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Review article

Swedish guidelines for the treatment of pain in tonsil surgery in pediatric patients up to 18 years☆

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ABSTRACT

Background: Surgery of the tonsils often causes severe pain lasting for many days as been shown by data from the National Tonsil Surgery Register in Sweden. Tonsillotomy is associated with fewer readmissions due to bleeding, number of days requiring analgesics and health care contacts due to pain compared to tonsillectomy. The register data demonstrate the necessity of better-evidenced based pain treatment guidelines for tonsil-surgery.
Objectives: To develop evidenced based pain treatment guidelines for tonsil-surgery in Sweden.
Methods: The evidence based guidelines were designed by an updated literature review and from the clinical expertise in the pediatric pain field, which thereafter were reviewed by ENT-doctors and anesthetists from each ENT-clinic in Sweden.
Results: A multimodal pain treatment approach is advocated, including premedication and administration during anesthesia, with paracetamol (acetaminophen), clonidine and betamethasone. If not given as a premedication the combination can be administered intravenously in the initial phase of anesthesia. At the end of surgery, if no bleeding problems, cox-inhibitors can be given.

After discharge from hospital, the recommendations for pain relief are paracetamol combined with cox-inhibitors (ibuprofen, diclofenac) and if needed oral clonidine in favor of opioids. When pain intensity decreases, discontinue the analgesic treatment in the following order: opioid, clonidine, paracetamol and at last ibuprofen. The need for analgesic treatment after tonsillectomy is usually 5–8 days, after tonsillotomy only 3–5 days.

Parents are recommended to contact the hospital if the child has difficulties in drinking or eating adequately and/or suffers from pain despite taking the recommended medication regularly.
Conclusions: Swedish guidelines for tonsil-surgery provide practical evidence-based pain treatment recommendations.

Contents

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1. Introduction

In Sweden thirteen thousand tonsil operations are performed annually. More than 50% are performed in children under the age of 15 [1,2]. Tonsillectomy and tonsillotomy cause severe and extended postoperative pain as well as a high frequency of nausea and vomiting [3–5]. Information from the Swedish tonsil registry showed that about 26% of patients performed tonsillectomy and 7% of patients performed tonsillotomy (year 2013) were in contact with hospital care due to pain after tonsil surgery [2].

The pain is often most pronounced on day 3 to 5 after tonsillectomy. Tonsillotomy generally gives rise to less pain than tonsillectomy. Dehydration and poor nutritional intake may be a cause of increased pain after tonsillectomies [3,6,7]. In Sweden are 75% performed tonsil surgery in children is done as day surgery[1] Older children who underwent tonsil surgery show higher pain scores postoperatively requiring increased need for analgesics [3,8].

Various interventions including pharmacological are used to treat and prevent pain and nausea [5,9,10]. The most common systemic analgesics used are paracetamol, cox-inhibitors and opioids. The use of opioids in tonsillectomy in children with obstructive sleep apnea (OSAS) can cause serious complications [6,9]. Alpha-2 adrenergic agonists such as clonidine have an analgesic effect without effect on respiratory drive. Clonidine may be a useful adjunct when paracetamol in combination with COX inhibitors do not achieve adequate analgesia [11,12]. Various regional approaches with local anesthetics can also be used with some analgesic effect.

The objective was to develop evidenced based pain treatment guidelines for tonsil-surgery in Sweden.

2. Updated Swedish evidence based guidelines

Due to the high number of patients with postoperative pain, a task force was formed with ear, nose and throat surgeons (ENT), anesthetists and pain specialists to revise the national guidelines for pain treatment after tonsil surgery. Responsible for the development of the guidelines was the National Tonsil Surgery Register in Sweden (see Appendix).

The evidence based guidelines were designed by an updated literature review and from the clinical expertise in the pediatric pain field. Relevant studies were retrieved from electronic databases PubMed and Cochrane library. The following key words were included: pain treatment; tonsil surgery, paracetamol, cox-inhibitors, clonidine. The reference lists of retrieved trial reports were also searched for relevant studies. All trials reports that could be considered on the effect on pain after tonsil-surgery were retrieved. The papers were reviewed and discussed by all authors.

A preliminary draft of the guidelines was sent for review to all ENT and anesthesia departments in Sweden performing tonsil surgery. After revision the updated Swedish national guidelines were introduced in 2013. The steering committee invited representatives of the various professions at all ENT-clinics to a training day. Multi-professional education was necessary to support innovation in the learning process and to achieve a shift in the pain management. A web-based information (www.tonsilloperation.se) was designed for the pharmacological treatment for patients (adults and children) and next-of-kin. Possibility for next-to-kin to calculate the correct dose of non-prescription drugs based on the new guidelines was developed. The implementation process of the guidelines is illustrated in Fig. 1.

The guidelines consist of both pharmacological and non-pharmacological recommendations. In this article focus is on the recommended analgesics and brief background is given for the different types of analgesics used. A multimodal analgesic approach, combination of analgesics, is recommended in the guidelines to provide an effective pain treatment with limited side effects. Individual aspects must always be taken into account. Most of the tonsil surgery are done as outpatient surgery in Sweden. More complicated cases are inpatients and the standard protocol used would be intravenous administration of analgesics in this patient group. A summary of recommended analgesics and doses are given in Table 1.

2.1. Analgesics for the perioperative pain treatment management in tonsil surgery in pediatric patients

2.1.1. Steroids

Steroids have been used to prevent pain and nausea/vomiting [13]. A meta-study has shown that steroid medication leads to some reduction of pain without any side effects [14] and shows a 50% reduction of nausea frequency the first postoperative day, also a faster return to eating [15]. It is not clear which dose of dexamethasone to be used to achieve analgesic and antiemetic efficacy but some studies have shown that doses as low as 50 μg/kg of dexamethasone may be enough [13,16,17]. Dexamethasone has been shown to increase the risk of bleeding, but only at doses of 0.5 mg/kg [18]. The risk of post-tonsillectomy hemorrhage did not significantly increase with dexamethasone or with the use of cox-inhibitors [19]. Most studies that describe steroid use in tonsil surgery have used dexamethasone, a preparation which is not available in injection form in Sweden. Betamethasone may be used instead. Betamethasone is somewhat more potent than dexamethasone, about 1.25 times.

2.1.2. Cox inhibitors

Cyclooxygenase (COX)-inhibiting drugs (equal to non-steroidal anti-inflammatory drugs, NSAIDs) have shown good efficacy against pain and lead to less nausea compared to treatment with opioids. Some concerns have been expressed that cox-inhibitors could increase the risk of postoperative bleeding, which can be life threatening. Bleeding risk is mainly associated with platelet dysfunction but this remains only as long as the effect of the drug. In contrast, the dysfunction associated with ASA remains until new platelets enter the circulation. Numerous studies have shown no increased risk of bleeding associated with NSAID therapy [20–25]. Cox-inhibiting drugs may be administered after surgery (when abnormal bleeding tendency is excluded) with the same efficiency as before surgery [23,26,27]. The studied drugs include diclofenac [28,29], ketoprofen [30,31], ketorolac [27] and ibuprofen [25,32–35]. Ibuprofen may be used in children from 6 months of age at a dose