

Salbutamol - intoxication

Part I

A 2-year-old boy accidentally ingested salbutamol sulfate inhalant (Ventolin inhalant; 0.5%, 30 mL/bottle) prescribed for the patient's elder brother. Mother happened to witness the accident and immediately brought the patient to a nearby physician. The ingested volume of the inhalant was estimated to be 15 mL.

1. To which drugs class belongs salbutamol sulfate - what is its mechanism of action, in which indication is it used?
2. How are the selective β_2 adrenergic agonists classified? Give representatives.
3. Which other groups of drugs are used as bronchodilators? What are their mechanisms of action?

Part II

Overdose of salbutamol sulfate and other β_2 selective bronchodilators involves unwanted sympathomimetic effects, including cardiac β_1 receptors activation, peripheral vasodilatation, muscle cramps, hyperglycemia, and hypokalemia.

Sinus tachycardia develops due in part to a decrease in peripheral resistance associated with a reflex increase in cardiac output.

5. How would you solve the situation? Suggest a suitable pharmacotherapy.

Part III

Treatment is primarily aimed at eliminating the ingested β_2 agonist by means of gastric lavage, diuresis and induction of laxation, and if necessary, a cardio-selective β blocker such as metoprolol may be given by injection. Non-selective β blockers are contraindicated for asthma. It is recommended to monitor the serum potassium and glucose levels for possible hypokalemia and hyperglycemia, and to secure fluid infusion route. More important than the consequence and treatment of accidental β_2 agonist inhalant ingestion is the means of its prevention.

6. Suggest how would you educate parents - including recommended preventive measures or warning, how to behave in case of repetition of the situation.

Part IV

It is recommended that families with infants and pre-school age children should keep the inhalant essentially inaccessible to children by storing the drug in a tightly capped container, on a high place or even in a locker.

The form of drug container also needs to be considered – small containers are safer.

In case of accidental indigestion: The patient should not be made to throw up, because it would result in loss of fluid and electrolytes and aggravate the condition. Therefore, it is best for family members to bring the patient to a physician's care immediately.