

Clinical Notes

Food protein-induced enterocolitis syndrome caused by scallop

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Food protein-induced enterocolitis syndrome (FPIES) is a non-immunoglobulin E (IgE)-mediated food allergy that predominantly affects children. The reports of FPIES have been increasing recently; however, the detailed pathophysiological mechanism of FPIES is yet to be well understood. Although any solid food can cause FPIES reaction, there is regional variation in common triggers. However, to the best of our knowledge, children with FPIES caused by scallop (scallop-FPIES) have not been described so far. We report two patients with scallop-FPIES, which may develop in association with dietary habits. Written informed consent for publication of these case reports was obtained from both patients' guardians.

Patient 1 is a now 4-year-old Japanese boy. He was admitted to nursery school at the age of 11 months. Starting from 13 months of age, he had four episodes of vomiting several times that began 2.5 h after eating the dishes provided at his nursery school. His mother noticed that scallops were commonly served before all episodes. He visited our hospital at the age of 15 months. His scallop-specific IgE was <0.10 kU_A/L. He underwent the oral food challenge (OFC) with scallop at 17 months of age. After 165 min of ingestion of 9 g scallop, he lethargically vomited six times in six hours. Based on the positive OFC result, he was diagnosed with scallop-FPIES and was advised to avoid scallops. Oral food challenges with scallop performed at the age of 28 months and 40 months were positive, respectively. He is currently avoiding scallops.

Patient 2 is a now 3-year-old Japanese girl. She suffered from egg yolk (EY)-associated FPIES (EY-FPIES) from the age of 9 months. She was admitted to nursery school at 16 months of age. An OFC with EY performed at the age of 26 months was negative. However, 29 months of age onward, she had three episodes of vomiting that began 2 h after eating the dishes served at her nursery school. Her mother noticed that scallops were commonly contained in the dishes at nursery school and visited our hospital. Her scallop-specific IgE

was <0.10 kU_A/L. She underwent OFC with scallop when she was 33 months old. After 140 min of ingestion of 8 g scallop, she lethargically vomited 10 times within 5 h. Based on the positive OFC result, she was diagnosed with scallop-FPIES and has been instructed to avoid scallop. She is currently avoiding scallops.

We reported two children with scallop-FPIES who were diagnosed according to the diagnostic criteria of the international guideline of FPIES.¹ Both patients presented with repeated vomiting after eating scallop dishes served at nursery schools. According to the household survey of the Statistics Bureau of Japan, Hokkaido prefecture is one of the largest scallop consumption areas in Japan. In Sapporo, the capital city of Hokkaido, where the patients are living, model menus for nursery lunches are proposed by the Bureau for the Future of Children in Sapporo. These menus included 10 kinds of scallop dishes (10–12 g of scallop for each menu) in the past 6 months. Thus, scallop is one of the most popular shellfishes among wide age groups.

Scallops are marine bivalve mollusks in the taxonomic family Pectinidae. Although a small number of children have been reported as having bivalve mollusk-associated FPIES caused by short-necked clam, clam, mussel, and oyster,^{2,3} scallop-FPIES has not been reported in children. To date, only a 53-year-old man with scallop-FPIES who remained symptomatic for 20 years has been reported.⁴

About 30%–40% of patients with FPIES react to multiple foods.⁵ In bivalve mollusk-associated FPIES, the combination of short-necked clam and squid, mussel, and cod, and mussel, clam, and sole have been reported.^{2,3} However, there is no report of bivalve mollusk-associated FPIES which developed after recovering from EY-FPIES. The mother of patient 2 noticed that delayed episodes of vomiting after the lunch were similar to those of EY-FPIES and visited our hospital, leading to early diagnosis. In recent years, given the fact that EY-FPIES is increasing in Japan,⁶ attention should be paid for FPIES to different foods, which may occur even after achievement of tolerance in EY-FPIES.

In conclusion, scallop-FPIES may develop in association with dietary habits. Bivalve mollusk-associated FPIES could occur after recovering from FPIES to any food and needs attention.

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Disclosures

The authors declare no conflict of interest.

Author contributions

Y.O. contributed to the conception of the work and wrote the manuscript. Y.T. and I.K. gave conceptual advice and critically reviewed the manuscript. All authors read and approved the final manuscript.

References

- 1 Nowak-Wegrzyn A, Chehade M, Groetch ME *et al.* International consensus guidelines for the diagnosis and management of food protein-induced enterocolitis syndrome: Executive summary-Workgroup Report of the Adverse Reactions to Foods Committee, American Academy of Allergy, Asthma & Immunology. *J. Allergy Clin. Immunol.* 2017; **139**(4): 1111–26. e4.
- 2 Miceli Sopo S, Monaco S, Badina L *et al.* Food protein-induced enterocolitis syndrome caused by fish and/or shellfish in Italy. *Pediatr. Allergy Immunol.* 2015; **26**: 731–6.
- 3 Masumi H, Takemura Y, Inoue N, Takemura T. Food protein-induced enterocolitis syndrome in a 6-year-old girl after ingestion of short-neck clam and squid. *Pediatr. Int.* 2018; **60**: 380–1.
- 4 Fernandes BN, Boyle RJ, Gore C, Simpson A, Custovic A. Food protein-induced enterocolitis syndrome can occur in adults. *J. Allergy Clin. Immunol.* 2012; **130**(5): 1199–200.
- 5 Lee E, Barnes EH, Mehr S, Campbell DE. An exploration of factors associated with food protein-induced enterocolitis syndrome: Birth, infant feeding and food triggers. *Pediatr. Allergy Immunol.* 2021; **32**: 742–9.
- 6 Yamamoto-Hanada K, Pak K, Saito-Abe M *et al.* Allergy and immunology in young children of Japan: The JECS cohort. *World Allergy Organ J.* 2020; **13**(11): 100479.