**Supplementary Materials**

**Definition of group**

FPIES group

The diagnosis and severity of FPIES were ascertained using the diagnostic criteria of the International Consensus Guideline published in the Journal of Allergy and Clinical Immunology [1]. Negative results of the OFC tests and episodes within one week from a previous vomiting episode were excluded.

Control group

A case (diagnosed with viral gastroenteritis by a doctor) in which all of the following three items were satisfied was included in a control group.

* Watery diarrhea is shown after vomiting, and the symptoms improve after a few days with fluid therapy alone.
* A fecal culture test is performed and no bacteria that cause bacterial enteritis are detected.
* Blood and urine tests, ultrasonography, and X-ray rule out all other diseases.

A fecal norovirus/rotavirus antigen test was performed to determine norovirus/rotavirus infection.

**ROC analysis**

**Methods**

For serum TARC and modified TARC values, an ROC analysis was conducted with the differentiation between FPIES and infectious gastroenteritis as the index. The area under the curve (AUC) was evaluated, and the sensitivity and specificity of the cutoff values were determined. The diagnosis of FPIES and the post-emetic serum TARC levels were analyzed using logistic regression analysis. All statistical analyses were conducted using the EZR 1.33 software (Saitama Medical Center, Jichi Medical University, Saitama, Japan).

**Results**

The results of the ROC analysis of the serum and modified TARC levels are shown in Figure E2. The AUCs for serum and modified TARC levels were 0.968 (95% CI 0.914–1.000) and 0.957 (95% CI 0.893–1.000), with a specificity of 88.2% and 88.2% and sensitivity of 100% and 90.9% at cutoff values of 1062 and 584 pg/mL (Youden Index), respectively.

The univariate analysis showed that the post-emetic serum TARC level was a significant factor for the diagnosis of FPIES, and the odds ratio per 1000 pg/mL increase was 23.0 (95% CI 2.17–244.0, *p* = 0.009). In the multivariate analysis adjusted by age, which tended to be lower in the FPIES group than in the control group, the serum TARC level was also a significant factor, and the adjusted odds ratio per 1000 pg/mL increase was 17.6 (95% CI 2.02–153.0, *p* = 0.009).

**References**

1. Nowak-Węgrzyn A, Chehade M, Groetch ME, Spergel JM, Wood RA, Allen K, 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 Apr;139(4):1111–26.e4.

**Supplementary figures**



**Fig. E1.** Study enrolment.



**Fig. E2.** Receiver operating characteristic curve for the diagnosis of FPIES.

Continuous and dashed lines indicate TARC and modified TARC levels, respectively.

FPIES, food protein-induced enterocolitis syndrome; IgE, immunoglobulin E; OFC, oral food challenge; TARC, thymus and activation-regulated chemokine.

**Table E1**

Clinical findings of all episodes of FPIES in the study population

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Patient–episode | Age at onset, years | Causative food | Presentation | Ingestion dose (g) | Symptom | Vomiting episodes | Symptom severity | Treatment | Baseline TARC, (pg/mL) | TARC, (pg/mL) | Time from antigen ingestion to blood test (hours) |
| 1-Ⅰ | 0.7 | Egg yolk | ED | 2 | V, L | 4 | Moderate | None | 630 | 2075 | 22 |
| 1-Ⅱ | 1.6 | Egg yolk | OFC | 2 | V, L, P | >10 | Severe | HC, IF | 630 | 7816 | 24 |
| 2-Ⅰ | 0.7 | Egg yolk | ED | 7 | V, D, L | 5 | Moderate | None | 576 | 2009 | 6 |
| 2-Ⅱ | 1.0 | Egg yolk | OFC | 2 | V, L | 2 | Mild | HC, IF | 576 | 1062 | 24 |
| 3 | 1.9 | Egg yolk | OFC | 2 | V, L | 6 | Moderate | HC, IF | 555 | 4097 | 24 |
| 4 | 0.7 | Egg yolk | ED | 2 | V, D, L, P, C | 5 | Severe | IF | NA | 3428 | 6 |
| 5 | 0.7 | Egg yolk | ED | 7 | V, L | 5 | Moderate | IF | NA | 1948 | 4 |
| 6 | 0.8 | Whole egg | ED | 3 | V, D, L, P | >10 | Severe | IF | NA | 3771 | 6 |
| 7-Ⅰ | 0.5 | Rice | ED | 3 | V, L, P | 4 | Moderate | IF | 886 | 1291 | 6 |
| 7-Ⅱ | 0.6 | Rice | ED | 5 | V, L, P | 6 | Severe | IF | 886 | 2911 | 6 |
| 8 | 6.2 | Short-neck clam | OFC | 10 | V, L | 7 | Moderate | HC, IF | 360 | 3748 | 24 |

FPIES, food protein-induced enterocolitis syndrome; TARC, thymus and activation-regulated chemokine; ED, emergency department visit; OFC, oral food challenge; V, vomiting; D, diarrhea; L, lethargy; P, pallor; C, cyanosis, HC, intravenous hydrocortisone; IF, intravenous fluid; NA, not available.