



Review

Local airway anaesthesia for awake fiberoptic intubation

Nina Pirlich^a, Ruediger R. Noppens^{a, b, *}^a Department of Anaesthesiology, University Medical Centre Mainz, Mainz, Germany^b Department of Anesthesia & Perioperative Medicine, Western University, London, Ontario, Canada

ARTICLE INFO

Article history:

Received 25 May 2016

Received in revised form

15 September 2016

Accepted 5 October 2016

Keywords:

Difficult airway management

Awake intubation

Fiberoptic intubation

Airway anaesthesia

ABSTRACT

Local airway anaesthesia for awake fiberoptic intubation is generally recommended to improve patient comfort, which will help make the procedure a success. There are multiple approaches in practice and several descriptions of methods in the literature. However, there is limited evidence regarding which method is the most common and which offers the best results. This review presents current data about topicalisation of the airway, including nebulisation, spray-as-you-go techniques and airway nerve blocks. This article aims to help the anaesthesiologist choose the right method, tailored to the individual needs of his patients, after weighing up the advantages and disadvantages of the presented methods.

© 2016 Elsevier Ltd. All rights reserved.

Contents

1. Introduction	22
2. Techniques for supraglottic topical anaesthesia	23
3. Nebulisation	23
3.1. Nebulisation of atomised lidocaine	24
4. Spray-as-you-go techniques	24
5. Airway nerve blocks/regional anaesthesia	26
5.1. Glossopharyngeal block	26
5.2. Superior laryngeal block	26
5.3. Translaryngeal block	26
6. Conclusion	27
Competing interest	27
References	27

1. Introduction

Well-performed awake intubation is a complex interaction of appropriate case selection, good patient preparation and technical expertise in e.g. fiberoptic intubation. It is generally recommended that preparation of the awake patient includes anaesthesia of the airway in order to optimise the patient's comfort, increase

compliance and therefore maximise the chance of a successful intubation in the spontaneously breathing patient.

Several ways to administer local anaesthetic to the upper airway have been described, each with its own potential advantages and disadvantages. Surprisingly, there is limited evidence regarding which method of airway anaesthesia is the most commonly used and which offers the best results in terms of effectiveness. Nowadays, awake fiberoptic intubation is less common than video laryngoscopy, being reserved for special airway situations. Therefore, local airway anaesthesia is a rather neglected topic. The method used to anaesthetise the airway depends on institutional standards, often as a result of tradition, and on personal preferences

* Corresponding author. Department of Anesthesia & Perioperative Medicine, Western University, 339 Windermere Road, C3-128, London, Ontario, Canada.

E-mail addresses: pirlich@uni-mainz.de (N. Pirlich), Ruediger.Noppens@lhsc.on.ca (R.R. Noppens).

and skills. In recent decades only a few new findings and technical developments have been published.

In this review we will give an overview of the current literature focusing on the different methods of local airway anaesthesia for awake fibreoptic intubation (see Table 1).

2. Techniques for supraglottic topical anaesthesia

Data assessing the effectiveness of local anaesthetic, vasoconstrictive and lubricating agents for preparing the supraglottic airway above the vocal cords (nose, mouth and throat) are the result of otolaryngologic scientific research since this area of the airway is also of great interest in otolaryngology. Surprisingly, there is a lack of suitable data for meta-analysis [1]. The absence of an evidence-based effect of nasal sprays (cocaine, lidocaine, cophenylcaine, tetracaine, ephedrine, phenylephrine, xylometazoline and saline), reported in a review including eight randomised controlled trials (746 participants), even led some authors to suggest that these agents should not be used due to their cost and unpleasant side effects [2]. In clinical practice unwanted side effects such as foul taste, numbness and overall unpleasantness are common in the majority of patients.

Direct application of local anaesthetic into the nose, mouth and throat has been performed using cotton-tipped swabs or nasopharyngeal airways, drops, gel, swish and gargling, aspirating and spraying of local anaesthetic [3]. In our opinion, topicalisation of the supraglottic airway helps the patient to become gradually more familiar with awake intubation. However, airway anaesthesia with regard to awake fibreoptic intubation pays more attention to the deeper airway regions like the hypopharynx, larynx and trachea. For this region three methods have been identified: nebulisation of local anaesthetic, spray-as-you-go techniques and airway nerve blocks.

3. Nebulisation

Only one study comparing nebulisation of local anaesthetic with placebo was in favour of the nebulisation technique. Nebulised lidocaine (4 ml 10%) decreased the discomfort of nasogastric tube insertion of 29 participants in comparison to 21 participants who received normal saline solution [4].

A recent study compared the effectiveness of nebulised lidocaine [5]. Fifty adult patients with cervical spine injury and the need for awake fibreoptic intubation received either airway anaesthesia using ultrasonic nebulisation of 10 ml lidocaine 4% for 15 min or bilateral superior laryngeal nerve block combined with transtracheal injection, each with 2 ml of lidocaine 2% after gargling viscous lidocaine twice beforehand. Orotracheal intubation was performed and showed no differences in haemodynamic

parameters, most likely because of a sufficient sedation protocol (midazolam 20 $\mu\text{g}\cdot\text{kg}^{-1}$ and fentanyl 1 $\mu\text{g}\cdot\text{kg}^{-1}$ intravenously). Vocal cord visibility, ease of intubation and overall comfort were better in the nerve block group. Additionally, there were fewer coughing and/or gagging episodes in this group. Seven patients in the nerve block group experienced coughing (nebulisation group: 17 patients) and six patients receiving nerve blocks suffered from gagging (nebulisation group: 16 patients). Time taken to intubate was also shorter in the nerve block group (123.0 ± 46.7 s) as compared with the nebulisation group (200.4 ± 72.4 s). Nebulisation itself required 15 min. This study is consistent with previous publications, also demonstrating that nerve blocks are superior to nebulisation of local anaesthetic.

In an observer-blinded study the efficacy of upper airway anaesthesia produced by nebulised lidocaine was compared with combined regional block for awake fibreoptic nasotracheal intubation in 48 patients [6]. Nebulisation was performed using a small volume nebuliser filled with 4 ml of 4% lidocaine driven by a flow of 8 l of oxygen per minute, connected to a facemask strapped over the patient's mouth and nose for 10 min. Patients in the combined regional block group received a combination of bilaterally superior laryngeal nerve blocks performed by the external approach (2–3 ml lidocaine 2% per site) and translaryngeal injection (2 ml lidocaine 4%). In addition, three cotton swabs (soaked in 4% lidocaine solution) were introduced in the selected nostril and kept in place for 3 min in the nerve block group. Fibreoptic intubation was successful in all patients. The total intubation time was comparable between groups (nebulisation group: 5.1 ± 1.2 min, combined nerve block group: 4.5 ± 1.3 min). The patients' own assessment of discomfort did not reveal any significant differences between the methods. Higher grimace scores (0 = no grimace to 5 = very severe grimace) were recorded on insertion of the endotracheal tube through the nostril in the nebulisation group. This is not surprising, since patients who received combined nerve blocks had an additional three lidocaine-soaked cotton swabs in the selected nostril. The simpler method of placing lidocaine-soaked cotton swabs in the nose provided better anaesthesia than nebulisation. The combination of nerve block and translaryngeal injection suppressed the cough response more effectively and provided better haemodynamic stability than nebulisation alone.

A preference for translaryngeal injection was found in comparison to spray-as-you-go and nebulisation techniques for fibreoptic bronchoscopy [7]. Patients indicated better VAS scores and bronchoscopists recorded less coughing and easier intubation. At the same time, most anaesthesiologists preferred translaryngeal injection for topical anaesthesia. However, the study was performed in an unblinded fashion and the dose of lidocaine administered was small. Patients ($n = 53$) received either 4 ml of 2.5% cocaine by translaryngeal injection ($n = 18$) or via the working channel of the

Table 1
Overview of different methods for local airway anaesthesia.

	✓	✗
Spray-as-you-go techniques	<ul style="list-style-type: none"> • Easy to learn and perform • Flexibility by selectively and repetitively anaesthetising the airway • Superiority regarding patient comfort and coughing when using an oxygen flow (vaporisation and Enk technique) in comparison to bolus technique 	<ul style="list-style-type: none"> • in case of airway stenosis and/or using high oxygen flow: risk of barotrauma and gastric insufflation
Nebulisation	<ul style="list-style-type: none"> • Easy to learn and perform 	<ul style="list-style-type: none"> • superiority only in comparison with placebo • additional time prior to intubation (15 min) • cooperation of patient
Airway nerve blocks	<ul style="list-style-type: none"> • Superiority in case of copious secretions and airway swelling (decreased effectiveness of topical anaesthesia) • easy to learn and perform • when glottis opening is so narrowed e.g. by a large tumor and passing the fiberscope is only possible for a few seconds (for intubation) 	<ul style="list-style-type: none"> • Invasiveness: risk of bleeding, emphysema • Risk of accidental intraarterial injection of local anaesthetic -> convulsion • Cooperation of patient • Identification of landmarks and knowledge of anatomy

Download English Version:

<https://daneshyari.com/en/article/5584244>

Download Persian Version:

<https://daneshyari.com/article/5584244>

[Daneshyari.com](https://daneshyari.com)