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A case of near-fatal asthma exacerbation

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Abstract

We report a case of mild intermittent asthma with rapid decompensation to respiratory arrest. The case was a 7.5-year-old male with mild intermittent asthma presented with a complaint of sudden shortness of breath and subsequently cyanosis that led to respiratory arrest. Although, asthma is the most prevalent chronic respiratory disease globally, it is affecting children through all ages. The patient had O_2 saturation of 90% during intubation with respiratory rate of 16 and pulse rate of 116 in one minute. Mechanical ventilator was conducted for the patient with set up of FiO_2:90%, PEEP: 7, RR: 20, and TV:150. The patient was listed as NPO and NG tube was fixed for him. Meropenem (1g), Vancomycin (350 mg), and Ciprofloxacin (350 mg, TDS) was injected for the patient. Nebulizer of Ventolin (5mg for every 20 minutes for one hour), 3% saline (every four hours), and epinephrine were administered with nasal oxygen (5 liters per minute). Spray of Seroflo (2 puffs for every 12 hours) was started in one hour after extubation. This study showed that patients with mild-intermittent asthma can be affected by asthma exacerbation. The exacerbation can become extremely severe to near-fatal asthma. These dangerous attacks can be prevented with inhaler corticosteroid easily.

Keywords: Near fatal asthma, Rescue therapy

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Case report

A 7.5-year-old asthmatic patient presented to the hospital emergency room at 3 am with a complaint of sudden shortness of breath and subsequently cyanosis. The patient was undergoing CPR there. After being transferred to the ICU of the hospital, he was referred to our medical center nine hours later and admitted to the PICU. The patient recorded a history of salbutamol spray once a week and betamethasone once daily for 20 days. The patient had no history of infectious symptoms, nasal discharge, cough, and fever. He had no previous history of contact with a cold person but did mention a trip to Dubai.

The gestational age of the patient was 38 weeks. The birth weight was 2,500 grams and a height of 47 centimeters, currently weighing 38 kg and a height of 140 centimeters. The patient had difficulty with speaking because of cleft palate. He had history of tonsillectomy. The patient's vaccination was complete, and his developmental status was normal.

The patient had O_2 saturation of 90% during intubation with respiratory rate of 16 and pulse rate of 116 in one minute. The pupils were midsize and reactive. Mild decrease in pulmonary sounds of right lung was found. The patient had moderate laryngeal and nasal discharge.

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Mechanical ventilator was conducted for the patient with set up of FiO_2:90%, PEEP: 7, RR: 20, and TV:150. The set-up was near normal after beginning the treatment including FiO_2: 60%, PEEP:9, RR:25, and TV: 150. Due to the frequent waking up, the drip of Midazolam (10 cc per hour) and the drip of Fentoline (3cc per hour) were administered for the patient. The blood pressure of the patient was raised to 100/60 mmHg. Blood sugar was checked for every six hours that was normal. ECG was also normal for the patient.

The findings of chest X-ray revealed bilateral pleural effusion. The patient was listed as NPO and NG tube was fixed for him. Meropenem (1g), Vancomycin (350 mg), and Ciprofloxacin (350 mg, TDS) was injected for the patient. This treatment was continued for the patient for three days. Spray salbutamol (3 puffs for every 6 hours) was prescribed for the patient which was stopped after six hours.

The first ABG of the patient showed the respiratory acidosis which became normal after one day. At the third day of hospitalization, the patient became extubated and chest X-ray was conducted. Nebulizer of Ventolin (5mg for every 20 minutes for one hour), 3% saline (every four hours), and epinephrine were administered with nasal oxygen (5 liters per minute). Spray of Seroflo (2 puff for every 12 hours) was started in one hour after extubation. The pleural effusion was disappeared in the first chest X-ray after extubation. The patient was transferred to the ward after three-day admission in PICU.

At the first day of ward admission, the oral feeding was started for the patient under supervision and was continued until the second day without any problem.

The patient was discharged after fifth day of hospitalization with spray of Salmetrol 2 puffs daily and Salbutamol in case of dyspnea.

Discussion

Asthma has various phenotypes which is different based on several factors such as genetic, environmental factors, and specially the age domain of affected population (1). However, despite the treatment of asthma, each of the affected individuals at any level of asthma can experience the exacerbations (2).

The asthma exacerbation is caused by the uncontrolled inflammatory process and worsening the manifestations (3). This condition can cause the morbidity especially respiratory failure which is leading to the growth in healthcare costs(4). Therefore, the managements should be guided to prevent the asthma exacerbation or to decrease the frequency of exacerbations. For this purpose, being informed about its associated risk factors is crucial.

Viral respiratory infections with human rhinovirus (RV) specially the subtypes of A and C, are the most prevalent trigger for an exacerbation(5). Seasonal increasing of RV in September through December and in spring is one of the main reasons of higher rate of hospitalization for school-aged children and affected adults within these seasons than other times (6, 7).

Although the evidence about asthma exacerbations following the bacterial infections are limited, the resulting mucus production and impairment of mucociliary clearance may lead to lower airway inflammation. On the other hand, respiratory viruses may predispose to bacterial infections (8).

Environmental allergens and pollutions can also provoke the inflammatory process and leads to asthma exacerbation(9) .

Near-fatal asthma and sudden asphyxic asthma the terms for describing the acute asthma exacerbations. Near- fatal asthma is defined as a rapid progress to hypoxemia, hypercapnia, and respiratory arrest. This condition is usually occurring due to the severe asphyxia rather than cardiac arrhythmia. However, the sudden asphyxic asthma is characterizing like near-fatal asthma while occurring within three hours and in a group of young patients (10, 11) .

The case of this study was at level of mild intermittent asthma which used spray of salbutamol once a week. However, he was led to near-fatal asthma and respiratory arrest. Given to the previous history of traveling to Dubai, the probable environmental factors including viral infection or allergens caused the respiratory arrest.

Conclusion

This study showed that patients with mild-intermittent asthma can be affected by asthma exacerbation. The exacerbation can become extremely severe to near-fatal asthma. These dangerous attacks can be prevented with inhaler corticosteroid easily.

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References

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1. Bijanzadeh M, Mahesh PA, Ramachandra NB. An understanding of the genetic basis of asthma. The Indian journal of medical research. 2011;134(2):149.

2. Castillo JR, Peters SP, Busse WW. Asthma exacerbations: pathogenesis, prevention, and treatment. The Journal of Allergy and Clinical Immunology: In Practice. 2017;5(4):918-27.

3. Wark P, Gibson P. Asthma exacerbations· 3: pathogenesis. Thorax. 2006;61(10):909-15.

4. Bai T, Vonk J, Postma D, Boezen H. Severe exacerbations predict excess lung function decline in asthma. European Respiratory Journal. 2007;30(3):452-6.

5. Johnston SL, Pattemore PK, Sanderson G, Smith S, Campbell MJ, Josephs LK, et al. The relationship between upper respiratory infections and hospital admissions for asthma: a time-trend analysis. American journal of respiratory and critical care medicine. 1996;154(3):654-60.

6. Johnston SL, Pattemore PK, Sanderson G, Smith S, Lampe F, Josephs L, et al. Community study of role of viral infections in exacerbations of asthma in 9–11-year-old children. Bmj. 1995;310(6989):1225-9.

7. Johnston NW, Johnston SL, Norman GR, Dai J, Sears MR. The September epidemic of asthma hospitalization: school children as disease vectors. Journal of Allergy and Clinical Immunology. 2006;117(3):557-62.

8. Von Hertzen L. Role of persistent infection in the control and severity of asthma: focus on Chlamydia pneumoniae. European Respiratory Journal. 2002;19(3):546-56.

9. Laza-Stanca V, Mallia P, Parker HL, Zhu J, Kebadze T, Contoli M, et al. Rhinovirus-induced lower respiratory illness is increased in asthma and related to virus load and Th1/2 cytokine and IL-10 production. Proceedings of the National Academy of Sciences. 2008;105(36):13562-7.

10. Molfino NA, Nannini LJ, Martelli AN, Slutsky AS. Respiratory arrest in near-fatal asthma. New England Journal of Medicine. 1991;324(5):285-8.

11. Wasserfallen J-B, SCHALLER D, Feihl F, Perret CH. Sudden Asphyxic Asthma: A Distinct Entity? 1, 2. Am Rev Respir Dis. 1990;142:108-11.

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