

Allergy to Mushroom-A Case Report

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ABSTRACT

Mushrooms are considered the healthiest food because of the high quality and quantity of fiber, protein and vitamins. Therefore, mushrooms are widely consumed and in great demand in the food and pharmaceutical industries. However, eating mushrooms can cause allergic reactions in some people. Food allergy is a Type-1 hypersensitivity reaction mediated mainly by immunoglobulin IgE, where allergens, mainly proteins, causes allergy. Currently, there is limited information about allergies caused by mushroom consumption. The prevalence rate of occurring mushroom allergy caused by ingestion is slight (1%) when compared to inhalation. A 53 year old female was admitted to Nephrology department with complaints of multiple episode of vomiting, dizziness followed by mushroom intake from hotel in the previous day. After 5 hours, she had symptoms like profuse sweating, facial edema and breathing difficulty and 9 episodes of loose stool. She has a history of multiple drug allergy (Avil/ Paracetamol, Amoxicillin/ Penicillin, Keytec D/ Ondansetron, ? Asthalin), Juvenile Myoclonic seizure, Type II Diabetes Mellitus for 18 years and Dyslipidemia. According to the physical examination the patient was diagnosed with Allergy to Mushroom and was managed with Corticosteroids, Sympathomimetics, IV fluids and Antacids.

KEY WORDS: Mushroom, Food allergy

I. INTRODUCTION

Anaphylaxis is a life threatening, acute hypersensitivity reaction and requires medical emergency. It is defined as a rapidly evolving, generalized, multi- system allergic reaction. It may be fatal without treatment due to its rapid progression to respiratory collapse.^{[1],[2],[3]}

Anaphylaxis is usually an IgE-mediated

hypersensitivity reaction (type 1) that involves the release of several chemical mediators from basophils and mast cell degranulation after re-exposure to a specific antigen.^{[4],[5]}

The main causes of anaphylaxis are drugs (Penicillin), insect stings, animal venoms, certain foods (seafood, mushroom, eggs) etc.^{[6],[7],[8]} Food allergies occurs when the body reacts to proteins present in the food as foreign particles and boost immune system to produce antibodies (IgE). During re-exposure, the food protein binds to the IgE antibodies and trigger to release chemical mediators. The symptoms appears suddenly after ingestion (within minutes to two hours).^{[9],[10]}

Different types of allergic symptoms are associated with various species of Kingdom Fungi. It mainly cause respiratory allergies and contact dermatitis due to the allergens from the mold spores. But mushroom allergy rarely (1%) causes digestive symptoms.^{[11],[12]}

Here we are reporting a case of anaphylactic reaction to mushroom after its ingestion, which is confirmed by the symptoms and the elevated parameters of chemical mediators in the blood.

II. CASE REPORT

A 53 year old female patient was admitted to Nephrology department with complaints of multiple episodes of vomiting, dizziness followed by mushroom intake from a hotel in the previous day. After 5 hours, she had symptoms like profuse sweating, facial edema and breathing difficulty and 9 episodes of loose stool. She was referred from Rolland's Hospital to NIMS Hospital for further management. She has a history of multiple drug allergy (Pheniramine maleate/ Paracetamol, Amoxicillin/ Penicillin, Domperidone + Ranitidine/ Ondansetron, ? Asthalin), Juvenile Myoclonic seizure, Type II Diabetes Mellitus for 18 years and

Dyslipidemia. Her medication history includes T.ATORVASTATIN 5mg P/O HS, T.PHENOBARBITAL 90mg P/O HS, SODIUM VALPROATE (333mg) + VALPROIC ACID (145mg) 500mg P/O TDS and Insulin.

She was conscious, oriented, afebrile, peripheral warmth present, chest was clear, she was able to move all limbs and GI was non-tender. During admission, she had a Pulse Rate of 124 beats/min, Respiratory Rate of 28 breaths/min, Blood Pressure of 160/90mmHg. Her laboratory investigation showed an elevation in WBC (20220 cells/mm^3), Eosinophils (18.7%), Basophils (5%), Urea (56mg/dL), Potassium (5.2meq/L), Total Cholesterol (212mg/dL), Triglycerides (159mg/dl), LDL (144mg/dL), RBS (267mg/dl), HbA1C (7.5%), Pro BNP (524pg/ml), D-Dimer (2789ng/ml), pO_2 (42mmHg), Lactic acid (4.3mmol/L), Glucose (236mg/dL) and decline in pH (7.26), pCO_2 (37mmHg), Na^+ (123mmol/L), Ca^{+} (0.19mmol/L). ECG showed sinus tachycardia, poor R wave programme and normal ECHO. CT Pulmonary Angiography showed no abnormality with pulmonary artery, trace right pleural effusion and minimal ascites and suggested clinical correlation. USG abdomen and pelvis suggested Grade I-II fatty liver and mild ascites. In urine analysis, albumin, Pus cells (20-22/hpf), RBC/Granular cyst (8-10/hpf), Cast was present. Urine culture reported growth of Escherichia coli. According to the culture sensitivity test she was resistant to antibiotics like AMOXICILLIN and CEFUROXIME.

Initially the patient was treated with IVF Normal Saline + INJ. HUMAN ACTRAPID 40 Unit, 3ml/hr. (6pm-7.30pm) for reducing elevated potassium level. INJ. HYDROCORTISONE 100mg for Severe allergic reaction, INJ. RANITIDINE 150mg for gastric irritation, T. SODIUM VALPROATE + VALPROIC ACID 500mg and T. PHENOBARBITAL 90mg for Seizure disorder, T. ATORVASTATIN 5mg for Dyslipidemia, Neb. BUDESONIDE for breathing difficulty, T. PREDNISOLONE 20mg for inflammation occurred during allergic reactions. During course of treatment INJ. RANITIDINE was changed to T. RANITIDINE. On day 2, she had severe symptoms of allergy, so INJ. ADRENALINE 0.5ml IM was given. Finally, the patient got symptomatically improved and discharged with the medications like T.ATORVASTATIN 5mg, P/O, HS, T.PHENOBARBITAL, 90mg, P/O, 0-0-1, SODIUM VALPROATE (333mg) + VALPROIC ACID (145mg), 500mg, P/O, 1-1-1, T. RANITIDINE

150mg, 1-0-0, T. PREDNISOLONE, 10mg, 1-0-0 for 2 days, INJ. HUMINSULIN (30/70) 12units-8units-0.

III. DISCUSSION

Mushrooms are often considered a delicacy and are sought after for their nutritional properties and deliciousness, but some of people experience adverse effects by ingestion.^[13] Intolerance, allergy and poisoning are the three types of adverse effects.

Allergies leads to an immediate reaction which may be severe, while intolerance only causes discomfort or a slight feeling of illness. The consumption of toxic mushrooms causes poisoning and the symptoms depend upon the type of toxic mushroom which is ingested.^[14]

In allergic reaction of mushroom ingestion, the body interprets mushroom proteins as a foreign substance. As a result the immune system of the body releases IgE antibodies to oppose these foreign proteins. These eventually causes the release of a chemical called histamine. Histamine plays a major role to exhibit allergic symptoms.^[15]

When an allergic reaction occurs, an antihistamine should be administered in order get relief from the distress caused by mushroom. If it is severe, a steroid will be administered. Paramedic assistance and immediate shot of epinephrine are essential for an anaphylactic reactions that will relax the respiratory tract.^{[16],[17]}

A case report by Cunha IM, Marques ML, Abreu C, Bartolome B, Gomes E present a case on anaphylaxis to Agaricus bisporus ingestion where a 33 year old male patient with allergic rhinitis and asthma on treatment with nasal and inhaled Corticosteroids. He has a history of allergy to Dermatophagoides pteronyssinus and Dermatophagoides farina (species of house dust mites) At his age of 25 years, he experienced an anaphylactic reaction with symptoms of facial and lip angioedema, dyspnea, cough and dysphagia after mushroom pizza ingestion. He stopped mushroom intake. But after the accidental contact with mushroom sauce, the patient reported two posterior episodes of lip angioedema, without any other symptoms. The patient undergone serum measurements and skin prick tests and diagnosed with allergy to house dust mites and mushroom. The patient was advised to avoid mushroom and mushroom containing products after his diagnosis and an Adrenaline autoinjector was prescribed to use if the patient required.^[18]

A second case of an 8 year old Japanese girl admitted to hospital with complaint of anaphylaxis, swelling of face and dyspnea after the intake of Matsutake mushrooms (*Tricholoma matsutake* is a typical edible mushroom available in autumn in Japan) before one hour. She has a history of bronchial asthma, atopic dermatitis and pollinosis to Japanese cedar pollen. Her sister has atopic dermatitis and father had a peach allergy and Japanese cedar pollen allergy. Based on the symptoms, the patient was diagnosed with anaphylactic reaction due to food allergy, most probably Matsutake mushroom. Subcutaneous epinephrine at dose of 0.005 mg/kg, 200mg of intravenous Hydrocortisone and inhalation therapy of Dexamethasone and Epinephrine was her drug of choice. She also managed with intravenous Prednisolone 2mg/Kg for 2 days. She symptomatically improved and discharged on her 4th day of hospital stay.^[19]

In our case, the patient showed clear symptoms of anaphylactic reactions. But, a skin prick test or immunoblotting assay for confirming the mushroom allergy was not done. The patient was treated with drugs like Antihistamine, Corticosteroids and Adrenaline, which is the standard protocol for an anaphylactic reaction. The patient had only undergone the primary treatment for the allergic condition. Because the urine analysis of patient indicated pus cell of 20-22/hpf, and RBC of 8- 10/hpf but no treatment was given to solve this condition.

IV. CONCLUSION

Mushroom allergy due to ingestion is a rare condition mainly caused by the cross-reactivity between molds and food allergens. In our patient, clear symptoms of anaphylaxis reaction after the intake of mushroom from a hotel indicates mushroom allergy. It is not further confirmed by any method like immunoblotting assay or skin prick test. It is challenging to consider less common allergenic sources as possible culprits, but it is extremely significant in the field of food allergy.

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