Endotracheal Obstruction by A Giant Blood Clot Following Tonsil Hemorrhage: A Case Report

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Case report

Keywords: airway obstruction, blood clot, oral bleeding

DOI: https://doi.org/10.21203/rs.3.rs-126136/v1

Abstract

Background: Clot formation along airway can lead to airway obstruction, causing life-threatening condition to the patient. However, blood from the oral cavity flowing down the endotracheal tube and forming a giant blood clot in the airway is rarely reported.

Case presentation: Here we present a case of central airway obstruction by a blood clot due to tonsil bleeding, which was managed with timely procedure.

Conclusions:The case do give us further educational meaning when such patient presented.

Background

Central airway obstruction is a life-threatening emergency defined as obstruction of trachea and mainstem bronchi. The etiologies of central airway obstruction can be malignant processes or non-malignant processes. Acute airway obstruction can be caused by foreign objects, toxic/hot fumes, difficult intubation, infections, laryngeal spasm, and tumors[1]. The central airway obstruction in our case was due to bleeding in the oral cavity, leading to a giant clot formation and ensuing catastrophic hypoxemia.

Case Presentation

A 50-year-old man presented to the hospital with one-month cervical lymphadenopathy and fever (highest 39.6℃). Oral examination revealed an inflamed and bleeding right tonsil at the superior portion. Lab tests upon admission showed procalcitonin 8.753 ng/ml, CRP > 200.0 mg/L, WBC 15.9*10^9/L, PLT 188*10^9/L, Hb 11*10^9/L. The patient was initially treated with piperacillin-tazobactam. Surgical incision and drainage were performed when the abscess was apparently seen. One day after the incision, the right tonsil, especially the superior portion, bled progressively. Prophylactic endotracheal intubation was employed to prevent apnea. Digital subtraction angiography (DSA) revealed contrast leakage from the mandibular branch of external carotid artery, and a 3*2 metal coil was positioned immediately to stop the bleeding. The embolization was successful as there was no more contrast leaking. The patient was then transferred to the intensive care unit. After successful Spontaneous breathing test (SBT) and stable hemoglobin level (10.5*10^9/L) we decide to extubate the endotracheal tube. However, pulse oximetry decreased right after removing the endotracheal tube. At the same time, the patient showed cyanotic. Balloon pressure mask oxygen supplement was given immediately, but the oxygen saturation failed to improve. Without any saturation improvement, endotracheal intubation was performed immediately. When the mouth was opened, we found the a giant blood clots which made tracheal intubation impossible. We immediately tried to clean up the clots. It was fragile by pulling with vessel clamp and without possibility to be pulled out completely after several attempts. The patient's heart rate began to drop, and cardiopulmonary resuscitation was performed immediately. The negative-pressure suction device which was mainly for aspiration of sputum beside each ICU bed was used simultaneously but

failed to evacuate the clot due to its large size and forceful attachment. Then we adjusted the attached site of the clot as close as to the glottis in order to hold more thinner part of clot(Fig. 1) in order to keep the lower part of the clot being pulled out completely. Press the suction device tightly into the clot, apply the negative pressure to maximum in order to hold the clot tightly, and pull out the clot as possible as keeping the device with clot in a line. Then the giant clot was pulled out completely (Fig. 2). Given supplemental oxygen immediately by compression balloon immediately, the patient regained consciousness without intubation. Vital signs became normal limits. The whole resuscitation was less than 4 minutes. With oxygen supplied by nasal cannula, and the patient was in satisfactory condition.

Discussion And Conclusions

The clot was formed gradually outside of the tracheal tube. The airflow remained unobstructed due to the lumen of the tube was clear and SBT test was also successful. All of the above made the clot challenging to discover before extubation. When we wanted to clean the clot the length of the lower part was unkown but it was better to draw it out completely since broken clots were still life-threatening to the patient. The report revealed the treatment to deal with the clot which resulted in total central airway obstruction by bronchoscopic[2]. However, in such crutial situation of our patient skilled doctors and endoscopic devices were unavailable. The negative-pressure suction device to attach the clot in the appropriate site with maximum negative pressure was really a wise try, and finally the clot was removed completely.

We have learned from this case that the patient with oral bleeding followed by endotracheal intubation the giant clot might form and lead to the life-threatening condition to the patient. Before removing the endotracheal tube, a simple SBT test may not be sufficient. The endotracheal tube air leak test should be performed as well before extubation to predict the risk of post-extubation upper airway obstruction. In addition, fibreoptic bronchoscopy should also be considered not only to examine the inside of the endotracheal tube but also to focus outside of it especially the posterior wall of the tube where the thrombus is easily to form. Finally, check the posterior wall of oropharynx would be the easiest way to roughly judge if there is a risk of extubation from the clot from the oral bleeding. Since blood is easy to accumulate at oropharynx in patients under endotracheal ventilation, the clots here can make the substantial risk of obstruction to the airway after extubation. The other experience from our case is that the treating physician should be aware of the life-threatening conditions even though a patient was in good condition. And when the situation gets deteriorated our reaction is critical for saving patient’s life including flexibly using available instruments on hand which might benefit the patient.

When we consider for extubation of the patient with oral bleeding patient our intensive care physicians or anesthesiologist must be aware of the risk of airway obstruction from the clot. Comprehensive oral and airway evaluation before extubation is necessary. Immediate and effective bedside management is critical for such a life-threatening situation.

Abbreviations

SBT Spontaneous breathing test

Declarations

Ethics approval and consent to participate: Jinhua Central Hospital Medical Ethics Committee (2020) Ethics Review No. 42Date of application:October.2020

Consent for publication: Informed consent was obtained from the patient for publication of this report and any accompanying images.

Availability of data and materials: All data information is in our Electronic case system of our hospital.

Competing interests: The authors declare that they have no competing interests.

Funding: None.

Authors' contributions: Binbin Ren and Qing Wang were reviewing the literature and drafting the paper; † Binbin Ren and Qing Wang contributed equally to this work and should be regarded as co-first author; Lin Chen was the patient’s doctor in charge and responsible for the final decision-making of any treatment; Hongying Ni, Jie Chang and Kun Chen reviewed the literature and made contribution to revising the manuscript;

Acknowledgements: Not applicable.

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Figures

Figure 1

Press the suction device tightly into the clot and keep the device with clot in a line as possible.

Figure 2

The giant blood clot. The size of the plate is 20cm of the major axis and 13cm of the minor axis.