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Anaphylaxis after ingestion of gummy bears

To the Editor:

Despite the vast number of agents that are added to foods, there are relatively few documented hypersensitivity reactions to food additives. The primary food additives that have been implicated in classic IgE-mediated anaphylactic reactions include sulfites and parabens.¹ Other additives that are known to cause adverse reactions include dyes, nitrates, nitrites, antioxidants, and flavorings; however, the mechanisms underlying these reactions remain unclear.¹ Gelatin, a stabilizer in food products and vaccines, such as measles, mumps, and rubella (MMR) vaccine, has been implicated in anaphylaxis.^{2,3} We report a case of anaphylaxis immediately after ingestion of gummy bears that led to an evaluation, including a negative food challenge result to gelatin, thus implicating "natural and artificial flavors" as the offending antigen.

A 3½-year-old white girl was referred for evaluation after 2 episodes of anaphylaxis after ingestion of gummy products. The first episode occurred within 5 minutes of consuming 2 packages of Farley's Fruit Snacks with development of generalized urticaria and erythema, which resolved after receiving oral antihistamines. Approximately 6 months later, a second episode occurred after ingesting gummy products from a local restaurant. Ten minutes after ingestion, she had a generalized rash, angioedema, and pruritus with subsequent lethargy, wheezing, and hypotension. She received 2 doses of subcutaneous epinephrine, nebulized albuterol, and intravenous diphenhydramine and ranitidine. In the interval between the 2 incidents, parents report that she consumed gummy products, with development of facial erythema only. This patient had an unrestricted diet and no prior history of reactions to foods, dyes, or medications.

Approximately 8 weeks after the second episode of anaphylaxis, skin prick test responses with a red gummy bear soaked in water were negative for both the gel and solution, whereas positive reactions were seen to MMR vaccine, pork extract, porcine gelatin, and Knox gelatin. Subsequent CAP-RAST test results to bovine and porcine gelatin and to common foods (milk, egg, soy, wheat, codfish, shrimp, and peanut) were negative. An open food challenge to Farley's Fruit Snacks resulted in no symptoms, whereas open challenge to Haribo Gold Bear Candy resulted in urticaria after ingestion of 16 pieces. Open challenge to Nabisco Gummi Savers and Trolli Brite-crawlers also produced pruritus and urticaria. Double-blind, placebo-controlled food challenge results to porcine (Nabisco) and Knox gelatin were negative. Because gelatin is an ingredient found in most gummy products, vaccinations were postponed. However, after a negative double-blind, placebo-controlled food challenge and CAP-RAST result to gelatin, MMR and varicella vaccines were given by means of incremental dosing without adverse reaction. The common component among the products to which this child had a positive reaction was "natural and artificial" flavors. Attempts to contact company representatives to obtain natural flavoring for objective testing were unsuccessful. Presently, the patient continues to avoid all gummy products and carries injectable epinephrine.

To our knowledge, this is the first reported pediatric case of food additive anaphylaxis after ingestion of gummy candies. In 1989, Wahl and Kleinhaus⁴ reported a case of urticaria and oral allergy in a 32-year-old woman after ingestion of fruit gum candies. RAST testing revealed IgE to gelatin, and RAST inhibition showed cross-reactivity to gelatin and gelatin-containing products.⁴ Although adverse reactions to gelatin have been described in association with vaccinations and some food products, objective testing did not reveal gelatin as the cause of anaphylaxis in our index case. Rather, the common ingredient "natural and artificial flavors" was suspected as the culprit in our patient. Currently, vendors are reluctant to reveal the variable components of these flavorings. In light of the potentially life-threatening complications that can ensue from consumption of these products, cooperation with industry and improved labeling of all ingredients is essential. Collaboration between allergy organizations and the Food and Drug Administration could serve to accomplish these efforts.

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