

Perioperative analgesia in laryngological cases

Analgezyja okresu okołoperacyjnego w przypadkach laryngologicznych

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ABSTRACT:

In clinical practice, pain management following various surgical interventions is far from perfect. Despite advances in pharmacology, suffering of patients after surgery is still commonplace. A change in simple rules for managing postoperative pain, as well as introduction of standards for therapy would let change status quo. Introduction of multi-drug therapy brings hope to improve patients' comfort and efficacy of treatment.

KEYWORDS:

postoperative pain management, laryngological surgery

STRESZCZENIE:

Leczenie bólu po różnych zabiegach operacyjnych w praktyce klinicznej odbiega od ideału. Pomimo postępów w farmakologii, cierpienie pacjentów po operacjach to sprawa powszechna. Zmiana prostych zasad w leczeniu bólu pooperacyjnego i wdrożenie standardów leczenia pozwoliłoby na zmianę dotychczasowej sytuacji. Nadzieję na poprawę komfortu chorych, a co za tym idzie skuteczności leczenia, daje wprowadzenie terapii wieloskładnikowej.

SŁOWA KLUCZOWE: leczenie bólu pooperacyjnego, operacje laryngologiczne

A wide range of surgical interventions in laryngological practice is the reason why postoperative pain management is highly diverse. Many patients do not require any analgesics, while others, following extensive operations, require complex multidrug therapy.

Standards for postoperative pain management should be developed individually for each and every institution, with respect to its surgical profile. Guidelines published in 2014 on postoperative analgesia, developed by the Polish Association for Pain Management, constitute a perfect basis to create schemes that are useful in clinical settings.

Ideally, postoperative pain management should be based on the postoperative pain management team established within an institution. The team is capable of developing therapeutic standards, their practical introduction and modification

in specific and difficult situations. Pain management service should be available 24/7. In practice, postoperative pain management is the domain of anesthesiology specialists that collaborate with surgical departments on a daily basis, or teams forming outpatient pain clinics. Acute pain management is a priority for every healthcare center for many reasons (also economic), since the pain teams offer treatment of chronic pain that is longstanding and expensive, and often requires multiple hospital admissions. Effective treatment of postoperative pain is of utmost importance in institutions that offer one-day surgery, especially when the patients are children. Elimination of postoperative pain allows to successfully broaden the scope of operations performed on an outpatient basis while maintaining patient safety. An essential element for creation of good postoperative management schemes is also a detailed documentation and systematic analysis of collected data. Data collection is a responsibility of nurses who take care

of patients. Nurses should have influence on development of standards for pain management and their modification when they prove unsuccessful.

POSTOPERATIVE PAIN – DEFINITION AND METHODS OF ASSESSMENT

Postoperative pain is an unpleasant sensation corresponding with tissue damage due to surgical intervention to organ structures. It is caused by damage to skin, subcutaneous tissue, mucous membranes and periosteum. It comes immediately after offset of analgesics used for general anesthesia, unless the so-called preventive anesthesia was introduced before or during the operation. It is of particular significance when ultra-short acting agents are used, e.g. remifentanyl.

Postoperative pain is inseparably linked with operated site, its location, degree of tissue damage, and hence – surgical technique. The pain is most intensive during first two days after operation. Pain sensation decreases with time and it is significantly lower on the 3rd and 4th postoperative day. However, the condition that must be met for it is proper pain management in its early stage. An underestimated element of postoperative pain management is preoperative education about pain relieve techniques, managing crises and routes for drug application. Written form of information regarding pain management methods improves education of patients and motivates them for better cooperation with medical personnel.

Postoperative pain is an individual phenomenon, depending on pain threshold of a specific person. If pain management is unsuccessful, it triggers cardiovascular reaction, including tachycardia and rise in blood pressure. It is sometimes accompanied by excessive sweating and lacrimation. The intensity of pain may be measured in many ways in clinical practice. There are multiple scales for postoperative pain assessment. The most popular is the 11-item numeric scale (NRS). On this scale, 0 refers to no pain, while 10 is the most severe pain. The patients can also verbally describe pain sensation – no pain, the most severe pain possible and unbearable pain. Children can describe their pain using appropriate drawings – happy or sad faces, corresponding to pain intensity. Other descriptive or multidimensional scales are also commonly used.

Postoperative pain sensation is sometimes inevitable, however, the pain should never exceed 4 on the NRS scale. Higher points indicate unsuccessful treatment or lower pain threshold in a specific patient. It requires immediate action and modification of treatment.

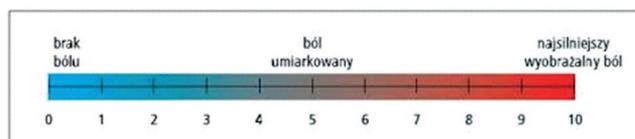


Fig. 1. Pain assessment scale

METHODS OF ANESTHESIA AND POSTOPERATIVE PAIN MANAGEMENT

In laryngology, general anesthesia is usually used in various forms, with inhaled or intravenous anesthetics. Application of regional or local anesthesia is very limited, only in certain procedures. General anesthesia is conducted using short-acting agents, which do not cause prolonged analgesia. Ketamine is an exception, it is used for induction and experiences a renaissance as an additional drug for treatment of certain types of postoperative pain. When ultrashort-acting opioids (remifentanyl) are used, it is necessary to add a long-acting analgesic in order to prevent pain intensification during emergence. Usually, postoperative pain management is initiated during surgery by administering NSAIDs, metamizole, paracetamol. Intravenous therapy is quicker and more effective than oral route.

ROUTES AND MODES OF ADMINISTRATION OF ANALGESICS IN ACUTE PAIN MANAGEMENT

How and with what drugs should postoperative pain be treated? Guidelines may be found in WHO analgesic ladder. It refers to chronic pain, however, it indicates that therapy should reflect the pain sensation associated with tissue damage due to surgical intervention.

The basic premise is that an effective pain management cannot be patient-controlled. That system leads to poor control of postoperative pain. Analgesics should be administered at fixed intervals, considering their pharmacokinetics. Routes of administration are different depending on the procedure, the most common are still oral and intravenous. In children, rectal administration of analgesics is another possible route. In extensive procedures, analgesics may be administered intravenously as patient-controlled anesthesia, using a special pump with software that allows to define daily dose as well as dose range over given intervals. Patient-controlled analgesia (PCA) pumps improve efficacy of treatment – nonetheless, they require special training of hospital staff and good cooperation with the patient. The most common route is via subcutaneous catheter inserted during surgery. This mode has as many supporters as opponents, however, it is effective and comfortable for the patient. Essential conditions for proper absorption of the drug are patient's normothermia and presence of



Fig. 2. PCA pum

an effective heating system during surgery. It seems that new better systems will be developed in the future, based on a transdermal patch releasing appropriate amount of drug over a time unit.

OPIOIDS USED IN POSTOPERATIVE PAIN MANAGEMENT

It is a long-known group of drugs, which ensure painless postoperative course. Unfortunately, they are not devoid of side effects, the most important being postoperative nausea and vomiting. Use of right doses at appropriate intervals allows to decrease the risk of developing respiratory failure, a serious complication. Cases of developing addiction in acute pain treatment are rare. The rate of opioid dependence, described in the literature, does not exceed 0.1% of cases.

A change in drug administration immediately following surgery contributes to greater efficacy of pain treatment. Small titrated doses of opioids i.v. allow to eliminate pain effectively and achieve basic level of analgesia.

The most commonly used opioid is morphine. Other drugs are also being introduced to clinical practice: oxycodone, combination of oxycodone with naloxone, buprenorphine, tramadol.

Current scheme of pain management does not include pethidine. Side effect relating to this drug along with formation of

proconvulsive metabolites caused exclusion of pethidine from current acute pain management regime.

MULTIDRUG ANALGESIC THERAPY

Use of multiple drugs and techniques of pain relieve until the desired analgesic effect is achieved allows for reduction of opioid doses even by 30-40%. Combination of opioids with non-steroidal anti-inflammatory drugs, paracetamol, ketoprofen, dexketoprofen eliminates sensation of pain caused by tissue damage. It takes place during laryngological interventions, where damage is caused to skin, mucosae and bone elements. In extensive oncological operations, tissue tension and catheter insertion cause the pain to be particularly severe during the first two postoperative days.

REGIONAL ANESTHESIA IN LARYNGOLOGICAL SURGERY

In the literature, only few applications of conduction anesthesia in laryngology have been described. Many reports regard pediatric patients, in whom cervical plexus block, infiltration of the postoperative wound with local anesthetics or irrigation are used. It applies to interventions such as tonsillectomy, nasal septum and sinuses surgery, extensive oncological operations.

PLANNING AND STANDARDIZATION OF POSTOPERATIVE PAIN MANAGEMENT IN LARYNGOLOGY

As stated at the beginning, rules for postoperative pain management should be adjusted individually depending on needs of a specific institution. Valuable guidelines may be obtained

Tab. I. Analgesia in laryngological interventions – medication.

PREVENTIVE ANALGESIA	PARACETAMOL, DICLOFENAC, KETOPROFEN, METAMIZOLE, OPIOIDS, BLOCKS.	
Type of intervention	Extent	Drugs
Cervical nevus removal, nasal ala correction, laryngeal microsurgery	Small	No medication, NSAIDs, Paracetamol, Metamizole
Septoplasty, Maxillary sinus tumorectomy, Auditory nerve tumorectomy, Cochlear implant, Uvulopalatoplasty	Moderate	NSAIDs, Paracetamol, Metamizole, Steroids, Xylocaine, Coxibs, Dexmedetomidine, Opioids
Laryngectomy with maxillary resection, Chinese flap reconstruction	Extensive	Opioids, NSAIDs, Metamizole, Paracetamol, Gabapentin, Steroids, Coxibs, Ketamine, Clonidine, Xylocaine.
	Highly specialized interventions	According to the practice of an institution

through analysis of medical documentation, designed studies and surveys as part of therapeutic process assessment.

CONCLUSIONS

1. Guidelines on acute pain management published in 2014 constitute a perfect basis for developing standards for a specific health care institution.

2. Application of multidrug postoperative pain management improves efficacy of treatment.

3. Monitoring and documenting pain intensity allows to adjust pharmacotherapy to the needs of an individual patient.

4. Establishing acute pain management teams improves quality and efficacy of pain control.

References

1. Malec-Milewska M., Woron J.: Compendium leczenia bólu. Medical Education, Warszawa 2012: 89–101.
2. Misiołek H., Cettler M., Woron J., Wordliczek J., Dobrogowski J., Mayzner-Zawadzka E.: Zalecenia postępowania w bólu pooperacyjnym AD 2014. *Ból*. 2014; 14, 3: 22–50.
3. Elvir-Lazo O.L., White P.F.: The role of multimodal analgesia in pain management after ambulatory surgery. *Current Opinion Anesthesiology*. 2010; 23: 697–703.
4. Buchanan M.A., Dunn G.R., MacDougall G.M., Gillian M.: A prospective double blind randomized controlled trial of the effect of topical bupivacaine on postoperative pain in bilateral nasal surgery with bilateral nasal packs inserted. *The Journal of Laryngology and Otology*. 2005; 119, 4: 284–288.
5. El-Hakim H., Nunez D.A., Saleh H.A., Macleod D.M., Gardiner Q.: A randomised controlled trial of the effect of regional nerve blocks on immediate post-tonsillectomy pain in adult patients. *Clinical Otolaryngology*. 2000; 25: 413–417.
6. Raghuvansi S.K., Chakravarty N.A., Dinesh P., Bankvar V.: Use of clonidine as an adjuvant to infiltration anesthesia in tympanoplasty a randomized double blind study. *Indian Journal of Otolaryngology & Head and Neck Surgery*. 2014; 66.1: 57–62.
7. De Maria S. Jr., Govindaraj S., Chinosorvatana N., Kang S., Levine A.: Bilateral sphenopalatine ganglion blockade improves postoperative analgesia after endoscopic sinus surgery. *American Journal of Rhinology & Allergy*, 2012; 26.1: 23–27.
8. Abdelmageed W., Equesny K., Shabana R., Abushama H., Nassar A.: Analgesic properties of dexmedetomidine infusion after uvulopalatopharyngoplasty in patients with obstructive sleep apnea. *Saudi Journal of Anesthesia*. 2011; 5.2: 150–156.
9. Bardiau F.M., Braeckman M.M., Seidel L., Albert A.: Effectiveness of an acute pain service inception in a general hospital. *Journal of Clinical Anesthesia*. 1999; 11.7: 583.
10. Hung T., Moore-Gillon V., Hern J., Hinton A., Patel N.: Topical bupivacaine in paediatric day case tonsillectomy: A prospective randomized controlled trial. *The Journal of Laryngology and Otology*. 2002; 116.1: 33–36.
11. Uysal H.Y., Takmaz S.A., Yaman F., Baltaci B., Basar H.: The efficacy of intravenous paracetamol versus tramadol for postoperative analgesia after adenotonsillectomy in children. *Journal of Clinical Anesthesia*. 2011; 23.1: 53–57.
12. Mitchell M.: Pain management in day-case surgery. *Nursing Standard*. 2004; 18.25: 33–38.
13. El-Fattah A.M.A., Ramzy E.: Pre-emptive triple analgesia protocol for tonsillectomy pain control in children: double blind, randomised, controlled clinical trial. *The Journal of Laryngology and Otology*. 2013; 127.4, 383–391.
14. American Society of Anesthesiologists Task Force on Acute Pain Management; Practice guidelines for acute pain management in the perioperative setting: an updated report by ASA. *Anesthesiology*. 2004; 100, 1573–1581.
15. White P., Kehlet H.: Improving postoperative pain management. What are the unresolved issues? *Anesthesiology*. 2010; 112: 220–225.

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