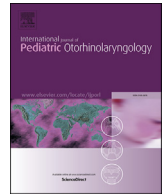




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Review Article

Assessment and management of pain in pediatric otolaryngology



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ABSTRACT

Introduction: Pain is a disease by itself and it's a public health concern of major implication in children, not just because of the emotional component of the child and his family, but also due to the potential morbidity and mortality involving it. A proper assessment of pain it's a challenge in the pediatric population, due to their lack of understanding and verbalization of hurt. Additionally, a satisfactory treatment of pediatric pain can be arduous due to a lack of clinical knowledge, insufficient pediatric research, and the fear to opioid side effects and addiction.

Objectives: The aim of this review is to address the current definitions of pain, its physiological mechanisms and the consequences of its inadequate management, as well as, to guide the clinicians in the assessment and management of pain in the pediatric population at otolaryngology services.

Methodology: Narrative review by selective MeSH search terms: Children, Pediatrics, Otolaryngology, Pain measurement, Pain Management, Analgesics and Analgesia, from databases: MEDLINE/PubMed, Cochrane, ISI, Current Contents, Scielo and LILACS, between January 2000 and May 2016.

Results: 129 articles were reviewed according to the requirements of the objectives. Pain measurement is a challenge in children as there are no physical signs that constitute an absolute or specific indicator of pain, and its diagnosis must rely on physiological, behavioral and self-report methods. Regarding treatment, a suitable alternative are the non-pharmacological cognitive/behavioral therapies helped by pharmacological therapies tailored to the severity of pain and the child's age. We provide evidence-based recommendations on pain treatment, including non-opioid analgesics, opioid analgesics and adjuvant medicines to improve the management of pain in children in otolaryngology services.

Conclusions: We present a global review about assessment and management of pain in pediatric otolaryngology, which leads to future specific reviews on each topic. Research gaps on pain assessment and pharmacological interventions in neonates, infants and children are very wide and it should be promoted ethical and safe research on pain control in this population.

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1. Introduction

The assessment and management of pain are essential components of pediatric care, due to the emotional component of the patient and his family, and the potential morbidity and mortality involving uncontrolled pain in children. An appropriate measurement of pain it's a challenge in children, due to their lack of understanding and verbalization of hurt. Additionally, a satisfactory treatment of pediatric pain can be arduous due to a lack of clinical knowledge, insufficient pediatric research [1], and the fear to opioid side effects and addiction [2]. The aim of this review is to address the current definitions of pain, its physiological mechanisms and the consequences of its inadequate management, as well as, to guide the clinicians in the assessment and management of pain in the pediatric population at otolaryngology services.

2. Materials and methods

The authors searched MEDLINE/PubMed, Cochrane, ISI, Current Contents, Scielo and LILACS computerized literature databases from January 2000 to the end of May 2016, supplemented by manual searching of reference lists from each relevant paper identified.

The main search terms were "Pain measurement", "Pain management", "Analgesia", "Otolaryngology", "Pediatrics", "Child" and "Adolescent". The studies were eligible for review if they matched the following inclusion criteria: 1- Level of evidence 1 to 3 (Oxford Centre for Evidence-Based Medicine 2011, Levels of Evidence) [3] 2- Child and/or adolescent samples, 3- Available full-text paper. Furthermore, taking into account the difficulty in finding experimental studies in children because of ethical considerations, case reports and book's chapters were also considered individually.

Two reviewers selected and reviewed the articles. First, each one independently selected the articles from their abstracts and checked their contents. Next, disagreements were resolved with a third reviewer. The results of the search yielded 415 total journal articles. After careful reading and filtering with our criteria only 129 articles were used for this review.

3. Pain definition

There are many definitions of pain, and it has historically been a very controversial issue defining pain. However, the worldwide most accepted definition comes from the International Association for the Study of Pain (IASP), defining pain as: "An unpleasant

sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage" [4] and if it persists with no available remedy to alter its causes and manifestations, a disease in itself [5]. In the last 50 years there has been a humanist and legal analysis that recognizes pain as the most terrible scourge of the human race and its treatment as a fundamental right of human beings, included in the article 25 [6].

In addition, pain definitions can be sub-classified into: somatic or psychogenic and acute or chronic pain. It's accepted that somatic pain arises from injury to body tissues, either nociceptive cause, when certain nerve terminals called nociceptors are irritated (eg, injuries, trauma or infection) or neuropathic cause, when there is damage in sensory nerves (eg, trigeminal neuralgia, Ramsay Hunt syndrome) [4]. One taxonomy system of pain subdivides nociceptive pain in musculoskeletal pain, inflammatory pain (eg, inflammatory arthropathies, postoperative pain, tissue injury, infection), or mechanical/compressive pain (eg, low back pain, neck pain, visceral pain from expanding tumor masses) [7]. Moreover, psychogenic pain, is one in which no physical cause is known, but apparently the information processing in the central nervous system is altered [8,9]. Regarding the duration of pain, chronic pain is defined as persistent or intermittent pain greater than 6 months, while acute pain is anyone that lasts less than 6 months [7].

4. Physiological mechanisms of pain

Pain is an experience, built around four fundamental components: Sensory/discriminative, affective/emotional, cognitive and behavioral [8]. The pain pathways represent sensory system. They are composed of afferent pathways, the central nervous system and efferent pathways. The ascending pathways start with specialized peripheral sensory neurons known as nociceptors, which alert to potentially damaging stimuli by detecting changes in temperature, pressure and injury-related chemicals, then transducing these stimuli into long ranging electrical signals that are transmitted to higher brain centers [10,11]. The activation of different nociceptors and the processing of information they carry, provide a wide diversity of qualities that mediate pain [10]. After nociceptors, the ascending pathways consist of three different tracts: the neospinothalamic tract, the paleospinothalamic tract and the archispinothalamic tract [12]. The first order neurons are located in the dorsal root ganglion for all three pathways. Each pain tract originates in different spinal cord regions and ascends to terminate in different areas in the central nervous system (CNS) [11].

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