



Suicide Attempt by Swallowing with 60 Formoterol Inhaler Capsules: A Case Report

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Authors' contributions

This work was carried out in collaboration between all authors. Author FB critical revision, managed the literature searches. Authors SV, UA and OE were acquisition of data. Author MDI did the manuscript design and writing. Author FC did critical revision. All authors read and approved the final manuscript.

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Case Study

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ABSTRACT

Formoterol is a long-acting β_2 agonist used in the management of asthma and chronic obstructive pulmonary disease (COPD). Oral ingestion of sympathomimetic aerosol preparations is unlikely to cause systemic toxicity as most of these agents are poorly absorbed via ingestion. Oral ingestion of inhaler formoterol capsule form is rare. Twenty six year old male admitted to the emergency department after a suicide attempt by swallowing 60 capsules of formoterol fumarate (12 mcg/capsule, total 720 mcg). With the oral ingestion of high doses caused nausea, vomiting, vertigo and palpitation in our patient. It is important to know the effects of the oral ingestion of inhaler formoterol capsule.

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1. INTRODUCTION

Formoterol is a β_2 agonist that used in treatment of asthma and chronic obstructive pulmonary disease (COPD), which includes chronic bronchitis, emphysema, and other lung diseases. Its effect is seen by bronchial smooth muscle relaxation. Formoterol is also used in treatment of obesity, stimulation of mitochondrial biogenesis and Down syndrome [1-3]. The most frequent adverse effects are viral infection (>10%), bronchitis, chest infection, dyspnea, chest pain, tremor and dizziness. It can also cause angina, arrhythmias, hypo/hypertension, tachycardia, hypokalemia, hyperglycemia, metabolic acidosis, headache, insomnia, paradoxical bronchospasm and severe asthma exacerbation.

Symptoms of overdose may include chest pain, syncope, tachycardia, bradycardia or irregular heartbeat, nervousness, headache, tremor, seizures, muscle cramps, dry mouth, upset stomach, dizziness, excessive tiredness, difficulty in falling asleep or staying asleep, thirst, tiredness, flushing, dry skin, frequent urination, loss of appetite, trouble in breathing [4]. Also a suicidal ideation associated with use of formoterol + budesonid combination was reported [5]. But we don't know well the effects of oral administration of it. Herein we reported an administration of 60 inhaler capsules of formoterol which was resulted with nausea, vomiting, vertigo and palpitation.

2. CASE REPORT

Twenty six year old male admitted to the emergency department after a suicide attempt by swallowing 60 capsules of formoterol fumarate (12 mcg/capsule, total 720 mcg). The patient admitted to emergency department after 60 minutes of oral intake. At admission, the patient had nausea, vomiting, vertigo and palpitation. He didn't have any chronic diseases. His blood pressure was 130/70 mmHg, heart rate was 110 beats/min. The physical examination was in normal range except tachycardia. Electrocardiogram was normal. We didn't apply gastric lavage and activated charcoal. With intravenous hydration and symptomatic treatment including antiemetics, his symptoms disappeared in the first 2 hours. In the first 24

hours, there wasn't any additional symptom and patient was discharged.

3. DISCUSSION

Formoterol is an innovative, highly potent, β_2 -adrenoceptor-selective agonist, combining the clinical advantages of rapid onset of action with a duration of action in excess of 12 h. In vitro, formoterol is a potent airway smooth muscle relaxant with high efficacy, and very high affinity and selectivity for the β_2 -adrenoceptor [6]. A dry powder inhaler capsule contains 12 mcg of formoterol fumarate and 25 mg of lactose (which contains trace levels of milk proteins) as a carrier.

Toxic effects of oral forms may result from the accidental ingestion of the material. Animal experiments indicate that ingestion of less than 40 g may be fatal or may produce serious damage to the health of the individual. There is strong evidence to suggest that oral forms of formoterol fumarate, if swallowed once, can cause very serious, irreversible damage of organs. At sufficiently high doses, the material may be toxic to the heart. Treatment of overdosage consists of discontinuation of formoterol fumarate together with institution of appropriate symptomatic and/or supportive therapy. The judicious use of a cardioselective beta-receptor blocker may be considered, bearing in mind that such medication can produce bronchospasm. There is insufficient evidence to determine if dialysis is beneficial for overdosage [4].

Oral ingestion of sympathomimetic aerosol preparations is unlikely to cause systemic toxicity, as most of these agents are absorbed poorly via ingestion. The symptoms in our case were nausea, vomiting, vertigo and palpitation. We didn't apply gastric lavage and activated charcoal. Because there are no known roles for activated charcoal and gastric lavage for oral ingestions of sympathomimetic aerosols due to their limited absorption via the gut [7]. Sadananda NB reported palpitations, tremors of the hands and sweating in a 22-year old female patient who was ingested 20 capsules of formoterol fumarate and mometasone furoate [8]. In this case report similarly with our case patient was followed with supplemental treatment; gastric lavage and activated charcoal were not applied and patient was discharged in two days without complications.

4. CONCLUSION

The interesting side of this case was oral ingestion of inhaler capsule form. We could find only one case reported as oral toxication of inhaler form of formoterol in the literature so we have limited knowledge about oral intoxication of it.

CONSENT

The patient has given his informed consent for the case report to be published.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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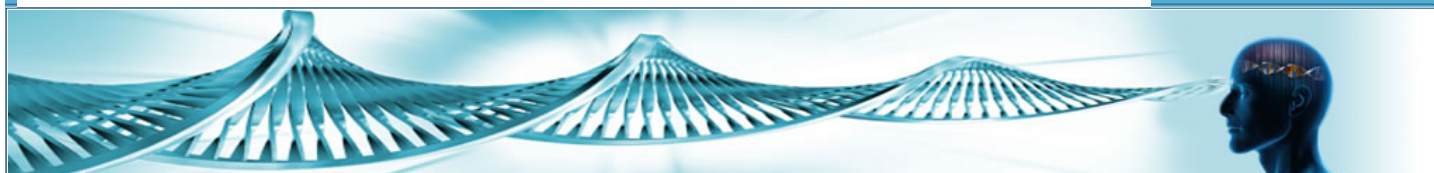
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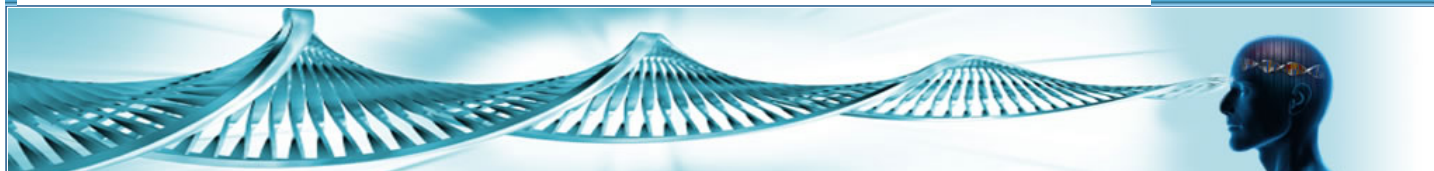
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