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Fixed food eruption caused by *Maja squinado* (European spider crab) in a child

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Loli-Ausejo et al[1] recently reported one of the few examples of fixed food eruption (FFE) in children that can be found in the literature. We present a similar case that was referred to our department, which is the first report, to our knowledge, of FFE caused by seafood in children.

CASE REPORT

A 9-year-old girl, with no previous dermatologic or medical history, was presented for examination due to the recurrent appearance of a 4.5 × 3 cm erythematous, slightly scaly, pruritic, macular lesion on the left cheek, 24 hours after ingestion of *Maja squinado* (European spider crab; Figure 1A). The lesion disappeared in the course of 1 week with no treatment without residual hyperpigmentation. The parents noticed it for the first time after eating spider crab on Christmas Eve 3 years before consulting, describing a total of five similar episodes after ingestion of the mentioned crab since then. No other dermatologic or systemic symptoms were noted. The patient was not taking any concomitant medication. Other types of seafood such as prawns, mussels, barnacles, and scallops were tolerated. The lesion was not triggered by any other food.

Skin prick test was negative for a commercial battery of common allergens, including grass and birch pollen, house dust mites, dog and cat dander, lipid transfer protein, and profilin. Prick-to-prick test with raw spider crab, cooked spider crab, and cooking water was also negative in immediate and late readings. Patch test (PT) performed with both cooked and raw spider crab was negative on healthy skin (forearm), whereas cooked spider crab was positive both at day (D) 2 and D4 on the affected area (left cheek; Figure 1B).

The PT findings and the history of eruption after ingestion of *M squinado* were considered sufficient to diagnose FFE. Therefore, and also owing to the girl's age, blood tests and a skin biopsy were not performed. The patient was advised to avoid spider crab, nevertheless she accidentally consumed the suspected food again and, 24 hours afterwards, the erythematous lesion reappeared, providing a confirmation in terms of an unintended, accidental positive oral food challenge (OFC).

DISCUSSION

FFE is an uncommon hypersensitivity reaction characterized by the recurrence of skin lesions at the same location after re-exposure to the offending food. It usually presents as one or a few erythematous plaques that appear 12 to 24 hours after the ingestion of the food, followed by spontaneous resolution leaving postinflammatory hyperpigmentation,[2] which was, however, not evident in our case.

The pathophysiology is thought to be multifactorial, and an underlying mechanism similar to fixed drug eruption has been suggested. Drug-specific $CD8^+$ T cells that persist in certain areas of the skin would get activated after re-exposure to the antigen, inducing apoptosis of basal keratinocytes, resembling a type IV hypersensitivity reaction,[2] consistent with positive intralesional skin testing and PT result on the affected area,[3,4] with the latter also present in our case. Moreover, Sohn et al[5] reported a case of almost immediate FFE with positive results for prick-to-prick test that could indicate that immunoglobulin E may also be involved.

The tolerance that the girl showed to molluscs (mussels, barnacles, and scallops) might be explained by the 57% to 61% homology of allergens such as tropomyosin between some molluscs and crustaceans. Therefore, sensitization to crustaceans does not necessarily imply sensitization to molluscs and vice versa.[6] In addition, although cross-reactivity studies show high homology of allergens among the crustaceans species, they are not 100% similar, and small differences between antigens could be the reason why prawns did not cause any symptoms.[7]

Loli-Ausejo et al[1] did not perform skin biopsy on account of the possibility of reaching a diagnosis with the history of exposure, OFC,

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FIGURE 1 (**A**) Clinical image: erythematous, slightly scaly, pruritic, macular lesion of 4.5 × 3 cm on the left cheek, 24 hours after ingestion of *Maja squinado* (European spider crab). (**B**) Patch test performed with Curatest (Lohmann and Rauscher, Germany) with cooked and raw *M squinado* on the previously involved area showed positive cutaneous reaction for cooked spider crab and no reaction for raw spider crab, at the day 2 reading

and in vitro cellular testing, in addition to the patient's age. Likewise, we consider that a consistent history and, in absence of systemic symptomatology, positive results for tests like OFC or PT on the affected site provide enough information to accurately diagnose FFE, without needing more invasive techniques. We would like to highlight the importance of performing the PT on the affected area at the same state of preparation that triggered the reaction, as some allergens are affected by food preparation such as cooking, frying, barbecuing, salting, drying, or freezing, increasing or reducing their allergenicity.[8,9] This fact has been studied in the mouse model, which showed that cooked fish extract was more allergenic than raw extract and it not only was able to induce parvalbumin-specific antibody production but also at higher levels compared with those induced by raw fish extract.[10] This would explain why some patients only experience clinical symptoms after consuming processed food. Our case exemplifies this phenomenon because only cooked crab PT on the previously affected cheek triggered the eruption.

Although there are several examples of FFE caused by seafood in the literature,[3] we could only find one article on FFE after crab ingestion in adults[2] and, to our knowledge, no report has presented before a case of FFE caused by seafood in children. We believe that when evaluating a skin lesion which recurs at the same location, FFE should be included among other possible diagnoses such as fixed drug eruption, contact dermatitis, or herpes simplex virus infection.

INFORMED CONSENT

Legal representative (parent) signed a written informed consent for publication.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

AUTHOR CONTRIBUTIONS

Pedro Gil-Pallares: Conceptualization; data curation; formal analysis; investigation; methodology; supervision; validation; visualization; writing-original draft; writing-review and editing. **Olaya Alvarez-Garcia:** Conceptualization; data curation; formal analysis; investigation; methodology; supervision; validation; visualization; writing-original draft; writing-review and editing. **Carlota González-Moure:** Conceptualization; data curation; formal analysis; investigation; methodology; supervision; validation; visualization; writing-original draft; writing-review and editing. **Mónica Castro-Murga:** Conceptualization; data curation; formal analysis; investigation; methodology; supervision; validation; visualization; writing-original draft; writing-review and editing. **Benigno Monteagudo-Sánchez:** Conceptualization; data curation; formal analysis; investigation; methodology; supervision; validation; visualization; writing-original draft; writing-review and editing.

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