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LETTER TO THE EDITOR

A converted spray device for topical pharyngeal anesthesia in awake intubation

Dear editor,

Ankylosing Spondylitis (AS) is a common inflammatory arthritis with progressive reduced spinal mobility.[1] Difficult airway exists in those patients with restricted neck movement, in which scenario awake intubation before anesthesia induction is suggested. Adequate topical anesthesia of oropharyngeal/nasopharyngeal and subglottic tracheal mucosa is required for airway instrumentation and patient comfort during this procedure.

Traditional device for topical pharyngeal anesthesia, like laryngotracheal topical anesthesia kit, is widespread but its effectiveness is not always ideal. Other techniques are soon proposed, for example, both ultrasonic nebulization and spray-as-you-go techniques provide acceptable conditions for awake intubation.[2] However, ultrasonic nebulizer is time consuming (usually needs 10–15 min) and spray-as-you-go technique is perceived difficult. Ultrasound-guided superior laryngeal nerve block is a hot topic, but it is invasive and required bilateral block.[3] Here we reported our successful experience for awake intubation through a new spray device easily converted from a spray bottle and oxygen delivery device. This converted spray device was consisted of three main parts, i.e., a glass bottle with a special spray nozzle, a simple humidifier, and a pipe for oxygen delivery (Fig. 1).

From October 8, 2020 to November 30, 2020, 5 patients aged 29–49 years, diagnosed with AS undergoing spinal deformity surgery received the awake intubation. After intravenous cannula insertion, patients were connected to routine monitors and received supplemental oxygen ($5\,L.min^{-1}$) via ventilation mask. Intravenous sedation consisted of 0.8–1 $\mu g.kg^{-1}$ dexmedetomidine with remifentanil infusion (target effect-site concentration 0.5–1.5 $ng.mL^{-1}$) to keep the Modified Observer's Assessment of Alertness/Sedation (MOAA/S) score between 3 to 5.[4]

About 10 minutes after administering dexmedetomidine, we used this converted spray device driven by oxygen ($5\,L.min^{-1}$) to anesthetize pharyngeal mucosa (Fig. 1). We firstly instructed the patient to open their mouth loudly, stick out their tongue as far as possible and sprayed 1% tetracaine solution into oropharynx for 3–5 seconds, then we sprayed the tetracaine solution into nasopharynx when they took a deep breath for 2–3 seconds bilaterally as well. Two minutes later, we repeated these steps. Another 1 minute later, we used a 5-mL syringe for thyrocricocentesis after identifying the cricothyroid membrane by landmark palpation and sterilizing the local area, 3 mL 2% lidocaine was given for subglottic tracheal mucosa anesthesia once the tip of needle located in the trachea, as signaled by a sudden loss of resistance and freely air withdrawing.

We performed awake intubation by flexible fiberscope with the endotracheal tube in-situ through the most patent nostril. After passing through the choana and identifying the epiglottis and glottis, the fiberscope was moved slowly into the trachea until the tracheal carina was visualized. Then the endotracheal tube was railroaded through the flexible fiberscope into the trachea. After reconfirming the position of the tube by mainstream capnograph, the cuff was inflated. During the procedure, glottis opening was fine when the fiberscope advanced into the glottis and trachea, and no intolerance symptoms such as cough, vomit, movement were found. Besides, MAP, HR, and SPO_2 were all stable. Patients were all satisfied about the procedure. General anesthesia was induced by propofol, remifentanil and rocuronium bromide. The anesthesia maintenance and surgery of those patients were all uneventful.

This converted spray device for topical pharyngeal anesthesia has several advantages. First, it is noninvasive and is more acceptable to patient; Second, it is easily converted from routine clinical devices and is very simple to use; Third, the consumed tetracaine is very small (median dose of these 5 patients is 35 mg), thus the risk of local anesthetic systemic toxicity is relatively low; Last and most important, it is more timesaving. Generally speaking, it only takes us 3–5 minutes to get sufficient topical anesthesia both for oropharynx and nasopharynx. Thus, it is a promising device for awake intubation in clinical practice.

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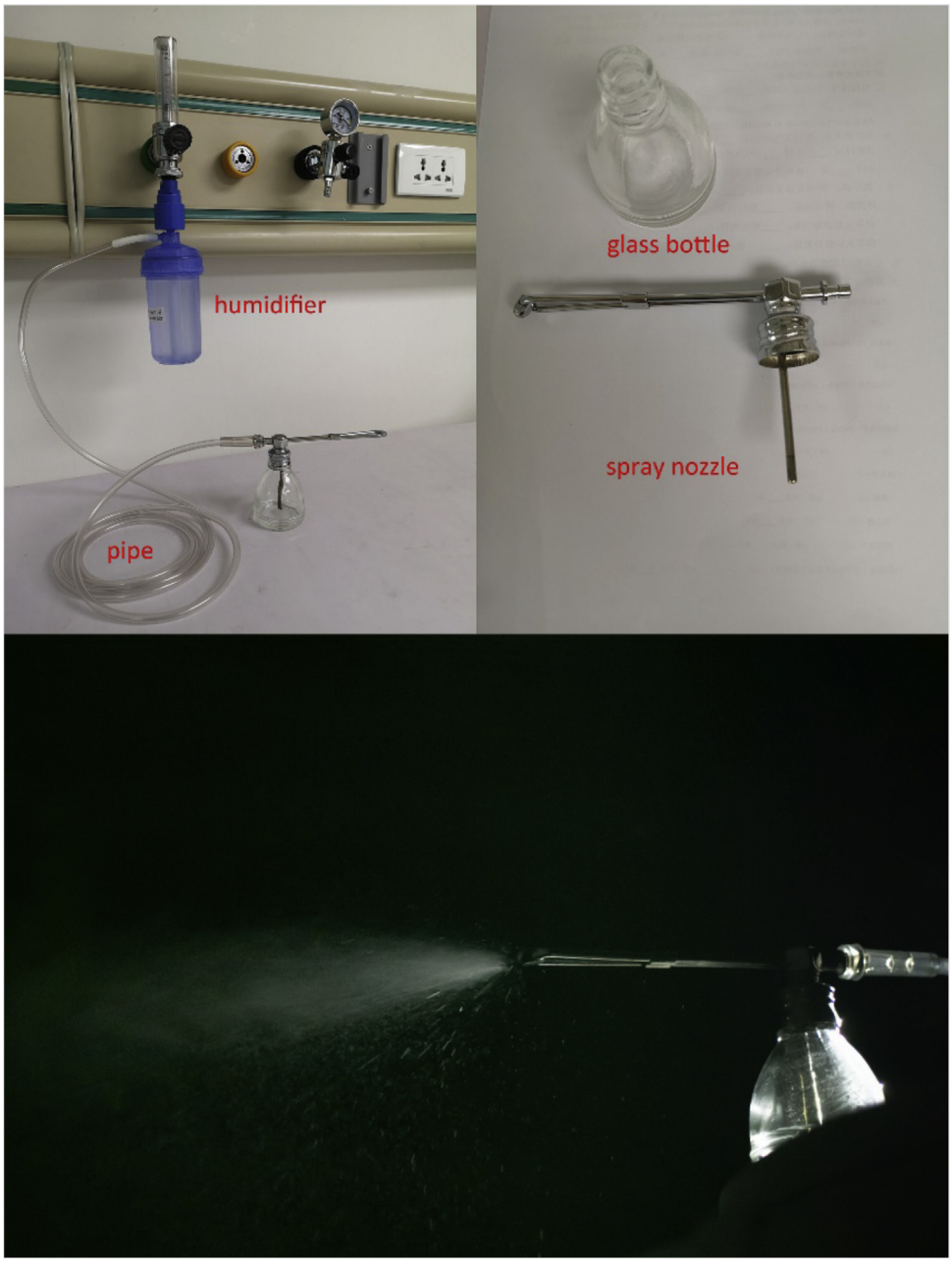

Figure 1 Converted spray device and beautiful sprayed solution.

Conflicts of interest

The authors declare no conflicts of interest.

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