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CASE REPORTS

Aspiration Pneumonitis.

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Abstract

Background: Aspiration pneumonitis also called as Mendelson's syndrome is a lung injury from acute inflammation that occurs after chemical burns in the airways and lung parenchyma, caused by the inhalation of gastric content. Depending on the quantity, nature of the aspirated material, and the host factors, the damage can lead to acute respiratory distress with a mortality rate up to 70%.

Case report: A 73-year-old male, was admitted from the emergency department to cardiovascular surgery ICU, diagnosed with ruptured abdominal aortic aneurysm. The patient presented with severe hypotension, tachycardic with altered mental status and was immediately sent to the operating room. At the moment of shifting to the operating table, the patient had cardiocirculatory arrest, large amount of gastric content came out of the patient's mouth. While the patient was assisted with chest compressions, suction was immediately done in the oropharyngeal cavity, the patient was intubated with direct laryngoscopy, the tube cuff had its adequate pressure assured to prevent further aspiration. Bronchial lavage was performed before patient ventilation. The cardiac rhythm was restored, and the surgical incision started. Within 30 minutes from the aspiration, during the surgery the patient appeared symptoms of Mendelson's syndrome. The arterial blood gas test was presented with hypoxemia in 100% with retention. Empiric antibiotic and corticosteroid were administered. After the surgery the patient was transferred to the ICU and was ventilated according to the ARDS protocol. The patient had other complications during his stay in ICU and was extubated after nine days and was discharged home after 19 days.

Discussion: Regardless of the measures taken to avoid aspiration pneumonia during emergency surgery, it is sometimes inevitable and it is important to know how to act and treat the patient according to the primary underlying condition.

Conclusions: Treatment with early, empiric, broad-spectrum antibiotics should be administered then selection of pathogen specific antibiotics or decision to stop or continue the use of antibiotics is made based on quantitative bacteriology

Keywords: Mendelson's syndrome, pneumonia, ARDS

Abbreviations
ARDS-Acute Respiratory Distress; ICU-Intensive Care Unit; CTA- Computed Tomography Angiography; HR-Heart Rate; BP-Blood Pressure; ETT- Endotracheal Tube; AC/VC- Assist Control/ Volume Control; PEEP- Positive End Expiratory Pressure; PBW- Predicted Body Weight; TNF- Tumor Necrosis Factor; IL – Interleukin

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Introduction

Aspiration pneumonitis also called as Mendelson's syndrome is reported for the first time in 1946 by Curtis. L. Mendelson as chemical pneumonitis in obstetric patients who aspirated gastric contents during anesthesia with ether. Aspiration of gastric acid causes chemical burns of the tracheobronchial tree, which is then followed by a parenchymal inflammatory response with the release of cytokines. [1, 2] Depending on the quantity, nature of the aspirated material, the PH of gastric content and the host factors, the damage can lead to a clinic characterized by fever, cyanosis, hypoxia, pulmonary edema. [3, 4] The course of the disease can vary from transient hypoxia to acute respiratory distress syndrome (ARDS) that can lead to potential death with a mortality rate up to 70%.[5]

Case report

A 73-year-old male ASA II, was admitted from the emergency department to cardiovascular surgery ICU, diagnosed with ruptured abdominal aortic aneurysm. The patient presented with a sudden stabbing abdominal pain that spread along the spine, the pain had started 3-4 hours before the patient came to the hospital. At admission the patient was obnubilated, disoriented, without motor and sensory neurologic deficits, with a pale and sweaty face. Spontaneous respiration, tachypneic, respiratory frequency 28/ min. Hemodynamically unstable, a tachycardic sinus rhythm heart rate (HR) 130/min, blood pressure (BP) 60/40mmHg. Abdomen appeared distended, with a pulsating mass. Cold extremities and weak peripheral pulses. Diuresis was absent.

In the computed tomography angiography (CTA) performed in the emergency department resulted:

Ascending aorta, aortic arch and pars thoracic descending aorta with normal caliber and contrast. In the distance from the renal artery, is found a ruptured aneurysm of the abdominal aorta with a maximum caliber of 104 mm with a mural thrombus, with longitudinal extension up to the bifurcation. Acute massive retroperitoneal hematoma. Distended stomach and hiatal hernia. (Figure 1)

After being admitted to ICU, the patient was immediately transferred to the operating room. At the moment of shifting to the operating table, the patient had cardiocirculatory arrest, large amount of gastric content came out of the patient's mouth. While the patient is assisted with chest compressions, suction was immediately done in the oropharyngeal cavity, the patient was intubated with direct laryngoscopy with endotracheal tube (ETT) nr 8, the tube cuff had its adequate pressure assured to prevent further aspiration. Bronchial lavage was performed before patient ventilation, where significant amount of gastric content came from the ETT. The patient was ventilated with the anesthesia machine, the cardiac rhythm was restored and the surgical incision started. 30 minutes after the incision, the patient appeared symptoms of Mendelson's syndrome. Oxygen saturation was 75-80% under assist control/ volume control (AC/VC) ventilation 100%. The arterial blood gas test was presented with hypoxemia and retention. On auscultation bilateral crepitant rales were heard. After the surgery the patient was transferred to the ICU.

In the following days, the patient continued under mechanical ventilation for nine days, starting with this ventilation parameters: AC/VC; tidal volume 4–6 mL/kg predicted body weight (PBW) 70%; positive end expiratory pressure (PEEP) 8 cm H_2O. The patient developed bacterial pneumonia and on day 4 got complicated with mesenteric ischemia. Laparotomy was performed, where it was found sigmoid ischemia up to the level of the anus, necrotic areas of colon with multiple perforations, fecaloid peritonitis, which led to abdomino-perineal resection with definitive colostomy. The patient was treated with antibiotics, [6, 10] Cortisone (Methylprednisolone), parenteral nutrition, lavage of the bronchial tree, diuretic in fractional doses. The patient left the ICU after 12 days and was discharged from the hospital after 19 days.

Discussion

The management of cases with aspiration of gastric content can become quite challenging, especially if it is an unexpected situation and when it has not been possible to make an adequate assessment of the patient preoperatively. Moreover, in our case the situation was more complicated with the cardiorespiratory arrest and the chest compressions that worsened the aspiration of gastric content. It is important to be prepared for a quick response in case of emergencies and to secure the airway as soon as possible

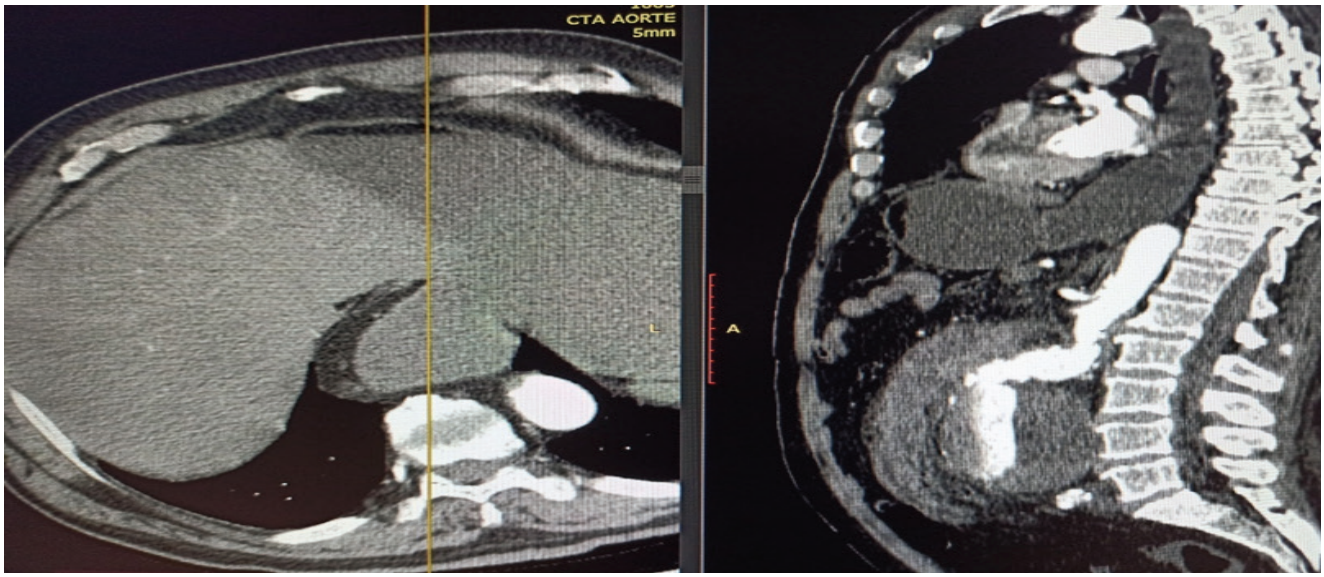

Figure 1 Acute massive retroperitoneal hematoma. Distended stomach and hiatal hernia.

to prevent further aspiration. After managing and securing the airway, the patient should be monitored closely, because based on the PH of gastric content, the amount and the physiological conditions of the patient, respiratory changes will be reflected clinically. The auscultation of pulmonary sounds, pressures, waveforms and loops of respiratory machine, blood gas analysis suggest about the progression of the syndrome.

The pathophysiology of aspiration pneumonitis consists in chemical burns of the tracheobronchial tree which is followed by an inflammatory cellular reaction fueled by the release of potent cytokines, particularly tumor necrosis factor (TNF)–alpha and interleukin (IL)–8 [7] Treatment is focused on reversing the cause of inflammation and reducing symptoms like bronchospasms by giving corticosteroids to reduce inflammation. [8,9] For aspiration pneumonitis, early presumptive antibiotics (ie, prophylactic) are not recommended. This practice is believed to lead to the selection of more resistant organisms.[10] However, analyzing the history of the patient's disease, the presence of hiatal hernia and the impairment of intestinal motility due to the alteration of their perfusion from the aneurysmal aorta, increase the possibility of colonization of the gastric content by microorganisms. Although the routine use of corticosteroids and antibiotics is not recommended, because supporting studies, both animal and human, are not convincing of a favorable benefit-to-risk ratio, in this case based on the patient's disease history we used empiric corticosteroids and antibiotics. After transfer to ICU, the patient was treated according to ARDS protocols.

Regardless of the measures taken to avoid aspiration pneumonia during emergency surgery, it is sometimes inevitable and it is important to know how to act and treat the patient according to the primary underlying condition.

Conclusions:

Treatment with early, empiric, broad-spectrum antibiotics should be administered then selection of pathogen specific antibiotics or decision to stop or continue the use of antibiotics is made based on quantitative bacteriology

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