ARQUIVOS DE ASMA, ALERGIA E IMUNOLOGIA

Corn-induced anaphylaxis: rare but possible

Anafilaxia induzida por milho: rara, mas possível

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ABSTRACT

Anaphylaxis is defined as a life-threatening systemic allergic reaction that can present with a wide range of clinical signs and symptoms. The most common foods responsible for food hypersensitivity reactions are milk, eggs, peanuts, tree nuts, fish, and shellfish. There are few documented reports of corn allergy, particularly corn-induced anaphylaxis. In addition, corn starch is a common excipient in medications, increasing the risk of reactions in individuals allergic to corn. Here, we report a case of anaphylaxis in a woman following the ingestion of corn and a medication containing corn starch as an excipient.

Keywords: Anaphylaxis, food hypersensitivity, drug-related side effects and adverse reactions, starch.

RESUMO

A anafilaxia é caracterizada como uma reação alérgica sistêmica com risco de vida e importante impacto na qualidade de vida, que pode incluir uma variedade de sinais e sintomas clínicos. Os alimentos mais comuns que causam reações de hipersensibilidade alimentar são leite, ovo, amendoim, nozes, peixe e marisco. Existem poucos relatos de alergia ao milho documentados, particularmente anafilaxia induzida por milho. Além disso, o amido de milho é um excipiente comum em medicamentos, e indivíduos alérgicos ao milho têm um risco aumentado de apresentar reações. Relatamos o caso de uma paciente que apresentou anafilaxia devido à ingestão de milho e a um medicamento contendo amido de milho como excipiente.

Descritores: Anafilaxia, hipersensibilidade alimentar, efeitos colaterais e reações adversas relacionados a medicamentos, amido.

Introduction

Anaphylaxis is a severe systemic hypersensitivity reaction[1], with an acute presentation, that can significantly impair a patient's quality of life and may lead to shock, respiratory failure, or even death.[1-3] Food allergens are a major contributor to the rising prevalence of anaphylaxis, being the most common triggers in children.[1,2] Most food-related allergic reactions are caused by an IgE-mediated mechanism. Therefore, sensitization can be assessed through specific IgE testing or immediate-reading skin tests.[3] While numerous foods can trigger anaphylactic reactions, approximately 80% to 90% are attributed to allergens from eggs, milk, soy, wheat, fish, seafood, peanuts, and tree nuts.[4] Although cereals account for approximately 70% of global protein intake, their prevalence as causative

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Submitted Nov 07 2024, accepted Dec 21 2024.
Arq Asma Alerg Imunol. 2024;8(4):425-8.

http://dx.doi.org/10.5935/2526-5393.20240057-en

agents in hypersensitivity events remains poorly documented.[5] Corn, a staple cereal for many populations, is an infrequent cause of food allergies, but when reactions occur, they can be potentially severe[6]. Beyond its dietary presence, starch—extracted from rice, potatoes, tapioca, and corn—is a common excipient in medications, with cornstarch found in nearly 37% of marketed medications. Corn-allergic individuals are more prone to reactions from cornstarch excipients in medications.[7,8] We report the case of a patient with a history of corn-induced anaphylaxis, diagnosed at a university hospital, who experienced a subsequent reaction after ingesting medication containing cornstarch as an excipient.

Case report

A 63-year-old female patient who worked as a cook, with a history of high blood pressure, type II diabetes mellitus, and allergic rhinitis, presented with angioedema of the eyelids and lips, progressing to dyspnea, after contact with ants near corn flour. Diagnosed with anaphylaxis at the emergency department, she responded well to epinephrine, antihistamine, and corticosteroid treatment. She also reported previous oropharyngeal itching when handling corn, a frequent occurrence due to her occupation. In a separate incident, she developed laryngeal angioedema and dyspnea approximately 10 minutes after ingesting food containing corn flour, requiring similar treatment as in the previous episode. Chemiluminescence was used to measure total IgE (206 IU/mL) and corn-specific IgE (9.95 KU/L) levels, as well as wheat-, mite-, ant-, and fungus-specific IgE levels (<0.10 KUA/L). Given the clear cause-effect relationship in the patient's history, the positive corn-specific IgE test, and the absence of new episodes post-dietary exclusion, we opted against a challenge test and made the diagnosis of corn-induced anaphylaxis. The patient was counseled to avoid corn and prevent accidental exposure. Following the elimination of corn and its derivatives from her diet and environment, she did not experience any new episodes. A few months after the last event, the patient experienced a runny nose and limiting sneezing, for which she took a second-generation antihistamine (loratadine). A few minutes later, she developed abdominal discomfort and oropharyngeal itching, symptoms similar to those of her previous reaction to corn. Upon reviewing the package insert, she identified cornstarch as an excipient in loratadine. Symptoms improved after switching to dexchlorpheniramine.

Discussion

Corn-induced anaphylaxis is rare and poorly documented in the literature.[5] Suspicion of this condition is typically based on the patient's clinical history and characteristic symptoms, after ruling out other potential causes and observing no new episodes following dietary exclusion. Oral food challenge testing is the gold standard for diagnosis, but it should be reserved for cases where the patient's history is unclear or the diagnosis remains uncertain. Given the prevalence of corn in global cuisine and the widespread use of starch as an excipient in medications, the risk of accidental ingestion and subsequent anaphylaxis is a major concern. In view of the foregoing, our team investigated the presence of starch in the 10 most prescribed medications of 2023, based on a survey by the Brazilian Association of Generic and Biosimilar Medicines Industries (PróGenéricos).[9] We reviewed package inserts from major suppliers and identified starch as an excipient in at least one formulation of the following common medications: losartan, dipyrone, hydrochlorothiazide, enalapril, atenolol, and simethicone (tablet) (Table 1). Additionally, we examined second-generation antihistamines, an important class of drugs commonly used in Allergy and Immunology, as illustrated in the case reported here, focusing on medications from major generic suppliers. Starch was consistently absent as an excipient only in desloratadine formulations (Table 2).

Conclusion

Managing corn-induced anaphylaxis requires careful attention beyond just dietary guidelines. When prescribing and dispensing medications, it is crucial to review the patient's prescriptions and provide clear guidance, as even different brands of medications with the same active pharmaceutical ingredient may contain different excipients.

Table 1
Ten most prescribed generic medications in Brazil in 2023 and respective evaluation of tablet formulations that contain or do not contain starch as an excipient, with cornstarch being one of the main excipients used

Active ingredient	Generics containing starch	Generics not containing starch
Losartan	CIMED, EMS, Prati, Teuto	Aché, Eurofarma, Medley, Neoquímica
Dipyrone	Medley [a]	CIMED, EMS, Eurofarma, Neoquímica
Hydrochlorothiazide	CIMED, EMS, Medley, Neoquímica	Not found
Nimesulide	Aché, Eurofarma, Medley, Neoquímica	CIMED, EMS
Sildenafil	Not found	Aché, CIMED, EMS, Eurofarma, Medley, Neoquímica
Atenolol	Aché, CIMED, Medley, Neoquímica	EMS
Simethicone	Aché, Neoquímica	CIMED, EMS, Medley
Tadalafil	Not found	Aché, CIMED, EMS, Eurofarma, Medley, Neoquímica
Simvastatin	Aché, EMS, Medley, Neoquímica	CIMED

[a] 500 mg formulation with starch as an excipient. 1 g formulation without starch described in the package insert.

Table 2
Main generic second-generation antihistamines used in Brazil with starch as an excipient as described in the package insert

Active ingredient	Generics containing starch	Generics not containing starch
Bilastine	Eurofarma, Neoquímica	EMS
Desloratadine	Not found	Aché, Eurofarma, Medley
Fexofenadine	EMS, Medley, Nova Química, Germed Pharma	Eurofarma
Levocetirizine	Eurofarma	Germed Pharma, Glenmark, EMS, Neoquímica
Loratadine	CIMED, Aché, Neoquímica	Not found

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No conflicts of interest declared concerning the publication of this article.

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