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Adherence to Swedish guidelines for pain treatment in relation to pediatric tonsil surgery: A survey of the multidisciplinary team

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ABSTRACT

Background: Pain management in children after tonsil surgery is essential, and optimal pain treatment has been discussed for many years. Data from the National Tonsil Register in Sweden (NTRS) and a national mapping have demonstrated the need for national pain treatment guidelines for pediatric tonsil surgery. As a result, Swedish national guidelines, together with updated patient information on the website *tonsilloperation.se*, were developed and implemented in 2013.
Objectives: The objective of this study was to evaluate the professionals' opinions of and adherence to pain treatment guidelines for pediatric tonsil surgery patients in a two-year follow-up.
Method: This descriptive cross-sectional study was based on data from an inter-professional questionnaire, which was validated by an expert group using a content validity index (S-CVI 0.93). The questionnaire was sent to all Swedish ear, nose and throat (ENT) departments (n = 49) that the NTRS identified as performing tonsil surgery on children younger than 18 years of age. In each clinic, we asked for responses from staff in each of the following professions: ENT physicians, anesthesia physicians, registered nurse anesthetists, and registered nurses in the ENT departments.
Results: Respondents from 48 ENT departments participated, and 139/163 (85%) completed questionnaires were returned. The guidelines were reported as being clear, ensuring patient safety and providing optimal pharmacological treatment. Treatment was given according to the guidelines: Half of the departments gave pre- or intraoperative treatment with clonidine, betamethasone and high-dose paracetamol (acetaminophen). A multimodal pain approach (paracetamol and COX-inhibitors) after hospital discharge was prescribed by all departments after tonsillectomy and, extensively, after tonsillotomy. One-third of the departments prescribed paracetamol with a higher normal dose for the first three postoperative days. Half of the departments prescribed rescue analgesics, clonidine or opioids after tonsillectomy. None of the departments prescribed codeine or tramadol, drugs that are discouraged in the guidelines. The majority of the departments used the website *tonsilloperation.se* to provide information to the patients and their caregivers.
Conclusion: The respondents' opinions of and the ENT departments adherence to the Swedish national guidelines were considered to be good. The national implementation process in Sweden has impacted the manner in which ENT departments treat pain after tonsil surgery.

1. Introduction

Pain management after tonsil surgery in children is essential because of the morbidity associated with uncontrolled pain in children and the emotional components of children and their families. Pain treatment after tonsil surgery in children has been regularly discussed for years. Associated issues have included the appropriate administration of analgesics, particularly the role of COX-inhibiting drugs (equal to non-steroidal ant-inflammatory drugs, NSAIDs) and their impact on hemostasis, and whether opioid drugs are necessary for adequate postoperative analgesics [1–9]. Total tonsillectomy due to the main indication of infection and/or

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upper airway obstruction due to tonsil hypertrophy is one of the most painful childhood surgical procedures, and the recovery time takes many days [2–4,10–13]. Following tonsillectomy, pain (described as moderate to severe pain) is common [5,6,13]. Over the last decade, there has been a trend to perform partial tonsillectomy/tonsillotomy if the indication is obstruction due to less postoperative morbidity [14–16].

The majority of tonsil surgeries are performed in outpatient settings [5,13,17], and caregivers are responsible for pain and symptom management [8]. In Sweden, approximately 75% of all pediatric tonsil surgeries are performed as day surgeries on an outpatient basis [18]. Children suffer more pain after tonsillectomy compared to other types of outpatient surgeries [4,12]. The main cause of morbidity after tonsil surgery is oropharyngeal pain. Other common postoperative complications include nausea, vomiting, dehydration, referred otalgia, and bleeding during or after surgery [2,5].

Poor pain control might lead to dehydration and hospital readmissions [2–4,7,10–13]. In 2013, the National Tonsil Register in Sweden (NTRS) registered a high frequency of contacts with health care services due to pain [19]. For quality improvement purposes, national mapping (2013) was conducted by the NTRS; it showed a lack of consensus on pain management, insufficient pharmacological treatment and patient-centered information. The pharmacological treatment primarily consisted of paracetamol and COX-inhibitors. A total of 80% of the departments used codeine as rescue analgesics/"pro re nata" (PRN), or for recognized reasons, such as hypersensitivity to COX-inhibitors. Only a small number of departments prescribed clonidine and/or opioids [20]. The NTRS identified a need for evidence-based guidelines for pain treatment in pediatric tonsil surgery (i.e., pharmacological and non-pharmacological recommendations), which resulted in the development and implementation of Swedish national guidelines, together with providing updated patient information on the website *tonsilloperation.se.* [21]. The website was designed for the pharmacological treatment of patients (adults and children) and next-of-kin. The website made it possible for caregivers to calculate the correct dose of non-prescription drugs based on the new guidelines [3].

The Swedish national guidelines (Table 1) targeted healthy children (younger than 18 years of age), and were designed based on an updated literature review [3,19] and clinical expertise in the pediatric pain field. The guidelines consist of premedication and postoperative pain management recommendations based on a multimodal analgesic approach. The guidelines recommend pre- or intraoperative administration of betamethasone, clonidine and paracetamol (acetaminophen). Furthermore, it is recommended that postoperative pain treatment at home be performed with paracetamol, COX-inhibitors and, if needed, rescue analgesics with oral clonidine rather than opioids. The guidelines clearly state that children should not be treated with codeine. This recommendation aligns with the warning issued by the Food and Drug Administration (U.S.FDA), which state that some individuals hyper metabolize codeine over therapeutic levels and may experience respiratory depression [3,22,23].

Ear, nose and throat (ENT) and anesthesia departments in Sweden were involved in the implementation process by reviewing a preliminary draft of the guidelines before they were revised and published. The guidelines were published in professional journals, and the NTRS invited various professionals from each ENT clinic to participate in a multi-professional training day. A two-year follow-up is needed to evaluate how the guidelines have been received in the departments. The objective of this study was to evaluate the professionals' opinions of and adherence to pain treatment guidelines for pediatric tonsil surgery patients in a two-year follow-up.

2. Material and methods

A cross sectional study, including prospective data from a questionnaire.

2.1. Participants and procedure

The National Tonsil Surgery Register in Sweden (NTRS) identified 49 departments that routinely conducted tonsil surgery in children < 18 years of age. The NTRS reporter in each clinic suggested the respondents, one from each of the following professions: ear, nose and throat physicians (ENT-P), anesthesia physicians (ANE-P), registered nurse anesthetists (RNA) and registered nurses in ENT (ENT-RN). In this study, ENT-RN was defined as the nurses who had primary contact with the child after surgery and could include nurses in post-anesthesia care units (PACU), day surgery departments, or wards. The inclusion criteria were respondents who were regularly involved in pediatric tonsil surgery.

Letters containing the questionnaire, information about the study, and a pre-stamped envelope were mailed to the proposed respondents in November 2015. The participants who did not

Table 1
Short summary of the Swedish guidelines for pain treatment in relation to tonsil surgery in pediatric patients. Recommended drugs and doses for patients <18 years and bodyweight <65 kg [3].

Drug	Dose premedication oral	Dose perioperative intravenous	Dose postoperative oral or rectal	Max dose/day (24h)
Paracetamol day 1–3	40 mg/kg	15-20 mg/kg	24 mg/kg × 4 (96 mg/kg/d)	1.5 g × 4
Paracetamol day 4–8			18 mg/kg × 4 (72 mg/kg/d)	1.0 g × 4
Ibuprofen (from 6 months)			5-7 mg/kg × 3-4	400 mg × 4
Diclofenac (from 1 year)		1 mg/kg	1–1.5 mg/kg x 3	50 mg × 3
Celecoxib (weight > 25 kg)			2 mg/kg × 2	200 mg × 2
Parecoxib (from 2 years)		0.5 mg/kg		40 mg × 2
Clonidine	2-3 μg/kg	1 μg/kg	1-2 μg/kg × 3	150 μg × 3
Morphine		<50 μg/kg	<150 μg/kg	
Oxycodone		<50 μg/kg	<100 μg/kg	
Betamethasone	0.2 mg/kg	0.2 mg/kg		8 mg
Ondansetron		0.1 mg/kg		8 mg

Oral premedication with paracetamol, clonidine and betamethasone or intravenously at the initiation of anesthesia (perioperative dose). The treatment length maximum is 10 days. The need for analgesic treatment after 10 days should be planned after discussion with healthcare professionals. A full description of the guidelines is available in Ericsson et al. (2015) [3].