



A Successful Endotracheal Intubation of a Patient with Ankylosing Spondylitis: A Case Report

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Abstract

Background: Ankylosing spondylitis (AS) is a chronic inflammatory disorder that primarily affects the spine and eventually causes its malformation. Surgery is a common treatment for AS patients. Patients with severe AS usually have difficulty with ventilation or intubation. Therefore, airway management should be carefully evaluated, especially in patients with severe cervical deformities. Anesthesiologists must fully and carefully evaluate the airway in these patients.

Case Presentation: A 49-year-old woman with AS suffered from a severe spinal deformity that required surgical treatment under general anesthesia. The patient was monitored for vital signs and adequately oxygenated. Lidocaine was used for cricothyroid puncture and throat anesthesia. The feasibility of tracheal intubation was assessed using a visual laryngoscope to expose the glottis under full surface anesthesia. Finally, a #7 enhanced tracheal catheter was successfully inserted after conventional sequential induction. The surgery was successfully completed, and the patient was discharged 10 days after surgery.

Conclusions: Anesthesiologists should fully and carefully assess the presence of a difficult airway in patients with AS, whether it is difficult to ventilate or intubate. Adequate preparation plans are essential.

Keywords

Ankylosing Spondylitis, Difficult Airway, Airway Management

Abbreviations

AS: Ankylosing Spondylitis; MRI: Magnetic Resonance Image; ICU: Intensive Care Unit; 3D: Three-Dimensional; CT: Computed Tomography

Introduction

Ankylosing spondylitis (AS) is a chronic inflammatory disorder of unknown etiology, which primarily affects the sacroiliac joints and eventually causes fusion and rigidity of the spine [1]. Spinal surgery is commonly required for AS patients due to kyphotic deformities, spinal trauma, and spinal

infections. This presents significant challenges for anesthesiologists due to potential cardiovascular and respiratory complications, especially difficult airways [2]. Therefore, airway management should be carefully evaluated, particularly in patients with severe cervical deformities.

Case Report

We present airway management in a patient undergoing surgery for AS with severe cervical malformations. Informed consent for publication was obtained from the patient.

Case Presentation

A 49-year-old woman, weighing 56 kg and with a height of 155 cm, had experienced spinal pain for 10 years, which had aggravated and resulted in deformity over the past 5 years. The patient had no discomfort such as dyspnea. She was admitted for orthopedic surgery for AS under general anesthesia. Cervical X-ray images showed severe cervical deformity (**Fig-1**). Chest computed tomography (CT) scan and three-dimensional (3D) spinal imaging revealed a severe spinal deformity (**Fig-2** and **Fig-3**).



Fig-1: Cervical X-ray Image Showed Severe Cervical Deformity

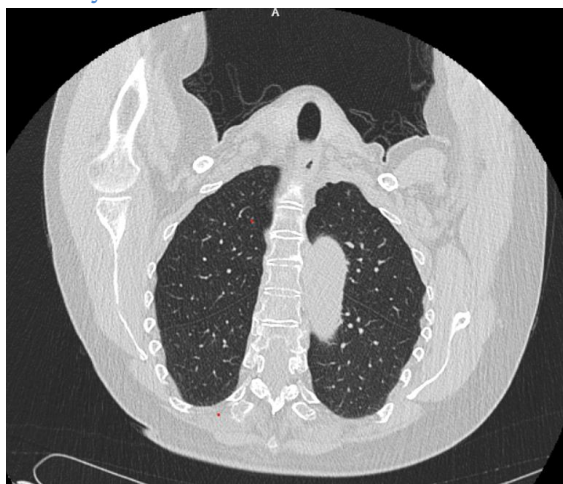


Fig-2: Chest Computed Tomography (CT) Scan Revealed a Severe Spinal Deformity That Compresses the Lung and Large Blood Vessels



Fig-3: Three-Dimensional (3D) Spin Imaging Revealed Severe Spinal Deformity

In the operating room, vital signs monitoring showed normal blood pressure, heart rate, and oxygen saturation. Dyclonine 10 ml was administered for pharyngeal surface anesthesia. Penehyclidine hydrochloride 1 mg injection was used to reduce salivation.

A mask was fastened to inhale 5% sevoflurane, and ventilation function was initially assessed after the patient was asleep. Then, a 5 ml syringe was used for cricothyroid puncture, and 3 ml of 2% lidocaine was injected into the airway after successful puncture. The visual laryngoscope was used to expose the glottis, and no significant intubation difficulties were assessed. The laryngeal anesthesia tube was used to spray 5 ml of 2% lidocaine near and under the glottis, and then mask ventilation was continued. Midazolam 2 mg, sufentanil 17.5 μ g, cis-atracurium 13 mg, and propofol 25 mg were injected intravenously. The patient was fully anesthetized, and a #7 enhanced tracheal catheter was successfully inserted. The vital signs were stable after the catheter was properly fixed. The patient was placed in a prone position, and the operation proceeded. The surgery was successfully completed, and the patient was sent to the intensive care unit (ICU). The tracheal catheter was removed after the patient was fully conscious, and she was sent back to the ward on the second day. After passing all assessments, the patient

was successfully discharged 10 days later.

Discussion and Conclusions

AS is a common inflammatory rheumatic disease affecting the axial bones, which can lead to structural and functional damage and reduce quality of life. Its clinical manifestations include inflammatory back pain, asymmetric back pain, peripheral arthritis, systemic inflammation, and varying degrees of eye, lung, and muscle lesions [3]. The main symptoms are stiffness of the spine and loss of spinal mobility [4]. AS typically appears around the age of 26, with a higher incidence in males than females, at a ratio of about 2:1. The cause of ankylosing spondylitis and other spondyloarthritides is unknown. There is a strong genetic component in spondyloarthritides, especially in ankylosing spondylitis. About a third of this effect is explained by HLA B27 [5], with 90–95% of patients with AS testing positive for HLA B27 [6].

For anesthesiologists, the primary concern in patients with AS is managing a difficult airway. Airway difficulties include clinical conditions of foreseeable or unforeseen difficulty or failure experienced by physicians trained in anesthesia care, encompassing one or more of the following: mask ventilation, laryngoscopy, supraglottic airway ventilation, tracheal intubation, extubation, or invasive airway [7]. Awake fiberoptic bronchoscopy is a safe and preferred method for patients with AS [8], offering low risk and a high success rate. However, many patients find this approach extremely uncomfortable and are unable to cooperate fully. In our case, adequate local anesthesia and suppression of salivary secretion were performed, followed by sedation with spontaneous breathing to assess the feasibility of tracheal intubation. The tracheal intubation was successfully completed after sequential induction. Nonetheless, awake tracheal intubation remains the first choice for patients with difficult mask ventilation.

Additionally, laryngeal mask ventilation may also be an option. Some observational studies have shown a success rate of 65%–100% for supraglottic airway insertion and intubation in anticipated difficult airway patients [9–11]. However, this method does not provide stable airway management, particularly for operations

requiring the patient to be in a passive specific position.

In general, patients with AS are treated surgically under general anesthesia. The anesthesiologist should fully and carefully assess the presence of a difficult airway, whether it is difficult to ventilate or intubate. It is crucial to prepare the necessary equipment, such as fiberoptic bronchoscopes and visual laryngoscopes. Additionally, seeking assistance from others and making adequate preparation plans are indispensable.

Conflict of Interest

The author has read and approved the final version of the manuscript. The author has no conflicts of interest to declare.

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