JOJ Nursing & Health Care
ISSN: 2575-8551

Juniper Publishers
key to the Researchers

Case Report
Volume 12 Issue 3 - June 2022
DOI: 10.19080/JOJNHC.2021.12.555836

JOJ Nurse Health Care

Pre-Hospital Intervention in a Case of Airway Obstruction in a Child: Communication and Clinical Decision-Making in a Challenging Social Context

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Submission: June 04, 2022; **Published:** June 13, 2022

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Abstract

Pre-hospital emergency interventions are in nature difficult and stressful even in optimum circumstances. efficient communication and rapid clinical decision making are a narrowed process with limited informational resources that can make this kind of intervention even more challenging. In this brief case report, we discuss the importance of communication and appropriate decision making within a challenging urgent situation where a child is found unconscious, and a medical team had to intervene with minimum information within a complex setting.

Introduction

Atelectasis in children is often caused by a blockage in the airway most commonly due to swallowing a foreign object and this is known as obstructive atelectasis (Duggan, et al., 2005). According to the National Safety Council's statistics (NSC), foreign-body airway obstruction (FBAO) is the fourth leading cause of unintentional death. In children under the age of 16, FBAO is one of the leading causes of accidental deaths. According to the NSC, 88% of children who died from airway obstruction injuries were children under the age of four. Infants under four years of age are particularly at risk of choking on small objects because their upper airways are smaller, they are less experienced in properly chewing food, and they tend to explore "the world" with their mouths [1].

Airway obstruction can lead to severe hypoxemia in children, which can rapidly lead to cardiorespiratory arrest [2]. Besides, FBAO in children may be suspected on the basis of a choking episode if the episode is witnessed. A simple maneuver, like the Heimlich maneuver, can save lives in such a situation [3]. However, the clinical presentation of unwitnessed obstruction can be challenging, and diagnosis requires a careful review of the history and faster clinical evaluation. In the pre-hospital context, such an event becomes even more complicated, since the absence of diagnostic resources, the social context outside the hospital with pressure and family desperation make this type of medical care very difficult. Focus, quick assessment, and assertive clinical decision are imperative competencies in this scenario. In this case report, we describe the medical assistance of unwitnessed airway obstruction in a 3-year-old child by the service of a pre-hospital emergency in Brazil.

The Case

Brazil's pre-hospital emergency service (SAMU) is one of the largest pre-hospital emergency services in the world, covering more than 3049 cities in the country [4]. This service is part of the country's health care system, known as "Sistema Unico de Saudi" (SUS), which provides free care and free medicaments to more than 220 million people. The service follows the French-German pre-hospital model, with physicians regulating the dispatch of ambulances and defining the type of emergency vehicle to be sent for the patient's care. The medical regulator has the prerogative to send from vehicles for simple patient transport to mobile ICU with doctors and nurses for critical cases.

The doctor regulator received a call from a desperate father who says he found his 3-year-old son unconscious, unresponsive and with blue lips in his home. Considering the father's description, the doctor decided to send a mobile ICU immediately. While the vehicle was moving, the medical regulator tried to obtain more information to support the family until the team arrived. Due to the panic of the family members, effective communication was not possible. The regulating physician could neither help the family and child nor obtain any information that could provide guidance to the medical team that was sent to the intervention. The intervention team was composed of a general physician with more than 5 years of experience in pre-hospital emergencies, a nurse and a first aider (emergency vehicle driver). The team received information that a 3-year-old child was unconscious and unresponsive at an address 5 minutes from where they were. The team quickly started moving despite limited information.

On arrival at the scene, the medical team entered the home. All family members were in emotional shock. The child was in the mother's arm. The child was not alert and did not respond to physical stimulation nor to verbal commands. He had cyanosis of the lips and extremities, with no cough, stridor, or wheezes. Oxygen Saturation: 87%, HR: 60/ and weak pulse. Imperceptible respiratory movements. No odour or signs of physical injury or insect bites. No allergies and past medical history are unremarkable. Despite de family and friends' social commotion and panic, resuscitation maneuvers were initiated according to AHA guidelines for children. The doctor decides to perform a laryngoscopy to proceed with tracheal intubation and ensure an open airway.

During the laryngoscopy, a rounded and bright object impacted at the entrance of the trachea, between the vocal cords, was identified. The doctor concluded that it was a total airway obstruction. The object spun due to the pressure emitted from the resuscitation maneuvers. A Magill forceps curved was used to promote airway clearance. The foreign object was pinched and successfully removed. The object was therefore identified as a marble ball. A few minutes later, the child presented saturation of 97%, HR:101 and RR: 26. Displacement of the mobile ICU was initiated to the referral hospital facility. It was a necessary 15-minute drive to arrive at the hospital. The child arrived at the hospital responsive, conscious, and with hemodynamic stability. The child was kept under observation for monitoring and supplementary investigation. He was discharged without neurological or physical damage after 6 hours.

Discussion

A major challenge in the resolution of this clinical case is communication and the environment of care. Doctors are used to acting in a "controlled environment", with conditions to have enough information to guide them to diagnostic hypotheses and eventually confirm them through supplementary tests. Nevertheless, communication failures occur frequently in the pre-hospital setting and can delay diagnosis and decision-making in emergency situations [5]. This can lead to severe clinical complications or even death [6]. Effective communication is still a challenge for many health professionals, and one of the important gaps in the training of the health professionals [7].

In a pre-hospital environment, failures can occur at various levels and points in the regulation process, between family members and regulation center professionals; between regulation center professionals and the mobile medical team; between the mobile medical team and lay people at the point of care; as well as among the mobile team members themselves. In the case presented, the panic, the emotional shock of the family members, the phone contact, and the difficulty of transmitting pertinent information to the intervention team were some of the barriers and challenges detected. Strategies to improve communication between professionals and patients' family members and loved ones in the prehospital environment should be encouraged. Health professional communication training should integrate communication skills to acquire even in the worst contexts when information is limited, and circumstances are not optimum for adequate and smooth communication.

Professionals who work in the pre-hospital environment are often confronted with difficult access places and with limits of resources to provide effective care. Emergency care outside the hospital environment is always a challenge that requires clinical experience and the ability to make quick and effective decisions [8]. Such professionals are constantly faced with ethical dilemmas and should receive continuing education and support to deal with such situations [9]. Studies have shown that 50% of patients with airway obstruction who lose consciousness progress to cardiorespiratory arrest. In addition, less than 26% receive the appropriate type of airway clearance attempt or receive cardiorespiratory maneuvers before the medical team arrives [10]. In our case, the child was found unconscious, and cyanotic and no family member confirmed that he could be obstructed. Not even the suspicion of airway obstruction was raised by family members.

Studies have shown that resolution of FBAO involves the use of multiple interventions, including encouraging the patient to cough and abdominal thrusts [11]. Sometimes success in removing objects was usually attributed to the last, or most aggressive, intervention. In our case, respiratory failure and imminent cardiac arrest of the child were quickly identified, and resuscitation maneuvers were initiated, but the visualization of the object during laryngoscopy and its extraction by Magill forceps were decisive in the child's prognosis. Also, the cold blood and the calm of the medical team played in favour.

Conclusion

The care of unattended airway obstructions remains a challenge in pre-hospital emergency care and tends to impose several additional stress factors on the medical team. In this case report, we demonstrate the process of emergency regulation and care in the fifth largest city in Brazil. Numerous issues and pre-hospital dilemmas were raised and discussed. Finally, we report the care of a 3-year-old child found unconscious due to an unwitnessed complete airway obstruction as well as the actions of the medical team to save the child. The foreign body was removed while still at the scene of the care with Magill forceps after visualizing the object during laryngoscopy. The child was discharged without any sequelae. Training of health professionals on the best way to communicate when no optimum communication can be possible considering the lack of information, and incomplete or unclear information should be encouraged because communication in medical and clinical settings is not always in optimum circumstances.

Conflicts of Interest

The authors declare no conflict of interest.

How to cite this article: Breitner Gomes Chaves, Khayreddine Bouabida, Cibele Martins Castelo Branco Camurca. Pre-Hospital Intervention in a Case of Airway Obstruction in a Child: Communication and Clinical Decision-Making in a Challenging Social Context. JOJ Nurse Health Care. 2022; 12(3): 555836. DOI: 10.19080/JOJNHC.2022.12.555836

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