Transitional pain and the risk factors for CPSP: novel targets for CPSP preventive strategies?

Pain, specifically chronic pain, is highly complex, combining sensory and emotional dimensions as well as psychosocial aspects. The presence of a neuropathic component is frequently incriminated in severe CPSP.[18] The negative impact of these neuropathic symptoms on recovery makes accurate diagnosis and treatment mandatory. Various therapeutic strategies both patient and symptoms specific are available. Some treatments e.g. capsaicin application seem to show better results with earlier application (within 6 months of diagnosis). It is here worth noting that neuropathic component in postoperative pain may develop as early as 48h after surgery with a high predictive value of persistence at 2 months and later.[19] In other cases, neuropathic component may develop later after a free interval as demonstrated after various surgical procedures including thoracic surgery. The later finding underlines the importance of patient's followup. Neuropathic symptoms and pain have a negative impact on function.[18] In orthopedic surgery mainly hip and knee arthroplasties, several publications have defined a critical phase in the recovery process i.e. the first 2 to 3 months at the end of which patients with poor outcome should be identified and require more intensive clinical care.[8,20] Pain catastrophizing and number of painful body regions have been associated with poor pain and functional outcome trajectories after knee arthroplasty.[20] Both pharmacologic and non-pharmacologic treatments might be appropriate to help those patients. The control of opioid analgesics intake as aforementioned is also mandatory.[21] Finally, after hospital discharge, the psychosocial dimension of pain may increase in relation to the influence of familial and environmental factors.[15] The management of family behaviors and cognitions may be sometimes necessary to improve the efficacy of patient's treatment. In example, parental pain catastrophizing significantly affects child recovery trajectory after major surgical procedure whereas the child catastrophizing does not.[15]

Conclusion Chronic postsurgical pain is now recognized as an important individual and socio-economic factor which may be difficult to relieve. A remained unchanged incidence over the past decades points out the failures of perioperative preventive strategies. Because pain is a dynamic process, current researches now focuse on the progression from acute to chronic pain to better understand associative and causal risk factors. Consequently, the subacute pain period also called transitional pain is now a novel target to apply preventive treatments and to try to reduce the development of CPSP. For that reason, the concept of 'transitional pain services' stands a corner stone of perioperative medicine.[22]

REFERENCES

1. Schug SA, Lavand'homme P, Barke A, Korwisi B, Rief W, Treede RD, Pain ITft-CoC: **The IASP classification of chronic pain for ICD-11: chronic postsurgical or posttraumatic pain**. *Pain* 2019, **160**:45–52.
2. Schug SA, Bruce J: **[Risk stratification for the development of chronic postsurgical pain]**. *Schmerz* 2018, **32**:471–476.
3. Fletcher D, Stamer UM, Pogatzki-Zahn E, Zaslansky R, Tanase NV, Perruchoud C, Kranke P, Komann M, Lehman T, Meissner W, et al.: **Chronic postsurgical pain in Europe: An observational study**. *Eur J Anaesthesiol* 2015, **32**:725–734.
4. Khan JS, Sessler DI, Chan MTV, Wang CY, Garutti I, Szczeklik W, Turan A, Busse JW, Buckley DN, Paul J, et al.: **Persistent Incisional Pain after Noncardiac Surgery: An International Prospective Cohort Study**. *Anesthesiology* 2021, **135**:711–723.
5. Montes A, Roca G, Sabate S, Lao JI, Navarro A, Cantillo J, Canet J, Group GS: **Genetic and Clinical Factors Associated with Chronic Postsurgical Pain after Hernia Repair, Hysterectomy, and Thoracotomy: A Two-year Multicenter Cohort Study**. *Anesthesiology* 2015, **122**:1123–1141.
6. Lavand'homme P: **Transition from acute to chronic pain after surgery**. *Pain* 2017, **158 Suppl 1**:S50-S54.
7. Gilron I, Vandenkerkhof E, Katz J, Kehlet H, Carley M: **Evaluating the Association Between Acute and Chronic Pain After Surgery: Impact of Pain Measurement Methods**. *Clin J Pain* 2017, **33**:588–594.
8. Lenguerrand E, Wylde V, Gooberman-Hill R, Sayers A, Brunton L, Beswick AD, Dieppe P, Blom AW: **Trajectories of Pain and Function after Primary Hip and Knee Arthroplasty: The ADAPT Cohort Study**. *PLoS One* 2016, **11**: e0149306.
9. Althaus A, Arranz Becker O, Moser KH, Lux EA, Weber F, Neugebauer E, Simanski C: **Postoperative Pain Trajectories and Pain Chronification-an Empirical Typology of Pain Patients**. *Pain Med* 2018, **19**:2536–2545.
10. Katz J: **One man's risk factor is another man's outcome: difference in risk factor profiles for chronic postsurgical pain maintenance vs transition**. *Pain* 2012, **153**:505–506.
11. Bugada D, Lavand'homme P, Ambrosoli AL, Cappelleri G, Saccani Jotti GM, Meschi T, Fanelli G, Allegri M: **Effect of Preoperative Inflammatory Status and Comorbidities on Pain Resolution and Persistent Postsurgical Pain after Inguinal Hernia Repair**. *Mediators Inflamm* 2016, **2016**:5830347.
12. Aasvang EK, Gmaehle E, Hansen JB, Gmaehle B, Forman JL, Schwarz J, Bittner R, Kehlet H: **Predictive risk factors for persistent postherniotomy pain**. *Anesthesiology* 2010, **112**:957–969.
13. Grosu I, Thienpont E, De Kock M, Scholtes JL, Lavand'homme P: **Dynamic view of postoperative pain evolution after total knee arthroplasty: a prospective observational study**. *Minerva Anestesiol* 2016, **82**:274–283.
14. Veal F, Bereznicki L, Thompson A, Peterson G, Orlikowski C: **Subacute pain as a predictor of long-term pain after orthopedic surgery**. *Medicine (Baltimore)* 2015, **94**:1–6.
15. Rabbitts JA, Zhou C, Groenewald CB, Durkin L, Palermo TM: **Trajectories of postsurgical pain in children: risk factors and impact of late pain recovery on long-term health outcomes after major surgery**. *Pain* 2015, **156**:2383–2389.
16. Katz J, Weinrib A, Fashler SR, Katznelzon R, Shah BR, Ladak SS, Jiang J, Li Q, McMillan K, Santa Mina D, et al.: **The Toronto General Hospital Transitional Pain Service: development and implementation of a multidisciplinary program to prevent chronic postsurgical pain**. *J Pain Res* 2015, **8**:695–702.
17. Jensen TS, Stubhaug A, Breivik H: **Important development: Extended Acute Pain Service for patients at high risk of chronic pain after surgery**. *Scand J Pain* 2016, **12**:58–59.
18. Stamer UM, Ehrler M, Lehmann T, Meissner W, Fletcher D: **Pain-related functional interference in patients with chronic neuropathic postsurgical pain: an analysis of registry data**. *Pain* 2019, **160**:1856–1865.
19. Beloeil H, Sion B, Rousseau C, Albaladejo P, Raux M, Aubrun F, Martinez V, network Sr: **Early postoperative neuropathic pain assessed by the DN4 score predicts an increased risk of persistent postsurgical neuropathic pain**. *Eur J Anaesthesiol* 2017, **34**:652–657.
20. Dumenci L, Perera RA, Keefe FJ, Ang DC, Slover J, Jensen MP, Riddle DL: **Model-based pain and function outcome trajectory types for patients undergoing knee arthroplasty: a secondary analysis from a randomized clinical trial**. *Osteoarthritis Cartilage* 2019, **27**:878–884.
21. Clarke H, Azargive S, Montbriand J, Nicholls J, Sutherland A, Valeeva L, Boulis S, McMillan K, Ladak SSJ, Ladha K, et al.: **Opioid weaning and pain management in postsurgical patients at the Toronto General Hospital Transitional Pain Service**. *Can J Pain* 2018, **2**:236–247.
22. Stamer UM, Liguori GA, Rawal N: **Thirty-five Years of Acute Pain Services: Where Do We Go From Here?** *Anesth Analg* 2020, **131**:650–656.

SP36 OPIOID SPARING ANESTHESIA

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Inadequate perioperative pain control delays postoperative mobilization, and may lead to development of chronic postoperative pain, amplified cardiac and pulmonary complications, and increased morbidity and mortality.[1] Even though opioids are still widely used,[2] more information on their misuse, limitations and side-effects is becoming available, including risk of dependence and opioid-induced hyperalgesia (OIH).[3] Multimodal analgesia has been defined as the use of two or more analgesics or techniques that target different mechanisms or pathways in the nociceptive system.[4] As drugs are combined,

lower doses of each class can be given, thereby lowering the side effects of each individual drug, but increasing overall efficacy.[5,6] Drugs commonly used in this framework include acetaminophen, non-steroidal anti-inflammatory drugs (NSAID) or cyclo-oxygenase-2 inhibitors, dexamethasone, gabapentin, clonidine, dexmedetomidine, intravenous lidocaine, magnesium and ketamine. When timed correctly, however, regional anesthesia remains the best and most powerful opioid-sparing technique for many indications.

REFERENCES

10. Gerbershagen HJ, Aduckathil S, van Wijck AJ, *et al*. Pain intensity on the first day after surgery: a prospective cohort study comparing 179 surgical procedures. *Anesthesiology* 2013;118:934–44.
11. Ladha KS, Patorno E, Huybrechts KF, *et al*. Variations in the Use of Perioperative Multimodal Analgesic Therapy. *Anesthesiology* 2016;124:837–45.
12. Wu CL, Raja SN. Treatment of acute postoperative pain. *Lancet* 2011;377:2215–25.
13. Manworren RC. Multimodal pain management and the future of a personalized medicine approach to pain. *AORN J* 2015;101:308–14; quiz 15–8.
14. Kehlet H, Dahl JB. The value of 'multimodal' or 'balanced analgesia' in postoperative pain treatment. *Anesth Analg* 1993;77:1048–56.
15. Buvanendran A, Kroin JS. Multimodal analgesia for controlling acute postoperative pain. *Curr Opin Anaesthesiol* 2009;22:588–93.

SP37 LOCAL ANAESTHETICS AND WOUND HEALING

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The potential tissue toxicity of local anesthetics and their interference with numerous pathways, among which G-protein coupled receptor pathways, has led to questions on whether local anesthetics may impair wound healing. It should be stressed first that no analgesic is perfect, there is always a trade-off, and side-effects will be found for every drug. Local anesthetics, in that regards, fare very well, with an excellent safety profile, decades of successful use in millions of patients, and, if applied correctly, superior pain relief since the pain is tackled right where it originates. There are two big wound healing scenarios: skin and bone. For both, a typical short course of local anesthetics in form of a single shot, or for a few days using continuous techniques, should be fine to the best of our knowledge. Basic and clinical evidence is presented to illustrate these points.

REFERENCE

1. Huss MK, Felt SA, Pacharinsak C. Influence of pain and analgesia on orthopedic and wound-healing models in rats and mice. *Comp Med* 2019;69:535–45.

SP38 THA

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The most recent Total Hip Arthroplasty (THA) recommendations by the PROSPECT working group update previous work published in 2005 and updated 2010. We performed a systematic literature review of randomized controlled trials and meta-analyses published between July 2010 and December 2019, and found 521 studies, of which 108 randomized studies and 21 meta-analyses were finally included. Peri-operative interventions that improved postoperative pain include: paracetamol; cyclo-oxygenase-2-selective inhibitors; non-steroidal anti-inflammatory drugs; and intravenous dexamethasone. In addition, regional anesthesia in form of select peripheral nerve blocks, single-shot local infiltration analgesia, intrathecal morphine and epidural analgesia were also found to decrease pain. Regional variation in use (more nerve blocks in Europe, more LIA in the United States) is noteworthy. Given a risk-benefit analysis, the PROSPECT group does not recommend use of femoral nerve blocks, epidural anesthesia, and gabapentinoids. The use of intrathecal morphine, similarly, should be subjected to a thorough risk-benefit analysis.

REFERENCES

1. Anger M, Valovska T, Beloeil H, et al. PROSPECT guideline for total hip arthroplasty: a systematic review and procedure-specific postoperative pain management recommendations. Anaesthesia 2021;76:1082–97.

SP38.1 UPDATE ON ADJUVANTS FOR PAEDIATRIC PNBS

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Adjuvants in Pediatric regional Anesthesia

Per-Arne Lönnqvist

Initial word of caution/Disclaimer With the exception of clonidine and preservative free morphine none of the other adjuvant agents mentioned in this practice advisory guideline are registered for spinal/epidural administration. None of the agents are registered for injection close to peripheral nerve structures. Thus, the decision to use the drugs mentioned below as adjuvants to pediatric regional anesthesia will be governed by the individual practitioner´s decision, departmental policy and the existing medicolegal situation.

Rational for using adjuvants

Even long-acting local anesthetics (racemic bupivacaine, levo-bupivacaine and ropivacaine) have a limited duration of action (typically 4–12 h of duration) balanced against the time period of more intense postoperative pain associated with moderate or major surgery (24–72 h). Prolongation of the block effect in order to better match pain duration can be accomplished by the use of catheter techniques that will allow repeated bolus administration or continuous infusion of local anesthetics.[1] However, the majority of pediatric surgical interventions do not merit the use of these more complicated and resource demanding options for postoperative analgesia. Thus, a popular alternative to achieve prolongation of a single injection nerve block is to use adjuvant drugs that are mixed with the local anesthetics and thereby increase the duration of the nerve block.[2,3]

Some of the advantages associated with the use of adjuvants drugs:

a. Will increase block duration in such a way that it may be possible to perform the surgical procedure before the block starts to wear off (e.g. neonatal spinal anesthesia)

b. Reduced general anesthetic requirement