

Salbutamol Induced Tachycardia in COPD

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Abstract: A 65 years old male patient was admitted in general medicine ward in Gandhi hospital. He had chief complaints of gradual progressive dyspnea of grade 2 since 4 months. Now it is progressed to grade 4 since 4 days. History of palpitations and giddiness was seen. SOB since 5 months and was aggravated since 1 week with cough and expectoration. On examination patient was conscious and coherent. He had tachypnea and was afebrile. In lungs, Bilateral crepts were found positive. He has a past medical history of bronchial asthma and COPD and was on medications. He is a chronic smoker and is alcoholic. ECG and blood gas report was done and the patient was diagnosed with acute infective exacerbation of COPD. The treatment was given to treat the condition, for which the patient was prescribed with nebulization by Salbutamol every 6th hourly along with Budesonide every 8th hourly. After the treatment was given, the patient developed tachycardia and his heart rate was found to be 112/min. This case has been reported as Asthalin (Salbutamol) induced tachycardia. **CONCLUSION:** In patients diagnosed with Acute infective exacerbation of COPD, use of salbutamol nebulization will induce tachycardia and cause diastolic dysfunction. Hence it should be avoided.

Keywords: dyspnea, tachypnea, tachycardia, diastolic dysfunction

1. Introduction

Salbutamol is an inhaled medicine used to relieve symptoms of chronic obstructive pulmonary disease (COPD), such as breathlessness and wheezing. Salbutamol is a type of short-acting beta-agonist bronchodilator, which is called SABA for short. Salbutamol is the most common type of SABA used to treat COPD. Patients with COPD are usually prescribed Salbutamol as a key part of their COPD treatment plans.

Salbutamol can provide quick relief for bronchospasms caused by COPD. People with COPD have airways that are irritated and inflamed, which can cause the muscles that surround the airways to tighten up all of a sudden. This is called a bronchospasm, and it can make it hard to breathe because the airways become too narrow.

2. Adverse Reactions of Salbutamol:

There are a number of adverse reactions to salbutamol that have been encountered during its 20 years of use. In general, these side effects of salbutamol are dose-related and occur more frequently with the oral tablets or syrup than with the inhalation aerosol or nebulizers.

The most common adverse reactions associated with use of salbutamol inhalation aerosol are palpitations (occurring in less than 10% of patients), sinus tachycardia (less than 10%), anxiety (less than 10%), tremors (less than 15% of patients) and increased blood pressure (approximately 5%), occasionally resulting in hypertension. Other side effects include nausea and vomiting (6%), throat irritation (6%), dyspepsia (5%), insomnia (3%), headaches (3%), epistaxis (3%), cough (2%), dizziness (1%), nightmares (1%), and hostility (1%). Some cases of urticaria, angioedema, maculopapular rash, bronchospasm, hoarseness, and oropharyngeal edema have also been reported after use of inhaled salbutamol. Salbutamol nebulizers produce adverse effects similar to those observed with the inhalation aerosol.

Often, adverse reactions occur in young children of 2-6 years of age than in older children or adults, particularly excitability and anxiety, which occur in roughly 20% and 15% of young children respectively. Gastrointestinal

problems such as nausea and vomiting have been reported in about 2% of young children who use salbutamol.

As a adrenoceptor agonist, salbutamol can in a small number of cases induce adverse cardiovascular effects such as hypertension (in 3% of patients), angina (in less than 1%), or arrhythmia exacerbation or precipitation, particularly in patients already suffering from some form of cardiovascular disease.

Salbutamol can also induce hyperglycemia and hypokalemia. Both of these effects occur due to stimulation of beta₂-receptors, resulting in gluconeogenesis and intracellular movement of potassium. These effects occur most commonly with inhalation through nebulizers of relatively large doses of salbutamol , such as over 5 mg.

3. Prevalence

The sinus origin arrhythmia is the most common types of arrhythmia (30%) that detected among COPD patients. This can also be further classified to subgroups with their specific magnitude per to total analysed ECG papers, not per to occurred arrhythmias. For instance, Sinus bradycardia accounted for 16.3%, Sinus tachycardia (8.8%) and Sinus arrhythmia (5.0%).

4. Case Report

A 65 years old male patient was admitted in general medicine ward in Gandhi hospital. He had chief complaints of,

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- History of palpitations and giddiness was seen.
- SOB since 5 months and was aggravated since 1 week with cough and expectoration.

On examination patient was conscious and coherent. He had tachypnea and was afebrile. In lungs, Bilateral crepts were found positive.

The patient had similar complaints 3 months back and was treated in the same hospital. He has a past medical history of bronchial asthma and COPD and was on medications. He is a

chronic smoker and is alcoholic. ECG and blood gas report was done and the patient was diagnosed with acute infective exacerbation of COPD.

The treatment was given to treat the condition, for which the patient was prescribed with nebulization by Salbutamol every 6th hourly along with Budesonide every 8th hourly. After the treatment was given, the patient developed tachycardia and his heart rate was found to be 112/min. This case has been reported as Asthalin (Salbutamol) induced tachycardia.

5. Discussion

The patient has a past medical history of bronchial asthma and COPD was on medications. He is a chronic smoker and is alcoholic. By ECG and blood gas report the patient was diagnosed with acute infective exacerbation of COPD. But an adverse effect was noticed with the treatment with salbutamol.

This case was reported as Salbutamol induced tachycardia in COPD patient. The treatment given for this patient was, an antibiotic Augmentin 1.2 gm by IV route 2 times a day, ranitidine 1cc by IV route 2 times a day, nebulisation with asthalin(Salbutamol) every 6th hourly and Budecort (budesonide) every 8th hourly and oxygen inhalation 4 lit/min.

The very next day on examination patient's pulse rate was raised to 112 beats per min and this case is reported as tachycardia due to salbutamol inhalation. After which immediately the nebulization with Salbutamol was stopped as it causes tachycardia and aggravates the condition causing diastolic dysfunction.

6. Conclusion

In patients diagnosed with Acute infective exacerbation of COPD, use of salbutamol nebulization will induce tachycardia and cause diastolic dysfunction. Hence it should be avoided.