

Sublingual Ketamine for Incident / Procedural Pain Management

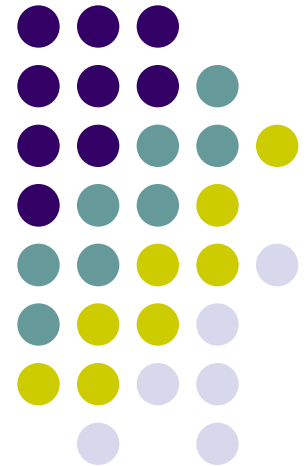
Jill Woods

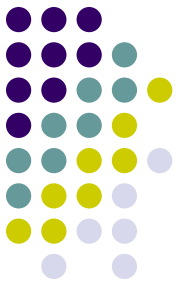
Clinical Nurse Consultant

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How we thought of it.....

- | Description of Ketamine+Midazolam PCA for burns dressing changes by Professor Schug at 2008 Spring Pain Meeting
- | Severe pain
- | Short duration
- | Desire to avoid opioid side effects & duration of effects
- | Burns dressing may take 2-3 hours



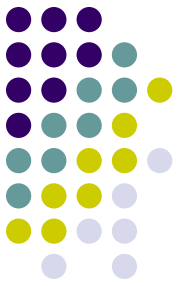
We thought.....What about other wound dressings?...leg ulcers etc

- | Also severe pain
- | Older patients
- | Short duration
- | Opioids have failed to provide sufficient analgesia (or predicted to fail)
- | Dressing frequency: variable
 - | Multiple per day
 - | Single ulcer debridement



Barriers to IV Ketamine PCA

- | Requires IV access
- | Cost of disposables
- | Ward nurses not able to prepare PCA ketamine
- | Don't want to keep patient attached to PCA for the 23 hrs of the day when it is not required
- | Detachment & re-attachment → infection risk.



What other routes for Ketamine?

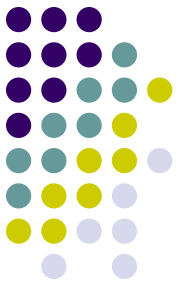
- | Intranasal ? è
 - | Cost of spray pump
 - | Requires patient coordination to administer
 - | Rapid onset
 - | High bioavailability
- | Oral ? è
 - | Slower onset than IN
 - | Lower bioavailability than IN
 - | Might be a suitable route
- | Sublingual ? è
 - | Slower onset & lower bioavailability than IN
 - | Similar onset & bioavailability to oral route
 - | OK in fasting patients or those who cannot swallow
 - | No disposables except 1ml syringe
 - | Little in the literature

Bioavailability of SL Ketamine

CC Chong, S. S., M Page-Sharp, KF Ilett, (2006). "Bioavailability of Ketamine After Oral or Sublingual Administration." Pain Medicine 7(5): 469-469.

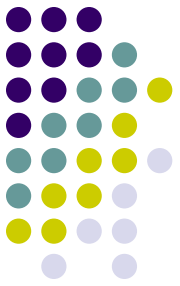


- | Six pts ⇒ serial bloods over 8 hrs after either oral or SL ketamine
- | Bioavailability (mean ± SD) of ketamine
 - | sublingual = 32 ± 17%
 - | Oral = 23 ± 9%
- | When the contribution from norketamine (as ketamine equivalents) was also included, the combined bioavailabilities
 - | Sublingual = 54 ± 17%
 - | Oral = 59 ± 16%
- | Conclusion:
 - | Oral and SL have similar bioavailability
 - | further studies are needed to determine analgesic efficacy of sublingual versus oral ketamine, including the contribution of nor-ketamine



Prescribing

- | **Ampoule of ketamine 200mgs prepared by pharmacy**
 - | 10 or 20 mg doses into 1ml syringes
- | **What dose?.....empirical decision**
 - | **AGE: less for the elderly**
 - | <60 yr è 20mg 5/60 X 5 prn
 - | >60 yr è 10mg 5/60 X 5 prn
 - | **Liver function?**
 - | Mild derangement è proceed
 - | Significant abnormal transaminases è contraindication
 - | **Psychological factors**
 - | Likely to cope with temporary dysphoria? è proceed
- | **What We Do**
 - | Oral opioid 40-60 minutes prior to procedure
 - | Supine with SpO2 monitor
 - | 1st dose 5 minutes before procedure commences
 - | Repeat 5 minutely prn during procedure if indicated



What about midazolam?

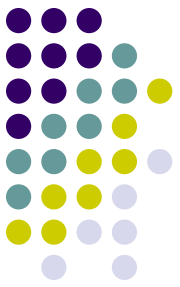
- | To minimise any dysphoric effect
- | Administered to patient using PCA ketamine
 - | Required presence of Pain Reg to administer
 - | Required IV access
 - | Not practicalè abandoned
 - | Worked but not sustainable practice



What about other Analgesics?

- | Oxycodone
- | Morphine S/C
- | Tramadol

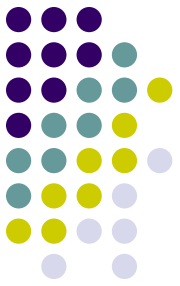
- | Opioids require administration 30-60 mins pre treatment
- | Lying supine
- | SL Ketamine 5 minutes prior to wound care.



Retrospective Audit

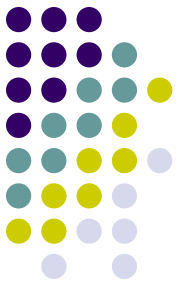
- | Commenced prescribing in September 2008
- | n = 15
- | Able to access 9 sets of case notes
- | Indications: all wound mx_ daily procedures
 - | Leg & foot ulcers
 - | BKA stump wound breakdown
 - | Multiple sites: pyoderma gangrenosum
- | AGE: 30 – 79 (mean 62) years; 6 of 9 were male
- | Frequency: dosing on 1 - 25 days
- | Total number of doses over treatment period: 1 – 45
- | Modal dose 20mg (range 10-100mg) per dressing

Dose mg	Age gender	Impair Renal Hepatic	Totals Days : Doses	Number of doses per dressing Mode (range)	No. doses per dressing Mode mg (max)	Effect
1. 10	79, F	R	1 : 1	1	10mg	++
2. 10	72, F	R	2 : 2	1	10	++
3. 10	71, M	R, H _(ALP & GGT only)	25 : 45	1 (1-4)	10 (40)	++
4. 20	60, M		1 : 1	1	20	—
5. 20	77, M	R	4 : 5	1	20 (40)	+++
6. 20	64, M		6 : 6	1	20	+ / _
7. 20	30, F	H _(ALP & GGT only)	7 : 10	1 (1-2)	20 (40)	+++
8. 20	51, M		16 : 24	1 (1-3)	20 (60)	++
9. 20	54, M		10 : 29	2 or 3 (1-5)	40 or 60 (100)	+++



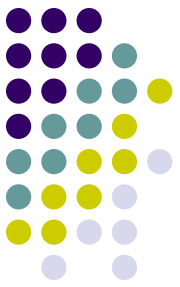
Patient comments

- | M, 54 è debridement infected full thickness burns: good analgesia
“like smoking a joint”
- | F, 30 è severe pyoderma gangrenosum
“much more comfortable throughout dressing change”



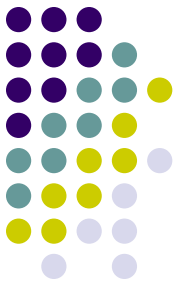
Case study

- | M, 60 è leg ulcers
 - | severe lymphodema both legs
 - | SL ketamine 20mgs
 - | – “did not like experience” – made him feel nauseated
 - | Currently weekly outpatients for dressings
 - | excruciatingly painful
 - | è methoxyflurane (Penthrox™) inhaler used successfully in preference to SL ketamine



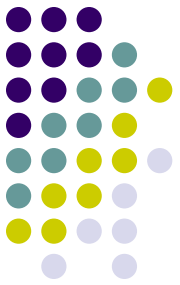
Optimising patient experience

- | **Safe drug preparation** (manufactured in pharmacy)
- | **Good explanation to patient** & give the patient time to absorb the information prior to dosing
 - | Warn the patient it may taste bitter
 - | Need to hold in mouth under the tongue for as long as possible
 - | May experience a “floating feeling”
 - | “Might” or “Might Not” enjoy the weird feeling
 - | Effect onset: within 5 minutes of administration
 - | May need repeated doses depending on duration of procedure
 - | Need to monitor LFTs weekly
 - | ? Atypical “allergic response” possible....no literature (anecdotal)
- | **Observations:** pulse oximeterè SpO₂, HR.
- | supplemental O₂ if indicated



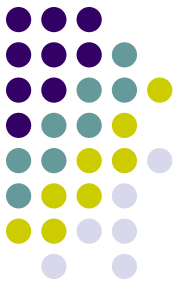
Adverse Events 2^y SL Ketamine

- | No significant AEs attributable to Ketamine
- | Dizziness
- | Nausea
- | No worsening pre-existing renal or hepatic impairment in absence of other causes
 - | Pt # 3:
 - | Large Groin wound: ketamine helped pain ++
 - | Became septic & unwell & died 35 days after starting SL ketamine
 - | Day before death:
 - § Forefoot amputation & SSG
 - § Ketamine infusion post op
 - § Hb=65; WCC = 27; AST & ALT normal; ALP = 306; GGT = 249;
 - § Creat = 750è 480



Summary

- | Mainly positive experience = effective in the majority
- | Few side effects
- | Well tolerated
- | Practical
- | Inexpensive
- | No disposables apart from a syringe
- |however our numbers are small



Future plans

- | Prospective audit
- | Observational study
 - | Ward: wound management
 - | ED: # NOF pain prior to IV access

- | Any comments / questions?