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Pain – Free Hospital: Recommendations for the Acute Pain Management in Poland

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Abstract

This paper aims to present Polish recommendations for the acute pain management which have been created and introduced within the last few years. Introduction of the accompanying national project "Pain-free hospital" was a success, with many dedicated hospitals that have joined the project. It provides assistance in organizing acute pain management teams and training of the medical professionals in this regard. We also describe our own experience with utilizing the above recommendations.

Keywords: Postoperative pain; Recommendations; Acute pain management; Pain scales; Multimodal analgesia

Introduction

Effective management of the acute pain (postoperative, trauma-related and obstetric) is a vital part of the modern healthcare. It can reduce the suffering postoperatively, following trauma injury and during labor, improves quality of lives, limits the number of complications and hospital stay, as well as overall healthcare costs. Optimizing acute pain control should also result in decreased incidence of persistent postoperative and trauma pain [1-3].

Pain is an unpleasant sensory and emotional experience which is related or described in relation to tissue or organ damage (IASP definition 1997). Genetic, cultural, age and gender – related variability results in diverse responses to nociceptive stimuli. Some groups of patients are highly vulnerable to inadequate pain control, especially children, the elderly and patients with communication disorders. Acute pain is worst in immediate postoperative period, early days following trauma injury and depends on the type of surgery, its duration and level of tissue injury.

It has been reported that postoperative pain is insufficiently treated worldwide. It does not seem to result from the lack of effective clinical measures, but much more from inappropriate arrangements of postoperative pain management. It is well known that around 50% of surgical patients would describe their postoperative experience as unpleasant, painful and more than 80% of day surgery patients leave the hospital in pain that cannot be effectively battled at home. In Polish hospitals it is common to choose the painkiller according to its cost, availability and physician's habits.

Negative sequel of inappropriate pain control is not only unnecessary suffering, but also sleep disturbance, mood swings, poor postoperative mobility and increased cardiac and respiratory morbidity.

Optimal pain control requires well organized pain management team, adequately informed patient, up to date training, use of multimodal analgesia and finally unified, frequent pain severity assessment and well designed clinical records [2,4-7]. Polish Pain Association at its annual congress in 2008 has initiated the project which was named "Pain-free hospital". It is currently very popular in Poland and many centers have joined the program. The key issue of it is to help with organizing pain teams and provide training for medical staff in this regard. Polish pain experts have provided guidelines on the acute pain management in 2005, which was updated in 2008 and 2011 [4,5,8].

Guidelines on the Acute Pain Management

We currently follow 2011 guidelines which was established and published by anesthesia and intensive care experts [8]. They created it after the analysis of literature, experts opinion and clinical practice. Arranged in statements, the guidelines are promptly referenced and arranged according to Evidence Based Medicine power levels, although it needs to be clearly stated that they should not replace the individual clinical judgment and personalized approach to every single case. The idea of creating the guidelines is to assist clinicians in choosing the best possible treatment option.

Effective postoperative analgesia is one of the fundamental patients' rights and can reduce perioperative morbidity, as well as duration and cost of the hospital stay, which is more pronounced in high risk patients (ASA III-IV), major surgeries and in intensive care. Battling acute pain (including postoperative) needs to be set as one of the priorities in "perioperative disease" management, the latter consisting of analgesia, early mobilization, early enteral nutrition and physiotherapy. Creating Acute Pain Service (APS) has been recommended in many countries of good quality healthcare in order to reduce the prevalence of postoperative pain [1,2,5,6].

Organizing APS Work

The APS team should be a multidisciplinary structure, consisting of anesthetists, surgeons, nurses, physiotherapists and other medical professionals, with anesthetists leading the team for their extensive experience in perioperative care. Introduction of APS should improve quality of pain management in surgical wards and decrease perioperative morbidity, including postoperative nausea and vomiting (PONV).

There is no ideal organization model of APS, as it has to be adjusted to local requirements and hospital capabilities. It is therefore recommended to create the procedures for acute pain management

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consisting of adequate preoperative assessment, use of pain severity scales, effective utilization of existing resources and staff training in order to achieve good quality of multimodal analgesia, early mobilization, early enteral nutrition and physiotherapy [1,6].

Pain management standards in Poland *(acc. to Polish recommendations: Misiołek* et al.: *2011)* [8]

Education

Vital part of perioperative pain management is to adequately inform the patient which can be achieved by counseling, as well as printed information leaflets on postoperative pain and methods of pain management.

Pain severity assessment – it is recommended**:**

- To assess and document pain intensity in patient's clinical notes at rest and during mobilization,
- To use pain severity scales: NRS (*Numeric Rating Scale*), VAS (*Visual Analog Scale*), PHHPS (*Prince Henry Hospital Pain Scale*)
- Pain scales should be chosen according to our experience with their use, type of surgery (operated area), whether it is well understood by the patients and its applicability to either resting or mobile patients, or both,
- For children and non-cooperative patients it is preferred to use Faces Pain Scale (FPS) and neurobehavioral scales.

Systemic analgesia

Either arbitrarily set or "as required" administration of opioids does not provide effective analgesia in immediate postoperative period. It is also crucial to choose appropriate route of administration. Hypovolaemia, hypothermia and postoperative or trauma - related blood redistribution may affect the absorption of subcutaneously or intramuscularly injected painkillers, which would result in ineffective analgesia, in spite of the administration of adequate dose.

Therefore the intravenous route for the administration of analgesics should be preferred postoperatively, especially after major surgery. Titrating method allows for maintenance of minimal effective analgesic concentration (MEAC) throughout the postoperative period (continuous infusion or patient controlled analgesia - PCA).

Most commonly used painkillers are paracetamol, metamizole, non-steroidal anti-inflammatory drugs (NSAIDs), weak and strong opioids and local anesthetics with or without coanalgesics.

They all could be used alone or as a part of multimodal analgesia regime, for accurate use of all available points and modes of action with minimal risk of side effects. Possible drug interactions are readily avoided when pharmocodynamics and pharmacokinetics of drugs are properly acknowledged.

Patient – Controlled Analgesia

Opioid – based, intravenous patient – controlled analgesia (PCA) is known to provide analgesia superior to other regimes, which use conventional parenteral routes of administration (5 mm in VAS 0-100 mm scale – on average), as well as better patient satisfaction. Nevertheless, it does not allow for reduction of overall opioids dose and does not result in reduced incidence of side effects.

Local anesthesia techniques

Conduction anesthesia techniques are employed for postoperative analgesia once patient condition, type and grade of surgery is considered. Properly chosen central and regional nerve blocks improve pain control while mobilizing, pain related to deep breathing, physiotherapy and nursing.

Central nerve blocks

- Postoperative epidural analgesia has proven to be more effective than systemic opioid analgesia,
- Epidural analgesia with local anesthetic alone or with added opioids may reduce the incidence of some respiratory complications, like atelectases, improve gas exchange, decrease rate of chest infections and paralytic ileus,
- Thoracic epidural analgesia, when combined with early enteral nutrition reduces the protein wasting postoperatively, as well as the incidence of peripheral thrombosis,
- The best possible option for the postoperative pain management is the use of local anesthetic with added lipophillic opioid. This approach reduces the prevalence of side effects when compared to use of local anesthetics, alone or with added morphine,
- Neuraxial blocks and anticoagulation – European Guidelines are adopted to Polish standards by Regional Anesthesia Task force of Polish Society of Anesthesia and Intensive Care.

Continuous nerve blocks techniques

Prolonged analgesia with continuous nerve blocks offers the reduced incidence of complications when compared to neuraxial analgesia, in case of which the epidural hematoma and abscess are the known threat.

Multitude of randomized trials has advocated their effectiveness, pointing to some beneficial effects for patients and reduced occurrence of side effects. Clinical trials have shown that after major orthopedic surgeries of the limbs, the regional nerve blocks are equally effective as continuous epidural analgesia. Both of the aforementioned procedures are more efficacious than intravenous opioids. Regional anesthesia should also be used in patients with multiple comorbidities, in order to decrease the dose of sedatives and opioids.

Patient – controlled regional anesthesia

PCRA is more effective than continuous infusion in providing postoperative pain control and creating conditions for postoperative physiotherapy. It is recommended to use PCRA for continuous anesthesia and continuous surgical site infiltration. Local anesthetic solution may be used in bolus doses alone or as boluses on the top of background infusion. Continuous infusion may be given with the use of PCA pump, mobile electronic infusion pump or elastometric infusion pump with preset infusion rates.

Multimodal / balanced analgesia

This method is based on simultaneous and continuous use of various medications and methods perioperatively (preoperatively, intraoperatively and postoperatively). It employs multiple techniques to suppress nociception and facilitate continuous modulation of nociceptive transmission. It effects in better quality of analgesia and lower doses of painkillers used, therefore causing less side effects.

Pain Management Depending on the Grade of Surgery – Polish Recommendations.

Grade 1 surgery

Minor superficial procedures, minor orthopedic and gynecological surgery (day case surgery), which are linked to postoperative pain severity of NRS<4.

Before surgery: The use of following drugs should be considered to induce the effect of preemptive analgesia:

- Metamizole (1-2,5 g) i.v.

- Paracetamol (1 g i.v. or 1-2 g p.r.)

- Ketoprophen (50-100 mg i.v) or Dexketoprophen (25-50 mg i.v.)

After the procedure:

- Metamizole (1-2,5 g, max. 5 g In 24hrs) every 6-12hrs i.v or p.o.

- Paracetamol 1 g i.v. or orally every 6hrs, combined or not with one of the following NSAIDS, i.v. or p.o.:

- Ketoprophen (50 mg), every 6-8hrs,

- Dexketoprophen (25 mg), every 6-8hrs,

- Ibuprofen (400 mg), every 8hrs,

- Naproxen (250-500 mg), every 8hrs.

In order to improve postoperative analgesia, in case of day surgery, it is suggested to provide the patient with the "drug bundle" on his/her discharge, which should contain 3-7 day supply of painkillers supply plus antiemetic if opioids are included.

"Drug bundle" for patients reporting mild postoperative pain (<4 NRS) should include:

- Paracetamol: 500 mg - 40 tablets, 0.5 g – 1 g every 6 hours for 4 – 5 days,
- NSAIDS, e.g. ketoprofen: 50 mg – 20 tablets, 50 mg every 8 – 12 hours for 4 – 5 days,
- Dexketoprofen: 25 mg – 20 tablets, 25 mg every 8 – 12 hours for 4 – 5 days,
- Ibuprofen: 400 mg – 15 tablets, 400 mg every 8 hours for 4 – 5 days or
- Naproxen: 500 mg – 15 tablets, 500 mg every 8 hours for 4 – 5 days

Local analgesia: Before the beginning of surgery the expected incision line should be infiltrated with 1% lidocaine (10-20 ml) or 0.25% bupivacaine (5-10 ml) for the induction of preemptive analgesia effect.

After the procedure: depending on the grade of surgery:

- Repeat the surgical site infiltration with LA
- Start the infusion of LA through the catheter implanted in surgical incision site (syringe driver or elastometric pump)
- Inject into the joint: 5-10 ml of 0.25% bupivacaine and/or opioid: 1mg of morphine / 15 – 25 mcg of fentanyl (orthopedic arthroscopic procedures)

Grade 2 surgery

Laparotomies without interruption of gastrointestinal tract integrity (cholecystectomy, nephrectomy), orthopedic procedures excluding surgery on pelvis and thorax, gynaecology, urology and neurosurgery, excluding spinal surgery. Pain level is more than 4, but usually lasts for no more than 3 days.

Before surgery: as in grade 1 surgery.

After the procedure:

- Metamizole (1 – 2.5 g, up to 5 g/24hrs), every 6 – 12hrs i.v., or
- Paracetamol (0.5 g – 1 g i.v.), every 6 hours, with or without NSAIDS:
- Ketoprofen (50 mg – 100 mg) i.v., every 8 – 12hrs
- Dexketoprofen (25 mg – 50 mg) i.v., every 8 – 12hrs

Additionally, for the breakthrough pain small doses of opioid with nurse - controlled analgesia (NCA) method (interval time 10min):

- Tramadol 10 – 20 mg, or:
- Morphine 1 – 2 mg, or:
- Oxycodone – 0.03 mg/kg

PCA device should be used whenever and wherever available.

During subsequent days of recovery: non-opioid analgesics can be used (as in Grade 1 surgery).

Local analgesia: as in Grade 1 surgery.

Grade 3 surgery

These are intraperitoneal procedures, orthopedic surgery in pelvic area, thoracic and spinal surgery. Expected NRS score postoperatively is >4 with estimated duration of more than 3 days.

Before surgery: like in Grade 1 surgery.

After the surgery:

- Continuous opioid infusion (morphine, oxycodone), infusion rate set by prior dose titration, or
- Opioid patient - controlled analgesia

Opioid infusion (either continuous or PCA) should be combined with non-opioid painkillers:

- Metamizole (1 – 2.5 g, up to 5 g/24hrs), every 6 – 12hrs i.v., or
- Paracetamol (0.5 g – 1 g i.v.), every 6 hours, with or without NSAIDs:
- Ketoprofen (50 mg – 100 mg) i.v., every 8 – 12hrs
- Dexketoprofen (25 mg – 50 mg) i.v., every 8 – 12hrs

Necessity of managing breakthrough pain should be always kept in mind (change of dressing, drain removal) – additional opioid doses may be required:

- Morphine 1 – 2 mg i.v., can be repeated after 10 – 15min,
- Oxycodone 1 – 2 mg i.v., can be repeated after 15min

In the following days pain management should be modified according to NRS score.

Local analgesia: In most of these cases intraoperatively - started

continuous regional anesthesia techniques would provide the basis for postoperative pain control with local anesthetic. Most frequently used types of regional anesthesia is continuous epidural analgesia with LA and opioid.

An alternatives to CEA are:

- Continuous spinal anesthesia

- Paravertabral blocks

- Intrapleural analgesia

- Peripheral nerve blocks.

Grade 4 surgery

More than one body cavity is involved or the reconstructive surgery of multiple trauma is planned. Expected pain level is >6 in NRS with estimated duration of more than 7 days.

Postoperative analgesia in these cases is the same as in Grade 3 surgery, although due to extensive surgical trauma the pain is more severe and lasts longer. It also creates specific issues for anesthesia team: effective postoperative analgesia needs to be extended far into recovery [3].

"Pain –Free Hospital" Project

The aim of the project was to introduce and maintain the highest standards of complex postoperative analgesia, from properly informed patient preoperatively, pain assessment and keeping records of pain management postoperatively to gathering information on its side effects and complications monitoring. One of the key elements of the project is continuous education. The goal is to provide up-to-date information on the new guidelines and techniques to large number of medical professionals. Granting the hospitals "Pain-free hospital" status is the notion developed by Polish Society for the Study of Pain (PSSP), Polish Society of Anesthesia and Intensive Care, Polish Society of Surgery, Polish Gynaecological Society and Polish Society of Orthopedic and Trauma Surgery. The project would grant the certificate to the hospital that fulfills the required criteria regarding the quality of pain management:

1. Medical staff involved in perioperative care need to take courses on pain management at least once a year.

2. Postoperative pain assessment should be done for all the patients undergoing surgical procedures at least 4 times daily (ideally: 6 times in 24 hours)

3. Postoperative pain information should be provided to the patients prior to surgery.

4. Records on pain severity assessment and management employed should be kept intact.

5. Monitoring and reporting the side effects of analgesics or complications of procedures used (via online tool on PSSP website).

After a few years of running the project there are currently 137 hospitals and 32 departments with valid "Pain-free hospital" certificate.

Rules of Granting "Pain-Free Hospital" Certificate

1. In order to apply, the hospital need to fill the questionnaire and send it to PSSP.

2. Once the questionnaire is accepted, the unit (hospital/ward/clinic) has 3 months to introduce the procedures necessary to fulfill the pain-free hospital criteria.

3. After 3 months the application for granting certificate should be sent to PSSP.

4. The certificate is then granted by the committee consisting of PSSP - appointed experts who perform an audit before decision is made.

5. "Pain-free hospital" certificate is valid for three years. The audit is then repeated.

Pain-free hospital project in our hospital

All clinical staff of the hospital have attended the lectures on the topics related to postoperative pain: acute pain pathophysiology, the consequences of poor pain control, modern methods of pain management and its safety. Additional courses for nurses were dedicated to their role in the project, with aim to answer all the questions and clarify the doubts.

Unified postoperative pain assessment and management record card was introduced. It is filled in by anesthetist (patient data, procedure performed and type of analgesia planned), recovery nurses and ward staff (NRS score for every 4 hours of analgesia administered and occurrence of the side effects should be noted). For better compliance with prescribed analgesia, anesthesia resident on-call does the "pain round": at 4.00PM and 8.00PM, assessing pain severity, pain records and adjusting management if NRS>3. Information leaflet on postoperative pain control is provided to surgical and on labor analgesia to obstetric patients. Round-the-clock labor analgesia service is now provided, assuring epidural analgesia is available to all women who are keen to benefit from that. In spite of that the rate of deliveries with epidurals is now only 40%.

Conclusion

The goal of granting "Pain-free hospital" certificate is to encourage hospitals to introduce the procedures that should improve patient comfort perioperatively and organize pain management postoperatively. The benefits of its introduction are obvious, as proper pain control is positive for patients, as well as for hospitals. It allows for smooth recovery and minimal risk of complications. It shortens the hospital stay (reduces the cost) and improves patient satisfaction, which is paramount in terms of public relations.

It is our plan to monitor pain severity in all inpatients: starting from the admission (Emergency Department) and once daily. NRS>3 would be an indication for APS involvement.

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