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Case report

King vision video laryngoscope: A suitable device for severe ankylosing spondylitis

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Abstract Ankylosing spondylitis is a chronic, autoimmune disease affecting the spine. Involvement of the cervical spine, atlanto occipital, temporomandibular and cricoarytenoid joints leads to difficulty in airway management and securing airway by conventional laryngoscopy. We report a case of severe ankylosing spondylitis with severe restriction in neck movements and limited mouth opening. Conventional laryngoscopy and endotracheal intubation was impossible in this patient as there was no movement at the atlanto-occipital join. So, we decided to use King Vision™ video laryngoscope for intubation which proved to be of great use.

1. Introduction

Ankylosing spondylitis is a chronic, autoimmune disease affecting the spine and sacroiliac joints. The disease affects males more commonly and has a strong association with the gene HLA B27 [1]. Involvement of the cervical spine, atlanto occipital, temporomandibular and cricoarytenoid joints leads to difficulty in airway management and securing airway by conventional laryngoscopy may not be the most prudent approach in these patients.

The options for airway management are limited and depend on the patient, the clinical setting and the skills of the anaesthesiologist. Over the years numerous airway gadgets have been added to the difficult airway armamentarium which has simplified the approach to secure airway in such patients. Videolaryngoscopes are one such advancement. The King Vision™ video laryngoscope is the latest device available in this category and provides a perfect view using video and digital technology. The device is inexpensive and portable. It has a two piece design. The reusable monitor is attached to a disposable blade with a specially incorporated channel for the endotracheal tube.

We report a case of severe ankylosing spondylitis with restriction in neck movements and limited mouth opening in which endotracheal intubation was done by King Vision™ video laryngoscope (King Systems, Noblesville, IN, USA).

2. Case scenario

A 40-year-old male patient weighing 50 kgs, American society of Anaesthesiologists classification I was posted for laparoscopic cholecystectomy. He had a history of ankylosing spondylitis for the last 15 years.

Airway assessment revealed a restricted mouth opening with Mallampati grade IV view and an interincisor gap of 2.7 cm. Neck mobility was restricted, and the thyromental

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distance was 5.8 cm. X-ray of cervical spine showed fusion of the posterior elements at all levels. After obtaining written informed consent from the patient, assessment of difficult intubation was made and the patient was planned for general anaesthesia. On the day of the surgery, the patient was premedicated with intravenous (i.v.) midazolam 2 mg and intramuscular (i.m.) glycopyrrolate 0.2 mg. He was instructed to lie down in a supine position with the head supported by pillows, and all standard monitoring procedures were applied. A difficult airway cart was kept ready. Anaesthesia was induced with i.v. fentanyl 1 mg/kg and i.v. propofol 2 mg/kg. After confirming adequate bag mask ventilation, neuromuscular relaxation was achieved with 1.5 mg/kg succinylcholine given intravenously. The table was adjusted to the head down position with flexion of both knees. Then we detached the video monitor of King Vision™ video laryngoscope and introduced the channelled blade of the device from left side of angle of mouth of patient with help of jaw thrust by an assistant and passed the blade over the centre of the tongue. The video monitor was then attached with the blade of laryngoscope. The device was advanced further down to reach the vallecula and then passed beyond the epiglottis. The tip was positioned just beyond the epiglottis and an upward force was applied to get a proper view of glottic opening. The bougie was then advanced down the channel while maintaining the upward lifting force that kept exposing the vocal cord, and the bougie could be observed passing through the vocal cords (Fig. 1).

An endotracheal tube sized 8.0 mm was then loaded over the bougie and advanced over it. The ETT cuff could be observed passing through the vocal cords. Once the cuff had passed the vocal cords, the bougie was pulled out, circuit was connected and position was confirmed with capnography and auscultation. The King vision was then removed while holding the ETT in place. Anaesthesia was maintained subsequently with nitrous oxide – oxygen, isoflurane and incremental doses of injection vecuronium bromide.

3. Discussion

Ankylosing spondylitis is a chronic progressive spondyloarthropathy involving articulation of the spine and adjacent tissue. The involvement of the cervical spine occurs late in the disease process and leads to restriction of neck movements and head rotation. The problem of difficult airway is compounded by involvement of atlanto occipital joint, temporomandibular joint and cricoarytenoid joints [2]. Problems encountered are difficulty in lying supine, difficulty in achieving an optimal sniffing position, limited mouth opening and distortion of the airway. The options for airway management are limited and range from awake fibreoptic to surgical airway.

Figure 1 King vision in ankylosing spondylitis.

Awake fibreoptic intubation has been considered the gold standard in difficult airway situation but many patients are apprehensive and refuse to remain awake during the procedure [3]. The technique is time consuming and requires expertise.

Some reports have described the use of conventional laryngoscopy for intubation in AS patients, though with great difficulty [4,5]. The laryngeal mask airway has also been used successfully in AS patients after inhalational anaesthesia induction [6]. However the utility and effectiveness of supraglottic devices in patients of limited neck extension are not guaranteed [7]. We have successfully used Airtraq® optical laryngoscope in two patients of AS who presented with limited neck extension restricted mouth opening [8]. Videolaryngoscopes are a new class of airway devices recently introduced and are amongst the most innovative advancement in current day practice. These devices offer many advantages such as impaired laryngeal visualization, less cervical spine movement, shorter learning curve, improved portability and cost [9].

Videolaryngoscopes are now being increasingly used in managing a difficult airway. Tahan et al. described the combined use of King Vision™ videolaryngoscopy and fibrescopy in patients with critical tracheal stenosis [10]. Park et al. described the use of Glidescope™ in patients of severe mentosternal contracture [11]. Suzuki et al. also reported the use of Pentax AWS™ in morbidly obese patients after failed fibreoptic intubation [12]. Gazynska et al. reported two cases in which King Vision™ videolaryngoscope was used for awake intubation in patients with pharyngeal and laryngeal tumours [13].

However these devices have been either infrequently used or their use is not reported in patients with AS. Lai et al. reported the use of Glidescope for visualizing the laryngoscope and facilitating nasotracheal intubation in patients with AS. Glidescope improved visualization of larynx in 11 patients and intubation was successful in eight patients [14]. We used King Vision™ laryngoscope successfully on our patient. To the best of our knowledge this device has not been used in patients with ankylosing spondylitis. The device has many advantages in such patients. A 18 mm mouth opening is sufficient enough to introduce the blade in the oral cavity. Non-alignment of the three axes i.e. oral, pharyngeal and laryngeal as a result of restricted neck movements is of little concern as the device does not require optimal sniffing position for laryngoscopy and the device is portable enough to be used in emergency situations. In conclusion the King Vision™ videolaryngoscope can be a good option for intubation in patients of ankylosing spondylitis who present with limited mouth opening and restricted neck movements.

Conflict of interest

We have no conflict of interest to declare.

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