DIFFICULT AIRWAY MANAGEMENT IN A POLYTRAUMATIZED PATIENT WITH OSTEOGENESIS IMPERFECTA AND MULTIPLE CONGENITAL SPINAL AND THORACIC DEFORMITIES AND SEVERE KYPHOSCOLIOSIS: CASE REPORT

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SUMMARY – Airway management in a polytraumatized patient with severe spinal and thoracic deformities demands detailed investigation of anatomical characteristics of the head, neck and airways, as well as thoracic configuration, before attempting endotracheal intubation. This enables the physician to predict a difficult airway and prepare for difficult airway management. We present a case of a 50-year-old polytraumatized patient with multiple congenital bone deformities associated with the syndrome of osteogenesis imperfecta and severe kyphoscoliosis, unable of lying on his back due to gibbus, who was successfully intubated in first attempt using video laryngoscope and only mild sedation. In patients with such severe multiple deformities, the use of video laryngoscope or Bonfils rigid endoscope should be mandatory in order to ensure success of intubation in first attempt and to avoid the possible aspiration of gastric contents.

Key words: *Osteogenesis imperfecta; Intubation; Difficult airway; Video laryngoscope*

Introduction

Severe spinal and thoracic deformities predispose a possible difficult airway[1]. Even when preoperative investigation of such a patient does not show any signs of a possible difficult airway, the physician must expect further complications after laryngoscopy. Deviation of the epiglottis, which can be accompanied by deviation of the larynx, makes visualization of the glottis aperture difficult, which leads to failed intubation in spite of external compression of the cricoid cartilage. Meticulous attention is warranted when such a patient is moved and positioned on the operating table because sudden or unprofessional movements, as well as hyperextension of extremities can lead to bone fractures. Considerable perioperative morbidity is also caused by easily breakable bones: hyperextension of the neck can lead to cervical spine fracture; intubation can lead to mandible fracture, while fasciculations that accompany the use of succinylcholine can also lead to bone fractures.

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Case Report

A 50-year-old patient was admitted to the Intensive Care Unit after he had been hit by a car. He had multiple congenital thoracic and spinal deformities, deformed and short lower extremities and normal upper extremities, due to which he was in a wheelchair. His thoracic cage was extremely deformed due to severe kyphoscoliosis. On admission, the patient

was conscious, with severe pain in his lower back and legs, markedly tachydyspneic and unable of lying on a flat surface or on his back due to gibbus. Due to spinal deformities his neck was retracted into his thorax and neck deflexion was limited. His mouth was full of blood because of nasal bleeding. Due to insufficient ventilation and further diagnostic procedures, we decided to intubate the patient. He was positioned into semilateral position, without usage of muscular relaxants. Only mild sedation was given (midazolam 1 mg intravenously). Using a CMAC video laryngoscope, we were able to see large epiglottis that was deviated to the left, glottis aperture could not be seen, but a bubble of air that moved synchronously to spontaneous respirations was seen. After intubation, a brief bronchospasm occurred when we could not verify successful intubation only by auscultation; as we visualized the entry of endotracheal tube into the trachea during laryngoscopy, we continued medicamentous management of the bronchospasm, and after two minutes normal ventilation occurred.

Discussion

Although admission of polytraumatized patients occurs on daily basis in our hospital, we rarely see patients with such severe deformities. Even though, every polytraumatized patient presents a challenge on airway management due to multiple injuries of the brain, head, cervical spine, facial bones, or bleeding in these areas. Such patients always have full stomach and they often vomit. Mostly these patients also have unstable respiration and hemodynamics, thus requiring emergent intubation. Visualization of the glottic aperture using a laryngoscope is usually not satisfactory, and use of the CMAC video laryngoscope or Bonfils rigid fiberscope is mandatory in order to improve visualization of airway and to achieve successful intubation while minimizing the risk of aspiration of gastric content[2-4].

Conclusion

In patients with multiple spinal and thoracic deformities, elective intubation should be achieved using awake fiberbronchoscopy when patients have empty stomach. If such patients are polytraumatized and emergent airway management is needed, we think any of newer devices such as CMAC video laryngoscope or Bonfils rigid fiberscope should be used in order to facilitate intubation[5].

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Sažetak

ZBRINJAVANJE OTEŽANOG DIŠNOG PUTA KOD POLITRAUMATIZIRANOG BOLESNIKA S TEŠKIM DEFORMITETIMA KRALJEŽNICE I PRSNOG KOŠA TE TEŠKOM KIFOSKOLIOZOM: PRIKAZ SLUČAJA

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Zbrinjavanje dišnog puta kod politraumatiziranog bolesnika s teškim deformitetima kralježnice i prsnog koša zahtijeva detaljan pregled anatomskih karakteristika glave, vrata i dišnih putova, kao i konfiguracije prsnog koša prije pokušaja endotrahealne intubacije. To omogućava liječniku da se pripremi za zbrinjavanje eventualnog otežanog dišnog puta. Prikazuje se slučaj 50-godišnjeg politraumatiziranog bolesnika s višestrukim prirođenim deformitetima kostiju povezanim sa sindromom osteogenesis imperfecta i teškom kifoskoliozom, nesposobnog da leži na leđima zbog velikog gibusa, koji je uspješno intubiran u prvom pokušaju uz upotrebu videolaringoskopa, samo uz blagu sedaciju. U slučaju zbrinjavanja bolesnika s višestrukim deformitetima videolaringoskop ili Bonfils rigidni endoskop bi se trebao redovno rabiti zbog sigurnosti intubacije u prvom pokušaju i izbjegavanja moguće aspiracije želučanog sadržaja.

Ključne riječi: *Osteogenesis imperfecta; Otežani dišni put; Videolaringoskop*