Persistent Post Surgery Pain

STATE OF THE ART REVIEW FOR THE GLOBAL YEAR AGAINST PAIN AFTER SURGERY
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Takeaway Messages

- Large cause of persistent pain.
- Psychological and demographic risk factors seem most important.
- CPAS involves differing mechanisms compared to NeuP, somatic, inflammatory, cutaneous, visceral or joint pain (at least in rodents).
- 'Small' procedures can be very painful.
- Clinical guidelines/protocols are probably helpful but are wildly at odds with current practice.
- Rapid screening for high-risk patients can be very reliable.
- PPSP seems at least partially preventable.
Overview

- New pain following a surgical procedure
- Either in the surgical field, in the territory of an effected nerve or in a dermatonally referred pattern
- Atlas 2 months in duration
- 5.2 million cases of severe PPSP world wide
- Mod-severe - 16% at 6 months and 12% at 12 (Fletcher 2015), and roughly double in children.
- Often neuropathic or mixed in nature - and therefore difficult to treat
6 Features predict 3/4 of all PPSPS

- Type of surgery (particularly long surgeries in highly innovated areas)
- Age, physical status, mental health
- Pre-operative pain (at site of surgery or elsewhere)
Psychological and demographic risk factors

- Be old, male, optimistic and not in much pain before surgery
- Catastrophising and anxiety are highly associated with increased risk of short-term and long-term high pain levels
- Sex difference is probably similar to the known female preponderance for all chronic pain
- Catastrophising may have a neurobiological basis, as does anxiety.
Psychological factors

- Catastrophising accounts for 16% of risk alone, and more than that in subjects with a past history of chronic pain of any type.
- Added to anxiety and medication expectation, this rises to over 40% of variance explained.
- This effect size is more than the difference between ‘highly painful’ and ‘minimally painful’ procedures due to operative causes.
- Targeted efforts directed towards risky patients is the appropriate strategy, as broadly directed interventions don’t seem to work in a population sense.
The following questions constitute a best-practice screening tool for high acute pain and high risk of CPAS

- "How old are you?"
- "How long has your pain been bad for?"
- "What sex are you?" (Tact possibly required)
- "Are you on opioids?" (RR 2 in gynae)
- "How much pain do you think you will be in?"
- "How much medication do you think you might need?"
- "How anxious are you about this procedure?"

Formal scoring systems are being developed.
As mentioned, some of the variance in prediction of CPAS is neither genetic, nor psychosocial.

Surgical technique differences have been explored with interesting results.

Thoracic and breast surgery are clearly the most risky operations, followed by major orthopaedic limb surgery, then the rest.

This additional risk of these procedures is probably due to the higher risk of NeuP.

Interestingly, several ‘nerve sparing’ techniques either produce no improvement in CPAS rate, or are actually worse.
Nerve sparing surgical techniques

- In breast surgery, CPAS rates and severity are INCREASED by sparing the intercostobrachial nerve instead of transecting it.
- In cholecystectomy, hysterectomy and thoracotomy, using minimally invasive laparoscopic techniques did not reduce CPAS rates.
- In a study of CPAS following iliac crest bone harvest, nerve sparing surgery increased CPAS rates compared to transection.
- It appears that a partial nerve injury in many types of procedure is worse than a complete transection for long-term CPAS risk.
Early warnings for CPAS

- Cognitive impairment worsens short-medium term risk of acute pain
- Pain trajectory after surgery may indicate need for early multimodal intervention (monitor both pain intensity and slope of reduction trajectory)
- Time spent with poor analgesia is important
- For every 10% increase in time spent in pain, there is a 30% increase in CPAS risk
How should we respond to this challenge?

- Transitional pain service (‘APS outpatients’) — Funding?
- According to Canadian modelling, a single patient with no prior health issues who develops disabling CPAS costs $1m over 30 years.
- An average hospital with 1% rate of new CPAS and 5% rate of pain worsening will create $2-4m of new CPAS every year if they do 4000 major procedures a year.
Prevention

- The most effective surgical intervention is to avoid surgery which has poor efficacy.
- If surgery is required then techniques which have been shown to have a reduced incidence of PPSP should be used. But what are they? And where should it take place - high volume vs low volume centres.
- Ability to change cognition?
- Avoiding opioids in those about to have surgery?
- Anaesthetic technique - regional - Best evidence for Epidural RR 0.33 in thoracotomy and para-vertebral 0.37 in breast surgery.
- Medication? Role for pregabalin, ketamine etc
- Follow up? Clinics
Could NMDA antagonists prevent CPAS due to neuropathic pain?

- KETAMINE?
- NOPE
- DEXTROMETHORPHAN?
- NOPE
- MEMANTINE??
- QUITE POSSIBLY – Robust RCT in mastectomy for 2 weeks pre and postop course (Pickering et al)
Goals of a Postacute Pain Service

- Educate patients, family members and staff
- Provide pain relief to patients with difficult post acute pain
- Modify problematic in-hospital trajectory
- Early reduction in opioids and initiation of outpatient antineuropathics where NeuP is highly likely
- Safe transition to chronic pain model
- Exploration and early introduction to interdisciplinary care model
Thank you