Modifiche ambientali

Posizionamento confortevole



LAST CHANCE



LA SEDAZIONE IN UNA NIV COSTITUISCE L'ULTIMA FASE DI UN **BUNDLE OF CARE AMPIO**

Scelta e adattamento appropriato dell'interfaccia (maschera)

Gestione delle perdite

Impostazioni del ventilatore adeguate

Trattamento del dolore

Riduzione dell'ansia e della paura

Gestione della febbre

Correzione dell'ipossia

Comunicazione e supporto del personale

Modifiche ambientali

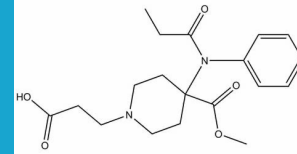
Posizionamento confortevole



LAST CHANCE



REMIFENTANIL



Oppiaceo ad azione ultrapida, sicuro ed efficace nella NIV, migliora la tolleranza intervenendo sul dolore e riduce l'ansia

Come tutti gli oppiacei, riduce attivamente la dispnea

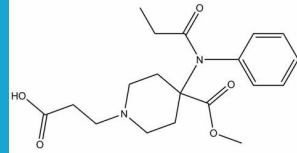
EXPERT OPINION

Sedation during non-invasive ventilation

G. HILBERT, B. CLOUZEAU, H. NAM BUI, F. VARGAS

Division of Medical Intensive Care, University Hospital, Bordeaux, France

REMIFENTANIL

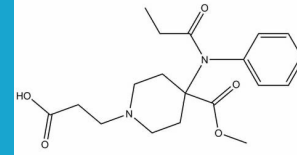


0.025-0.15
µg/kg/min

**titolazione con incrementi di 0.01-0.025 µg/kg/min,
fino a un massimo di 0.20 µg/kg/min**



VANTAGGI REMIFENTANIL



PICCO in 1-3 minuti

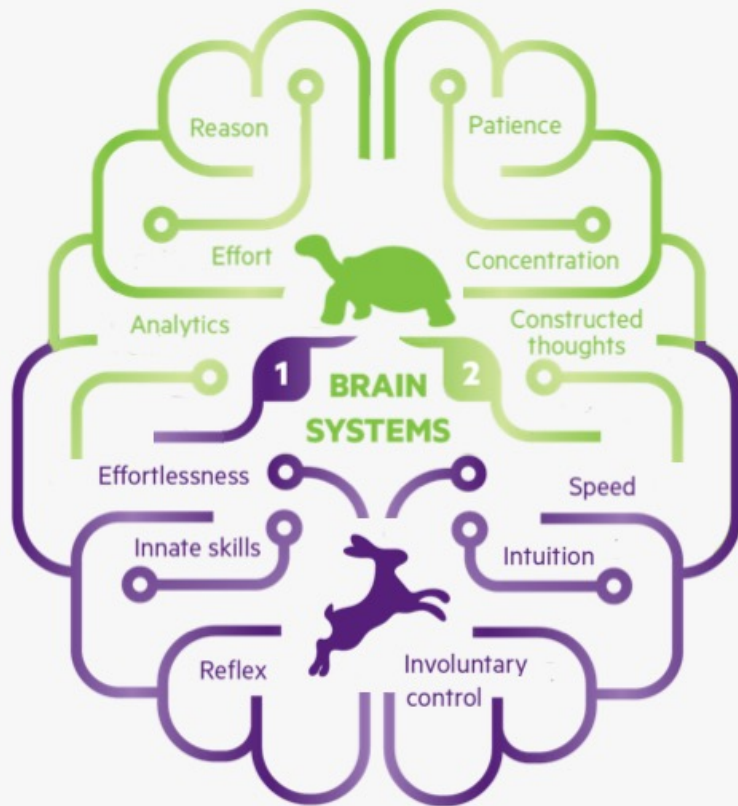
BREVISSIMA EMIVITA CON RIPRESA DOPO 3-10 minuti
dalla sospensione

TITOLABILE

ANTAGONIZZABILE



...a questo punto
parliamo di
ANALGESIA
e forse abbiamo alternative

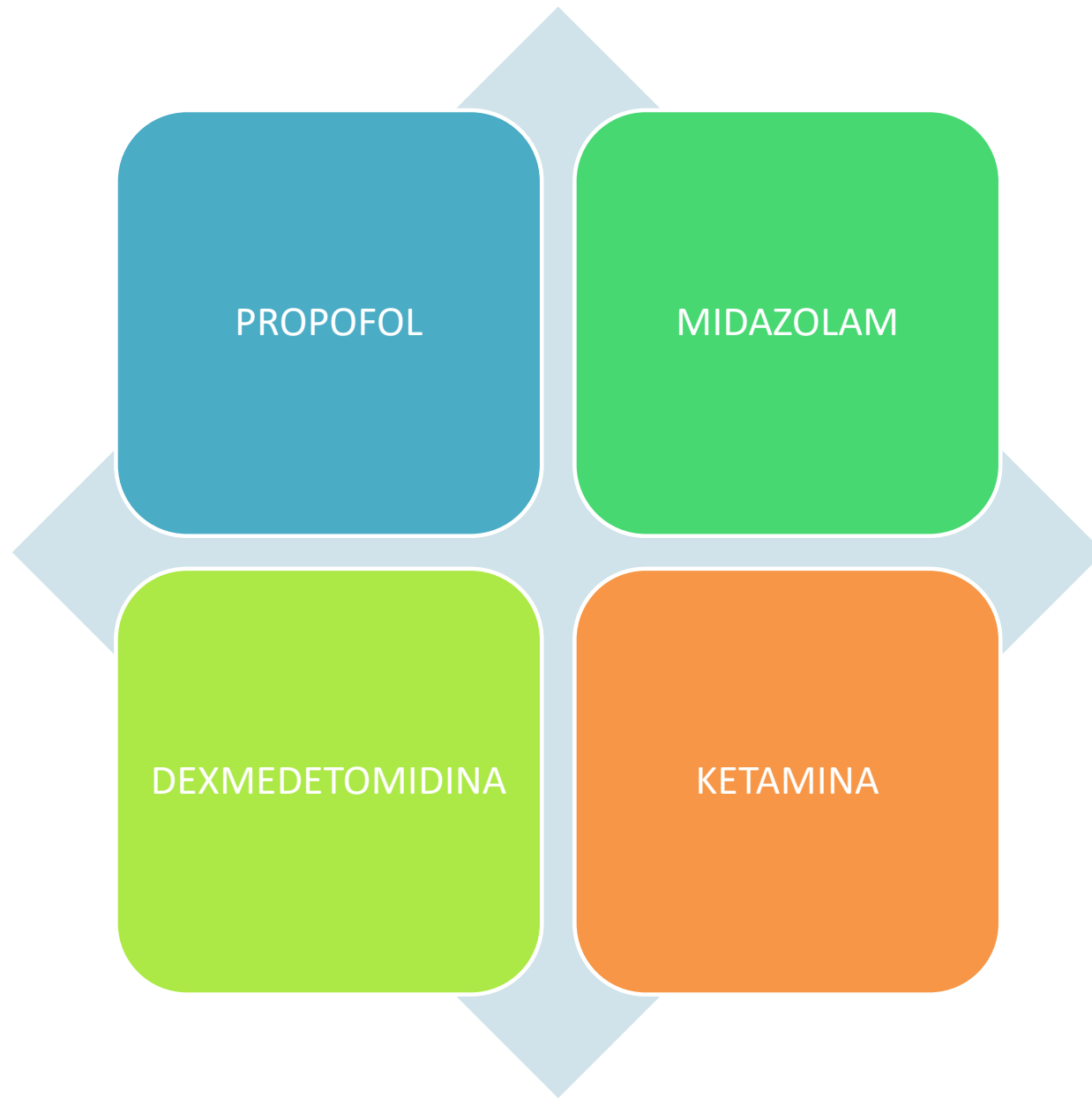


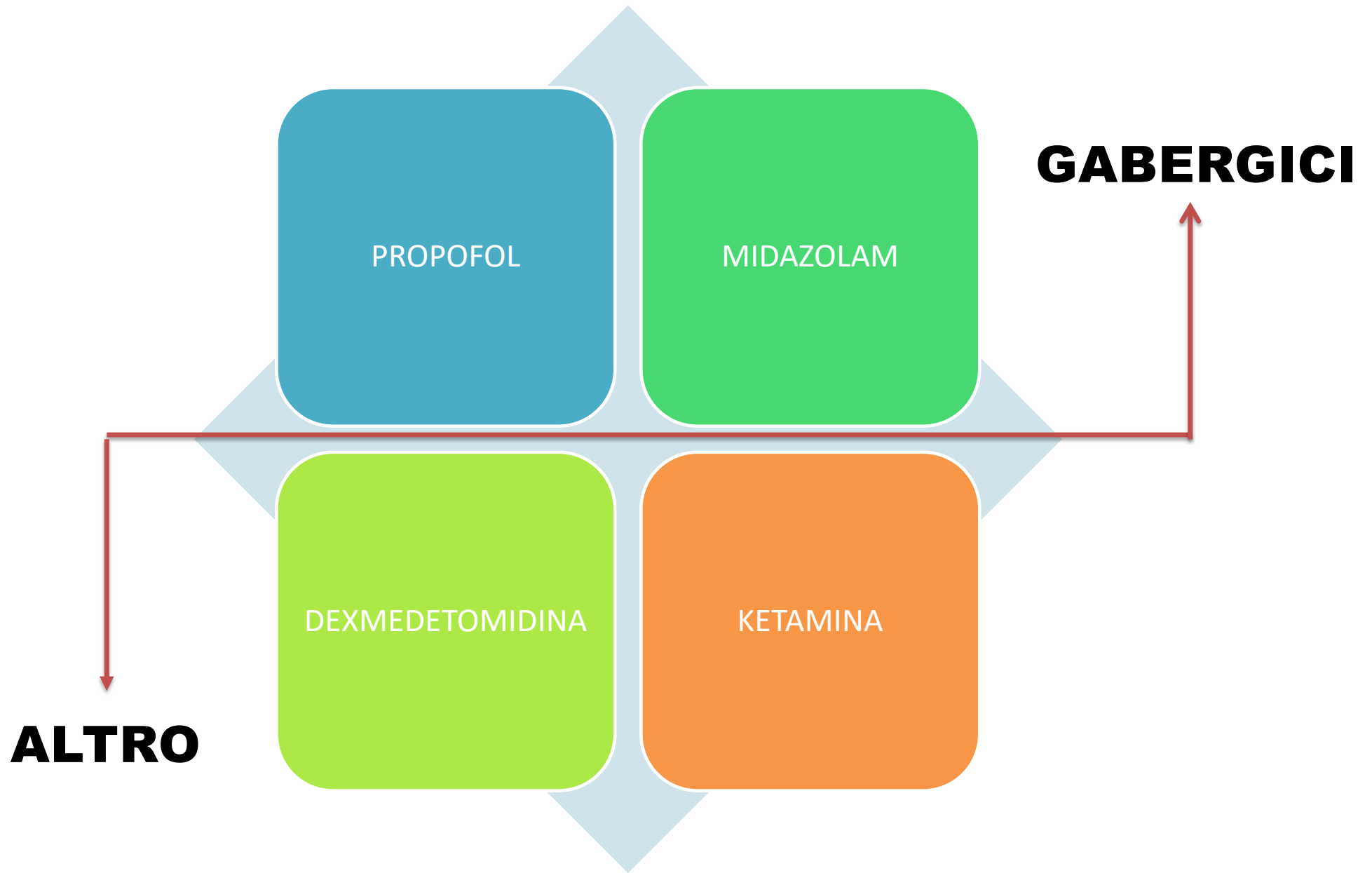
...se è presente grave distress, o estrema agitazione, o scarsa compliance

...pensare rapidamente, e optare per la sedazione può migliorare l'outcome e ridurre la probabilità di intubazione



quali opzioni per
la **SEDAZIONE**
durante una NIV





EXPERT OPINION

Sedation during non-invasive ventilation

G. HILBERT, B. CLOUZEAU, H. NAM BUI, F. VARGAS

Division of Medical Intensive Care, University Hospital, Bordeaux, France

Sedation during NIV: in practice

A recent survey of sedation practices during NIV to treat acute respiratory failure, showed that a benzodiazepine alone was the most preferred (33%), followed by an opioid alone (29%).²⁴ Europeans were less likely to use a benzodiazepine alone (25% *vs.* 39%, $P<0.001$) but more likely to use an opioid alone (37% *vs.* 26%, $P<0.009$). Sedation was usually administered as an intermittent intravenous bolus, outside of a protocol, and was assessed by nurses using clinical end points rather than a sedation scale.



JEM Reports 4 (2025) 100138



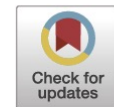
Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

JEM Reports

journal homepage: www.journals.elsevier.com/jem-reports



Ketamine for rapid control of hyperactive delirium with severe agitation. A retrospective comparison study



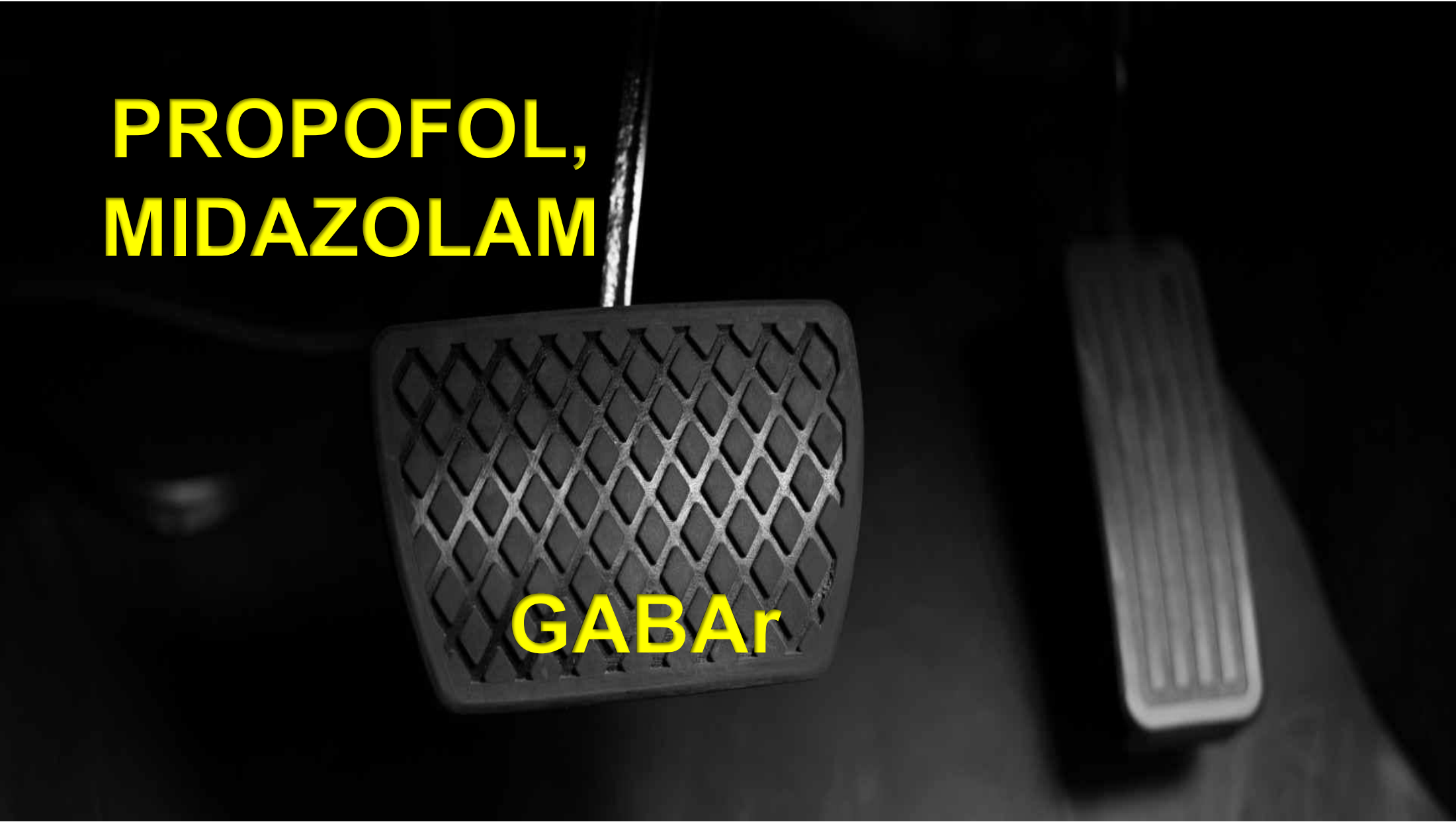
Beatrice Borreani^a, Annalisa Belluti^b, Francescopaolo D'Adamo^c, Luca Acquarone^b,
Cristina Cocino^d, Paolo Canepa^d, Francesco Quaglia^d , Martina D'Antoni^d, Andrea Alienda^d,
Alessandro Riccardi^{d,*}

^a Pronto Soccorso e Medicina d'Urgenza, Savona, Italy

^b Pronto Soccorso, Imperia, Italy

^c 118 Imperia, Italy

^d Pronto Soccorso e Medicina d'Urgenza, Pietra Ligure, Italy



**PROPOFOL,
MIDAZOLAM**

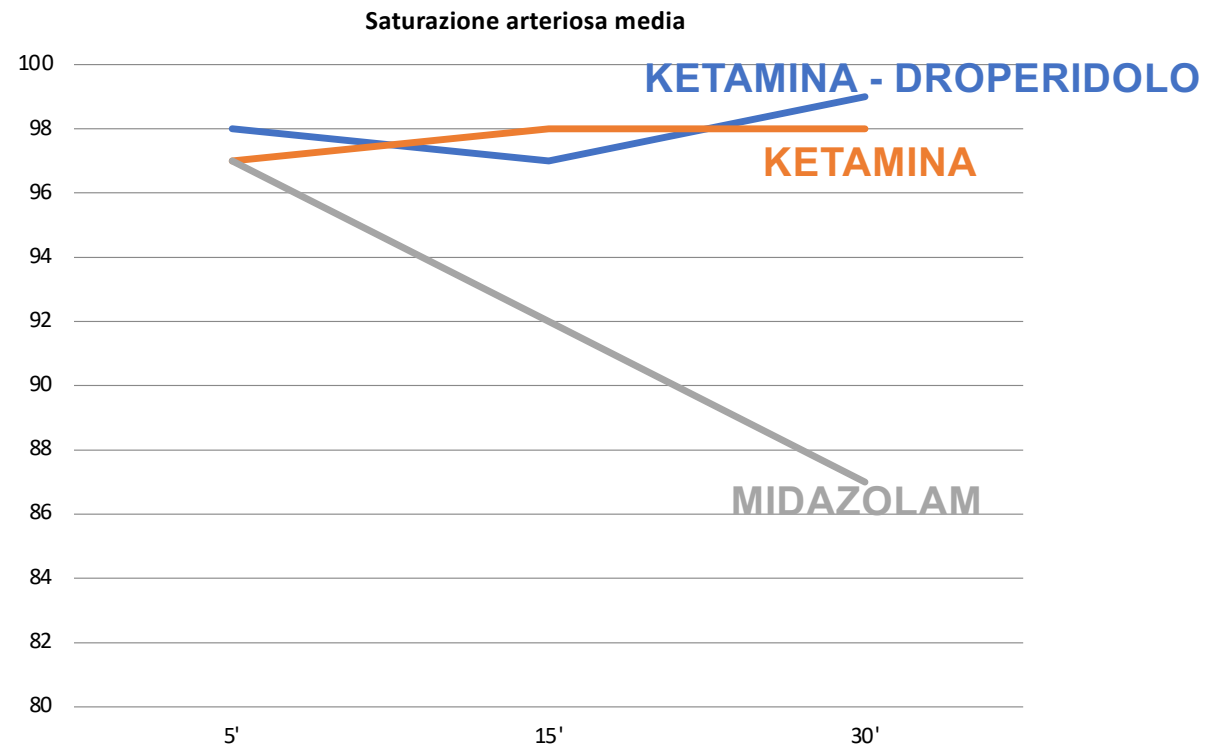
GABAr

PROPOFOL, MIDAZOLAM

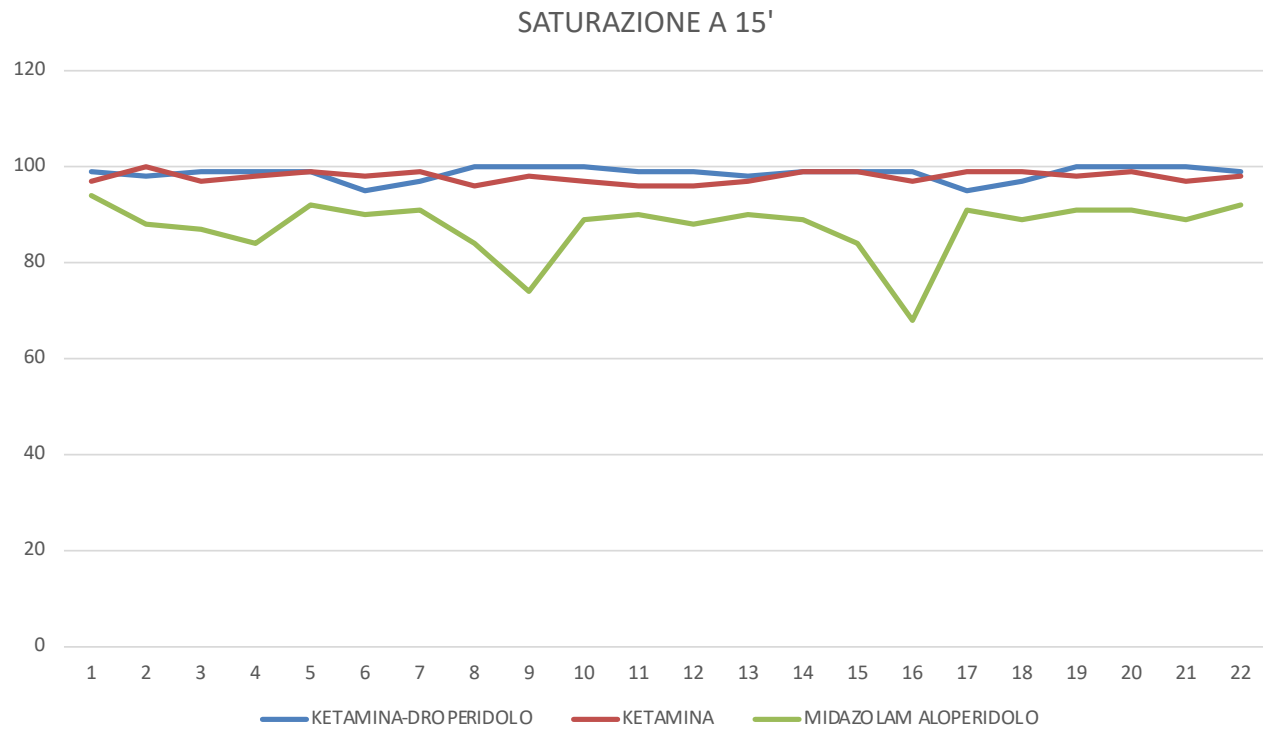
Deprimono attività
corticale
Deprimono i riflessi
protettivi
Deprimono attività
respiratoria

GABA_r



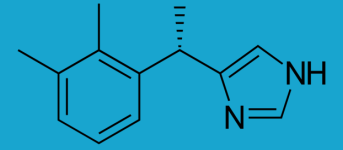


DATI DELL'AUTORE (multicentrico ligure su grave agitazione psicomotoria RASS 4)



DATI DELL'AUTORE (multicentrico ligure su grave agitazione psicomotoria RASS 4)
Gruppo MIDAZOLAM: 3 apnee con necessità di ventilazione

DEXMEDETOMIDINA



INTERNAL  MEDICINE

□ ORIGINAL ARTICLE □

Dexmedetomidine Versus Midazolam for the Sedation of Patients with Non-invasive Ventilation Failure

Zhao Huang, Yu-sheng Chen, Zi-li Yang and Ji-yun Liu

Dexmedetomidine is an α_2 adrenoreceptor agonist with a unique mechanism of action, providing sedation and anxiolysis via receptors within the locus ceruleus, analgesia via receptors in the spinal cord, and attenuation of the stress response with no significant respiratory depression (12, 13). Dexmedetomidine sedation was recently been proposed to manage NIV failure in acute respiratory failure patients in a preliminary study (14). We hypothesized that a sedation strategy using dexmedetomidine would result in improved outcomes in non-invasive mechanically ventilated, hypoxe-

A close-up photograph of a newborn baby lying in a hospital bed. The baby is wearing a white long-sleeved onesie and is covered with a white blanket featuring a blue grid pattern. The baby's eyes are closed, and they have a slight smile on their face. The bed has a blue sheet and a white pillow with a blue grid pattern. The text "induce un sonno sovrappponibile a quello naturale" is overlaid on the image in yellow and red font.

**induce un sonno
sovrappponibile a
quello naturale**



ELSEVIER



SFAR

Société Française d'Anesthésie et de Réanimation



Original Article

Dexmedetomidine to facilitate non-invasive ventilation after blunt chest trauma: A randomised, double-blind, crossover, placebo-controlled pilot study[☆]

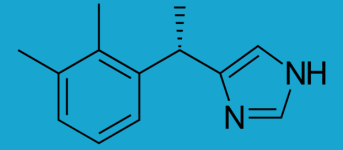
Baptiste Deletombe^a, Thibaut Trouve-Buisson^a, Alexandre Godon^a, Dominique Falcon^a, Lise Giorgis-Allemand^{b,c}, Pierre Bouzat^{a,d,e}, Jean-Luc Bosson^{b,c,f}, Jean-Francois Payen^{a,d,e,*}

4. Discussion

In a population of patients with blunt chest trauma managed with NIV, the introduction of dexmedetomidine improved NIV tolerance, as reflected by a clinically relevant effect of more than 50% duration of the first NIV session, a deeper level of sedation and less respiratory discomfort compared to placebo. No effects on pain scores and morphine consumption were found in these patients who had controlled pain within 0–3 VAS at rest. This dexmede-



DEXMEDETOMIDINA

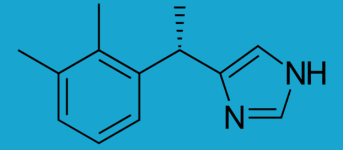


AZIONE ANALGESICA
MINOR PERCENTUALE DI DELIRIUM
MAGGIORI EVIDENZE DI EFFICACIA
MINOR DEPRESSIONE
RESPIRATORIA

MINOR LIVELLO DI SEDAZIONE
IPOTENSIONE
TEMPO DI INSORGENZA LENTO
COSTO ELEVATO



DEXMEDETOMIDINA



0,2-1,4 $\mu\text{g/kg/h}$

iniziando in genere a 0.7 e titolando

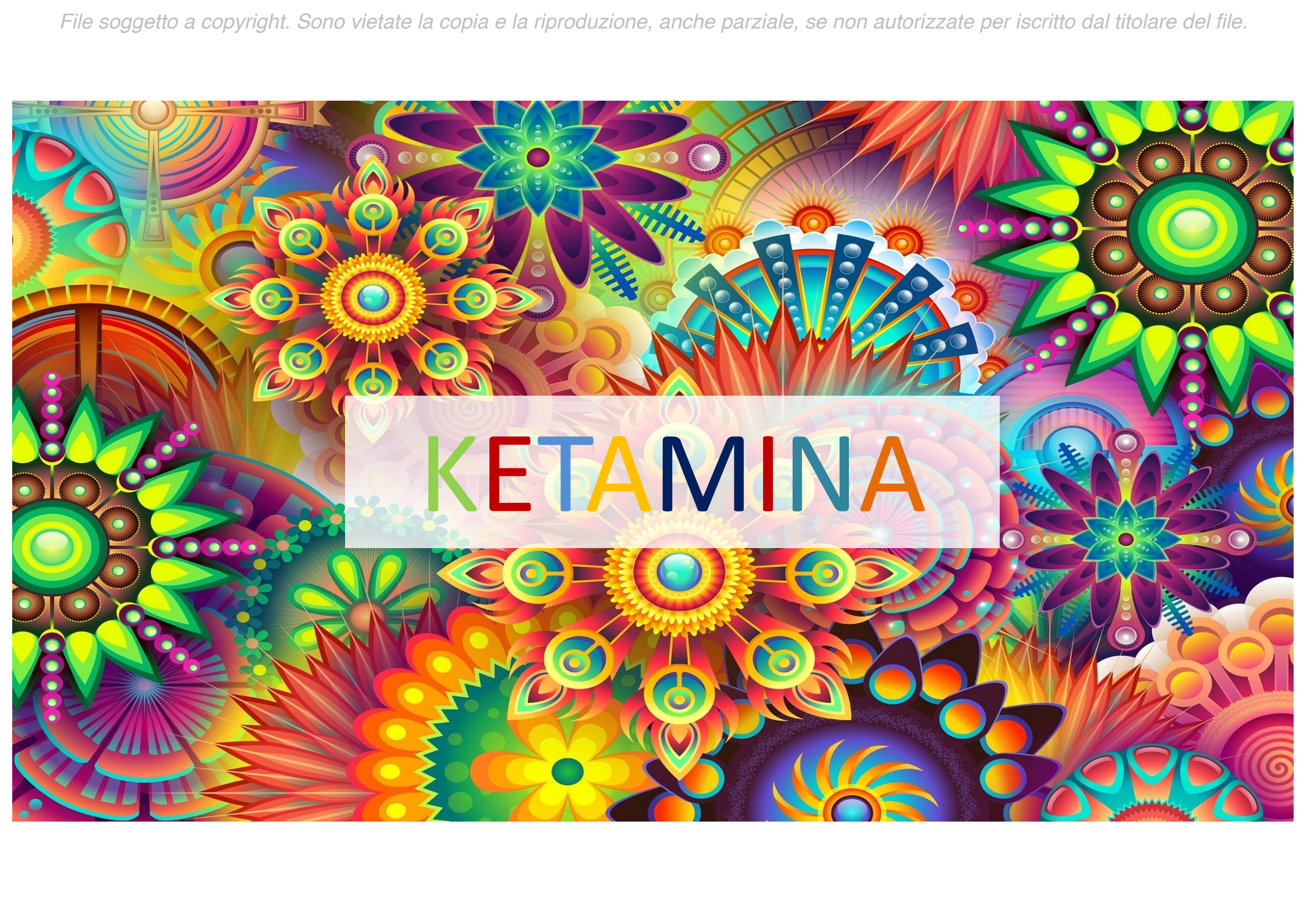


Original Article

Dexmedetomidine versus ketamine in improving tolerance to noninvasive ventilation after blunt chest trauma: A randomized, double-blinded, placebo-controlled trial

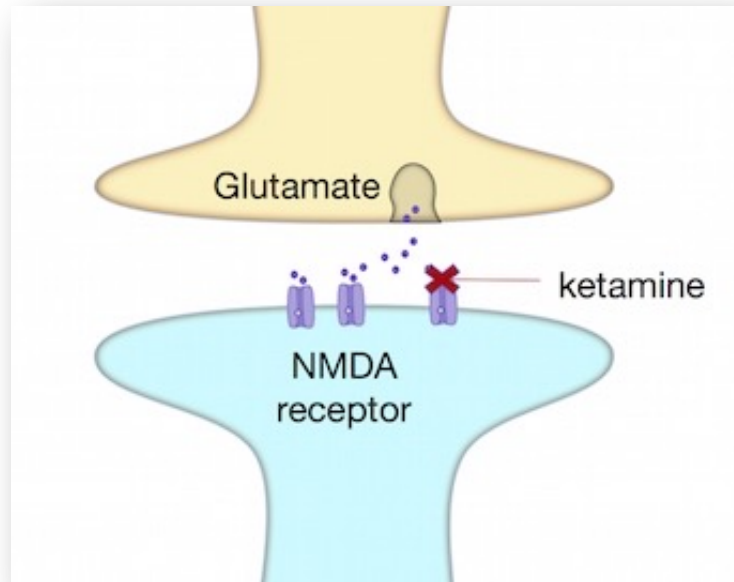
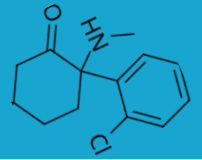
Huda F. Ghazaly, Mohamed M. Elansary, Ahmed A. Mahmoud, Mohamed K. Hasanen, Mahmoud M. Hassan

Our clinical trial is the first to compare the effects of dexmedetomidine and ketamine on improving patient tolerance to NIV after blunt chest trauma. We found that patients who received a dexmedetomidine or ketamine intravenous infusion could tolerate NIV for longer periods than those who received a placebo. The duration of the NIV sessions, however, did not differ significantly between the dexmedetomidine and ketamine



KETAMINA

KETAMINA



**BLOCCO NEURONI
GLUTAMMINERGICI
ECCITATORI
TRAMITE
ANTAGONISMO SU
NMDAr**

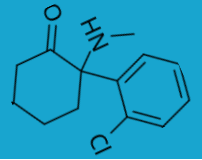


KETAMINA

Blocco comunicazione tra
periferia e corteccia
Corteccia attiva
Riflessi mantenuti
Attività respiratoria
conservata

NMDAr

KETAMINA

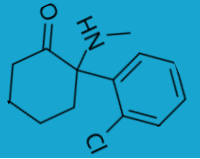


AZIONE ANALGESICA POTENTE
PROTEGGE LA FUNZIONE
RESPIRATORIA
MIGLIOR IMPATTO EMODINAMICO
BRONCODILATAZIONE
AZIONE IMMEDIATA

MINORI EVIDENZE
MAGGIOR TASSO DI DELIRIUM
POSSIBILE IPERTENSIONE



KETAMINA



1-2 mg/kg ev bolo
poi mantenimento 1-2 mg/kg/h



Analgesia

Sedazione

Amnesia

Riflessi

Circolo

Ventilazione



100%

DEXMEDETOMIDINA

KETAMINA



Clinical Pharmacology

■ SPECIAL ARTICLE

Ketamine Analgo-sedation for Mechanically Ventilated Critically Ill Adults: A Rapid Practice Guideline from the Saudi Critical Care Society and the Scandinavian Society of Anesthesiology and Intensive Care Medicine

Marwa Amer^{1,2}, Morten Hylander Møller^{3,4,5}, Mohammed Alshahrani⁶, Yahya Shehabi^{7,8}, Yaseen M. Arabi⁹, Faye Alshamsi¹⁰, Martin Ingi Sigurðsson^{11,12}, Marius Rehn^{13,14,15}, Michelle S. Chew¹⁶, Maija-Liisa Kalliomäki¹⁷, Kimberley Lewis^{18,19}, Faisal A. Al-Suwaidan^{20,21,22,23}, Hasan M. Al-Dorzi⁹, Abdulrahman Al-Fares^{24,25}, Naif Alsadoon²⁶, Carolyn M. Bell^{27,28}, Christine M. Groth²⁹, Rachael Parke^{30,31}, Sangeeta Mehta³², Paul E. Wischmeyer³³, Awad Al-Omari³⁴, Klaus T. Olkkola³⁵, Waleed Alhazzani^{5,18,19,36,37}

Table 2. Summary of recommendations

Recommendation	Strength and certainty of evidence
Should we recommend using ketamine monotherapy for critically ill adults undergoing iMV?	
Recommendation 1: For critically ill adults undergoing iMV, the panel suggests not using ketamine monotherapy for analgo-sedation	Conditional; very low
Should we recommend using adjunct ketamine therapy with non-ketamine usual care sedatives for critically ill adults undergoing iMV?	
Recommendation 2: For critically ill adults undergoing iMV, the panel suggests using ketamine as an adjunct to non-ketamine usual care sedatives (e.g., opioids, propofol, dexmedetomidine) or continuing with non-ketamine usual care sedatives alone	Conditional; very low

Clinical Pharmacology

■ SPECIAL ARTICLE

Ketamine Analgo-sedation for Mechanically Ventilated Critically Ill Adults: A Rapid Practice Guideline from the Saudi Critical Care Society and the Scandinavian Society of Anesthesiology and Intensive Care Medicine

Marwa Amer^{1,2}, Morten Hylander Møller^{3,4,5}, Mohammed Alshahrani⁶, Yahya Shehabi^{7,8}, Yaseen M. Arabi⁹, Faye Alshamsi¹⁰, Martin Ingi Sigurðsson^{11,12}, Marius Rehn^{13,14,15}, Michelle S. Chew¹⁶, Maija-Liisa Kalliomäki¹⁷, Kimberley Lewis^{18,19}, Faisal A. Al-Suwaidan^{20,21,22,23}, Hasan M. Al-Dorzi⁹, Abdulrahman Al-Fares^{24,25}, Naif Alsadoon²⁶, Carolyn M. Bell^{27,28}, Christine M. Groth²⁹, Rachael Parke^{30,31}, Sangeeta Mehta³², Paul E. Wischmeyer³³, Awad Al-Omari³⁴, Klaus T. Olkkola³⁵, Waleed Alhazzani^{5,18,19,36,37}

Table 2. Summary of recommendations

Recommendation	Strength and certainty of evidence
Should we recommend using ketamine monotherapy for critically ill adults undergoing iMV?	
Recommendation 1: For critically ill adults undergoing iMV, the panel suggests not using ketamine monotherapy for analgo-sedation	Conditional; very low
Should we recommend using adjunct ketamine therapy with non-ketamine usual care sedatives for critically ill adults undergoing iMV?	
Recommendation 2: For critically ill adults undergoing iMV, the panel suggests using ketamine as an adjunct to non-ketamine usual care sedatives (e.g., opioids, propofol, dexmedetomidine) or continuing with non-ketamine usual care sedatives alone	Conditional; very low

Clinical Pharmacology

■ SPECIAL ARTICLE

Ketamine Analgo-sedation for Mechanically Ventilated Critically Ill Adults: A Rapid Practice Guideline from the Saudi Critical Care Society and the Scandinavian Society of Anesthesiology and Intensive Care Medicine

Marwa Amer^{1,2}, Morten Hylander Møller^{3,4,5}, Mohammed Alshahrani⁶, Yahya Shehabi^{7,8}, Yaseen M. Arabi⁹, Fayeze Alshamsi¹⁰, Martin Ingi Sigurðsson^{11,12}, Marius Rehn^{13,14,15}, Michelle S. Chew¹⁶, Maija-Liisa Kalliomäki¹⁷, Kimberley Lewis^{18,19}, Faisal A. Al-Suwaidan^{20,21,22,23}, Hasan M. Al-Dorzi⁹, Abdulrahman Al-Fares^{24,25}, Naif Alsadoon²⁶, Carolyn M. Bell^{27,28}, Christine M. Groth²⁹, Rachael Parke^{30,31}, Sangeeta Mehta³², Paul E. Wischmeyer³³, Awad Al-Omari³⁴, Klaus T. Olkkola³⁵, Waleed Alhazzani^{5,18,19,36,37}

Table 2. Summary of recommendations

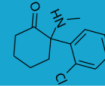
Recommendation	Strength and certainty of evidence
Should we recommend using ketamine monotherapy for critically ill adults undergoing iMV?	
Recommendation 1: For critically ill adults undergoing iMV, the panel suggests not using ketamine monotherapy for analgo-sedation	Conditional; very low
Should we recommend using adjunct ketamine therapy with non-ketamine usual care sedatives for critically ill adults undergoing iMV?	
Recommendation 2: For critically ill adults undergoing iMV, the panel suggests using ketamine as an adjunct to non-ketamine usual care sedatives (e.g., opioids, propofol, dexmedetomidine) or continuing with non-ketamine usual care sedatives alone	Conditional; very low



**e quindi forse non ha senso cercare un vincitore tra
ketamina e dexmedetomidina**



KETAMINA

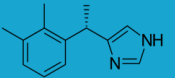


AZIONE ANALGESICA POTENTE
PROTEGGE LA FUNZIONE
RESPIRATORIA
MIGLIOR IMPATTO EMODINAMICO
BRONCODILATAZIONE
AZIONE IMMEDIATA

MINORI EVIDENZE
MAGGIOR TASSO DI DELIRIUM
POSSIBILE IPERTENSIONE



DEXMEDETOMIDINA

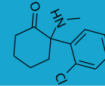


AZIONE ANALGESICA
MINOR PERCENTUALE DI DELIRIUM
MAGGIORI EVIDENZE DI EFFICACIA
MINOR DEPRESSIONE
RESPIRATORIA

MINOR LIVELLO DI SEDAZIONE
IPOTENSIONE
TEMPO DI INSORGENZA LENTO
COSTO ELEVATO



KETAMINA

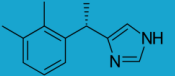


AZIONE ANALGESICA POTENTE
PROTEGGE LA FUNZIONE
RESPIRATORIA
MIGLIOR IMPATTO EMODINAMICO
BRONCODILATAZIONE
AZIONE IMMEDIATA

MINORI EVIDENZE
MAGGIOR TASSO DI DELIRIUM
POSSIBILE IPERTENSIONE



DEXMEDETOMIDINA

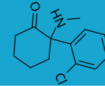


AZIONE ANALGESICA
MINOR PERCENTUALE DI DELIRIUM
MAGGIORI EVIDENZE DI EFFICACIA
MINOR DEPRESSIONE
RESPIRATORIA

MINOR LIVELLO DI SEDAZIONE
IPOTENSIONE
TEMPO DI INSORGENZA LENTO
COSTO ELEVATO



KETAMINA

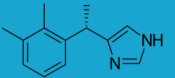


MINORI EVIDENZE
MAGGIOR TASSO DI DELIRIUM
POSSIBILE IPERTENSIONE

AZIONE ANALGESICA POTENTE
PROTEGGE LA FUNZIONE
RESPIRATORIA
MIGLIOR IMPATTO EMODINAMICO
BRONCODILATAZIONE
AZIONE IMMEDIATA



DEXMEDETOMIDINA

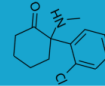


MINOR LIVELLO DI SEDAZIONE
IPOTENSIONE
TEMPO DI INSORGENZA LENTO
COSTO ELEVATO

AZIONE ANALGESICA
MINOR PERCENTUALE DI DELIRIUM
MAGGIORI EVIDENZE DI EFFICACIA
MINOR DEPRESSIONE
RESPIRATORIA



KETAMINA

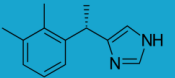


MINORI EVIDENZE
MAGGIOR TASSO DI DELIRIUM
POSSIBILE IPERTENSIONE

AZIONE ANALGESICA POTENTE
PROTEGGE LA FUNZIONE
RESPIRATORIA
MIGLIOR IMPATTO EMODINAMICO
BRONCODILATAZIONE
AZIONE IMMEDIATA



DEXMEDETOMIDINA



MINOR LIVELLO DI SEDAZIONE
IPOTENSIONE
TEMPO DI INSORGENZA LENTO
COSTO ELEVATO

AZIONE ANALGESICA
MINOR PERCENTUALE DI DELIRIUM
MAGGIORI EVIDENZE DI EFFICACIA
MINOR DEPRESSIONE
RESPIRATORIA



KETADEX



Journal of
Clinical Medicine



Brief Report

Uncovering the Benefits of the Ketamine–Dexmedetomidine Combination for Procedural Sedation during the Italian COVID-19 Pandemic

Alessandro Riccardi ¹, Sossio Serra ², Fabio De Iaco ³, Andrea Fabbri ⁴, Dana Shiffer ^{5,6} and Antonio Voza ^{5,6,*} on behalf of the Study and Research Center of the Italian Society of Emergency Medicine (SIMEU)

	KETA-DEX Group	KET Group	DEX Group
Patients (n)	22	22	22
Male % (n)	40.9 (9)	40.9 (9)	45.5 (10)
Mean age (years)	78.33 ± 8.72	79.41 ± 10.76	77.21 ± 12.33
Hypertension % (n)	86.4 (19)	68.2 (15)	72.7 (16)
Diabetes % (n)	36.3 (8)	27.3 (6)	22.7 (5)
Neoplasm history % (n)	22.7 (5)	27.3 (6)	31.8 (7)
Heart failure % (n)	40.9 (9)	27.7 (6)	36.3 (8)
Mean P/F before sedation	145.45 ± 23.46	138.59 ± 20.67	147.45 ± 26.25
Mean RASS	-5 ± 0	-5 ± 0	-1.96 ± 0.21
10' RASS	-5 ± 0	-5 ± 0	0
30' RASS	-5 ± 0	-5 ± 0	-0.82 ± 0.39
60' RASS	-5 ± 0	-5 ± 0	-1.81 ± 0.39
Desaturation (n)	0	0	0
Change in blood pressure (n)	0	10 (hypertension)	10 (hypotension)

Data are expressed as absolute numbers (n), percentages (%), or mean ± standard deviation.

EQUILIBRIO TRA L'AZIONE IPOTENSIVA DELLA DEXMEDETOMIDINA E QUELLA IPERTENSIVA DELLA KETAMINA

RIDUZIONE EVENTI DI DELIRIUM DA KETAMINA

	KETA-DEX Group	KET Group	DEX Group
Patients (n)	22	22	22
Male % (n)	40.9 (9)	40.9 (9)	45.5 (10)
Mean age (years)	78.33 ± 8.72	79.41 ± 10.76	77.21 ± 12.33
Hypertension % (n)	86.4 (19)	68.2 (15)	72.7 (16)
Diabetes % (n)	36.3 (8)	27.3 (6)	22.7 (5)
Neoplasm history % (n)	22.7 (5)	27.3 (6)	31.8 (7)
Heart failure % (n)	40.9 (9)	27.7 (6)	36.3 (8)
Mean P/F before sedation	145.45 ± 23.46	138.59 ± 20.67	147.45 ± 26.25
Mean RASS	-5 ± 0	-5 ± 0	-1.96 ± 0.21
10' RASS	-5 ± 0	-5 ± 0	0
30' RASS	-5 ± 0	-5 ± 0	-0.82 ± 0.39
60' RASS	-5 ± 0	-5 ± 0	-1.81 ± 0.39
Desaturation (n)	0	0	0
Change in blood pressure (n)	0	10 (hypertension)	10 (hypotension)

Data are expressed as absolute numbers (n), percentages (%), or mean ± standard deviation.

AZIONE MOLTO RAPIDA DETERMINATA DALLA KETAMINA

KETADEX

- KETAMINA 1
mg/kg/h
- DEXMEDETOMIDINA
0.7 mcg/kg/h

