A pediatric case of anaphylaxis due to octreotide

Dilek Azkur,[1] Tamer Yoldas,[2] Muge Toyran[1] and Can Naci Kocabas[1]

Summary

Octreotide is an octapeptide that mimics natural somatostatin pharmacologically. It is a potent inhibitor of growth hormone, glucagon and insulin, which is used for treatment of acromegaly, symptomatic treatment of carsinoid tumours, and vasoactive intestinal peptide secreting tumors. It is also used for chylothorax, chemotherapy induced diarrhea and, as it inhibits the exocrine production of pancreatic enzymes, for acute and chronic pancreatitis. Gallbladder stones, diarrhea, nausea, vomiting, hypoglycemia/hyperglycemia, headache, and abdominal discomfort are some of the common adverse effects of octreotide and it may rarely cause anaphylaxis. We present here a child who had chronic pancreatitis and had an anaphylactic reaction to octreotide. To our knowledge this is the first pediatric case of anaphylaxis with octreotide who was successfully desensitized. ***(Asian Pac J Allergy Immunol 2011;29:361-3)***

Key words: *child, octreotide, anaphylaxis, desensitization, pancreatitis*

Introduction

Octreotide is an octapeptide that mimics natural somatostatin pharmacologically. It is a potent inhibitor of growth hormone, glucagon and insulin, which is used for treatment of acromegaly,[1] symptomatic treatment of carsinoid tumours,[2] and vasoactive intestinal peptide secreting tumors.[3] It is also used for chylothorax[4], chemotherapy induced diarrhea[5,6] and, as it inhibits the exocrine production of pancreatic enzymes, for acute and chronic pancreatitis.[7-9] Gallbladder stones, diarrhea, nausea, vomiting, hypoglycemia /hyperglycemia, headache, and abdominal discomfort are some of the common adverse effects of octreotide[10] and it may rarely cause anaphylaxis.[10,11] We present here a child who had chronic pancreatitis and had an anaphylactic reaction to octreotide. To our knowledge this is the first pediatric case of anaphylaxis with octreotide who was successfully desensitized.

From the [1]Department of Pediatric Allergy and Immunology
[2]Department of Pediatrics Ankara Children's Hematology Oncology Training and Research Hospital, Ankara, Turkey
Corresponding author: Can Naci Kocabas
E-mail: cankocabas@yahoo.com
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Case report

A 12-yr-old white boy was admitted to our hospital with recurrent abdominal pain which was diagnosed as chronic pancreatitis. Besides other treatment strategies, octreotide was one of the drugs used. First octreotide treatment was given intravenously (iv) at 6 mcg/kg/dose once a day for 15 days without any adverse reaction. The patient was discharged from the hospital as he was clinically stable. However, two weeks after the first pancreatitis episode, the patient was readmitted with recurring symptoms and octreotide treatment was started again along with other treatment strategies. During the intravenous administration of the tenth dose of octreotide (1.3 mcg/kg/dose, iv, every 8 hours), he immediately experienced flushing of his face, erythema over the arms, periorbital and perioral swelling, upper airway breathing difficulty, cough and abdominal pain. Following the development of these symptoms, the octreotide infusion was stopped immediately. He did not have hypotension or wheezing but he had flushing and perioral and periorbital angioedema on physical examination. Pheniramine maleate was given by the iv route and his complaints began to subside within 5 minutes and the physical findings returned to normal completely within an hour. Aside from abdominal pain, none of these symptoms were present before the drug was given and the abdominal pain was dramatically augmented during the infusion. The patient was not taking any medication during the octreotide infusion. Treatment with other drugs (antibiotics and proton pump inhibitors) was continued and there was no reaction with these medications. The patient did not have pyrexia, infection, other than pancreatitis, peptic ulcer or malnutrition. Liver and kidney function tests were within normal limits but the serum lipase and pancreatic

Table 1. Desensitization Protocol for Octreotide

	Volume, mL	Infusion Time, min	Time Accumulated	Dose Administered, mcg	Cumulative Dose, mcg
Solution A	100	30	30	1	1
Solution B	100	30	60	5	6
Solution C	100	30	90	10	16
Solution D	100	30	120	20	36
Solution E	100	30	150	40	76

amylase levels were high. The patient developed the same reaction to the subsequent dose of octreotide. Octreotide treatment was stopped again and he was referred to our department of Pediatric Allergy and Immunology for evaluation of an allergic reaction to octreotide. With his symptoms of flushing, angioedema, upper airway obstruction and abdominal pain recurring during octreotide infusions, the patient was suspected of having anaphylaxis to octreotide. The patient had no personal or family history of atopic disease or of hypersensitivity to any drug. Skin prick tests with inhalants and food allergens all showed negative results. Skin prick test at 1/1 concentration and intradermal tests at of 1/1000, 1/100, 1/10, and 1/1 with octreotide were performed five weeks after the anaphylactic reaction. Intradermal testing at concentrations of 1/10 and 1/1 were positive (3 mm and 4 mm respectively, with a negative saline control and positive histamine control of 7x7 mm). The patient was diagnosed as anaphylaxis caused by octreotide hypersensitivity. As the patient had an exacerbation of pancreatitis at the time of the diagnosis, he needed octreotide treatment and desensitization to the drug was considered. The desensitization protocol was carried out with continuous monitoring (pulse-oximetry, non-invasive blood pressure, and heart rate) and appropriate resuscitation equipment and medications at the bedside (Table 1). Premedication with corticosteroids and/or antihistaminics was not given before desensitization. Increasing doses of the drug were given by iv infusion, with 30 minutes intervals between doses, until a cumulative dose of 76 mcg (1.3 mcg/kg/dose) was reached. The patient did not experience any reaction during desensitization for octreotide. Treatment was continued for five days without any reaction at 1.3 mcg/kg/dose every 8 hours.

Discussion

Anaphylaxis is a severe, potentially fatal, systemic allergic reaction that occurs suddenly after contact with an allergy-causing substance.[12] Foods and drugs are the most common causes of anaphylaxis.[13,14] When there is no alternative drug that can be used instead of the agent causing anaphylaxis, desensitization of the patient can be considered.

To our knowledge, no pediatric case of anaphylaxis to octreotide has been reported to date. The diagnosis of octreotide hypersensitivity was based on the clinical picture and skin testing of the patient. He was successfully desensitized and octreotide treatment was completed without any allergic reaction. In conclusion, although rare, anaphylaxis due to octreotide can occur in children and desensitization can be considered when treatment is needed to be continued.

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