

Dangerous Liaison: Sexually Transmitted Allergic Reaction to Brazil Nuts

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■ Abstract

Brazil nuts are the second most frequent cause of nut allergy in the United Kingdom. We report the case of a 20-year-old woman with documented Brazil nut allergy who developed widespread urticaria and mild dyspnea after intercourse with her boyfriend who had earlier consumed Brazil nuts. Skin prick testing with the boyfriend's semen after Brazil nut consumption confirmed significant reactivity whereas a sample before nut consumption was negative. We believe this to be the first case of a sexually transmitted allergic reaction.

Key words: Brazil nut allergy. Semen. Sexual transmission.

■ Resumen

Las nueces del Brasil constituyen la segunda causa más frecuente de alergia en el Reino Unido. Describimos el caso de una mujer de 20 años de edad con alergia documentada a nueces del Brasil que sufrió urticaria generalizada y disnea leve tras mantener relaciones sexuales con su pareja, que previamente había consumido nueces del Brasil. Las pruebas cutáneas con semen del varón, recogido tras haber consumido nueces del Brasil, confirmó una reactividad importante, mientras que la muestra tomada antes del consumo de dichas nueces no produjo ninguna reacción. Creemos que este es el primer caso de reacción alérgica por transmisión sexual.

Palabras clave: Alergia a las nueces del Brasil. Semen. Transmisión sexual.

Introduction

While there are several cases of semen allergy reported in the literature [1], cases of a systemic allergic reaction caused by food proteins transferred in semen have not previously been recorded. We describe the case of a woman with a documented Brazil nut allergy who developed urticaria and dyspnea after intercourse with her boyfriend who had consumed Brazil nuts 2 to 3 hours previously.

Case Description

A 20-year-old woman in a stable relationship developed widespread urticaria and angioedema shortly after vaginal intercourse with her partner. Condoms were not used as the patient was taking the contraceptive pill. The patient's partner was aware of the patient's very significant nut allergy and had

bathed, brushed his teeth and cleaned his nails immediately before intercourse as he had consumed mixed nuts roughly two to three hours earlier. These had included between 4 to 5 Brazil nuts. The patient also suffered significant itching and swelling of her vagina and vulva and felt faint even when sitting. While there was no choking or wheezing, she felt mildly short of breath. She took 10 mg of cetirizine and started to improve within 45 minutes. Throughout the following day she noticed a marked fatigue but no skin rash, dyspnea or faintness.

The patient had been diagnosed with Brazil nut allergy 2 years earlier as a result of several episodes of urticaria and angioedema after consuming foods containing nuts. Skin prick testing with commercial reagents (Hollister-Stier Laboratories, Washington, USA) had confirmed a very highly positive 9 mm wheal to Brazil nuts. There were negative reactions to peanuts, almonds, walnuts and hazelnuts. Positive reactions were also evident to grass, tree and weed pollens in keeping with the

patient's hayfever. The most severe of the patient's nut based reactions at 6 years of age had also caused dyspnea. Prior to her diagnosis she had regularly consumed peanuts, almonds, hazelnuts, pistachios, pine nuts and a variety of legumes without any problems. She had been advised to avoid all nuts and had done so.

The cause of the patient's post-coital reaction was initially unclear. However, the history suggested a possible Brazil nut reaction with the Brazil nut proteins being secreted into her partner's semen. With the patient's consent, skin prick testing (SPT) was arranged to the partner's semen before and roughly two and a half-hours after he had been asked to consume 4 Brazil nuts. The results showed an unequivocal 7mm weal to the semen sample after, but not before, he had consumed Brazil nuts (figure). The patient was asked to avoid sexual intimacy if her partner had consumed nuts and to keep antihistamines and her adrenaline pen at hand. Unfortunately the couple separated soon afterwards and it was impossible to formally confirm the secretion of Brazil nut proteins into seminal fluid by Western blotting and other techniques.

Discussion

Brazil nut allergy is the second most frequent cause of nut allergic reactions in the United Kingdom [2]. The most important of the allergenic Brazil nut proteins is the 9 kDa 2S albumin and immunoglobulin E antibodies specific for this protein are seen in all patients with clinical Brazil nut allergy [3]. The protein resists digestion within the human gastrointestinal tract [4]. This may allow it to reach the immune system to produce sensitisation and via circulation in the blood to produce systemic anaphylaxis [4]. Our demonstration of an allergenic Brazil nut protein in the semen clearly proves the ability of such protein(s) to resist digestion. Additionally, to enter the semen the protein would require circulation in the blood to the prostate or other reproductive organs.

Common clinical experience indicates that patients with a significant nut, egg, milk or fish allergy not infrequently develop local allergic reactions if touched or kissed by someone who has handled or consumed the food to which they are allergic. Indeed, local reactivity was the first symptom evident in all 17 patients reported by Hallet et al [5] whose allergic reactions occurred after being kissed by someone who had eaten the food to which they were sensitive. Interestingly 4 of these reactions occurred in patients whose partner had brushed their teeth after consuming nuts and before the kiss and 4 patients went on to have bronchospasm. In each case, however, it is likely that direct transference of allergenic proteins caused the reaction. In our patient, bathing, scrubbing of the finger nails and brushing of the teeth would have eliminated much of the Brazil nut proteins that could be transferred by these routes. Additionally, the absence of any initial labial or oral tingling would argue against Brazil nut proteins being directly transferred or via secretion in the saliva. Indeed, we are unaware of any reports demonstrating the secretion of allergenic proteins into saliva, tears or urine after consumption. Thus, the patient's reaction could only



Skin prick testing with partner's semen before and after he had consumed 4 Brazil nuts.

have occurred by Brazil nut proteins present in semen transferred during intercourse. Indeed, skin testing with semen after Brazil nut consumption confirmed the presence of an allergenic nut protein.

As our patient had never previously or subsequently suffered similar anaphylactic reactions it is extremely unlikely that she has idiopathic sexual intercourse-induced anaphylaxis. Additionally, the absence of previous symptoms on intercourse and the lack of a positive SPT response to the semen sample before Brazil nut consumption rules out semen allergy [1]. Condoms were not used by our patient and thus latex allergy is excluded, the more so by the negative skin test to a commercial latex preparation. We can only speculate whether the patient's reaction was aggravated by the exertion of the intercourse.

To our knowledge this is the first case of a severe food allergic reaction transferred by normal vaginal intercourse. However, anaphylaxis has been reported in a young woman with a crustacean allergy after she was kissed by her boyfriend who had earlier eaten several shrimps [6]. For smaller non-protein molecules, clinical reactions and re-sensitisation were attributed to sexual intercourse with a partner on penicillin in two subjects with a documented significant penicillin allergy [7]. It would be interesting to see if other food proteins may be secreted into semen and present a hazard to sexually active individuals with a significant food allergy. We also speculate whether some cases of idiopathic anaphylaxis occurring after sexual intercourse may be due to seminally transferred food proteins in susceptible individuals.

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