

6 kg recent weight loss. Eosinophil count was 4400/ μ L. Polymerase chain reaction analysis ruled out the presence of genome of the following pathogens: bacteria (*Campylobacter* spp., *Clostridium difficile* toxin B and hypervirulent, *Salmonella* spp., enteroinvasive *E. coli*/*Shigella* spp., *Vibrio* spp., *Yersinia enterocolitica*, *Aeromonas* spp., *E. coli* 0157, enterohemorrhagic *E. coli*, enteropathogenic *E. coli*, enterotoxigenic *E. coli*, enteroaggregative *E. coli*), viruses (norovirus GI and GII, rotavirus, adenovirus, astrovirus, sapovirus), and parasites (*Giardia duodenalis*, *Entamoeba histolytica*, *Cryptosporidium* spp., *Blastocystis hominis*, *Dientamoeba fragilis*, *Cyclospora cayentanensis*). Scotch tape test for oxyuriasis was also negative.

Fecal occult blood test analysis was slightly positive at first examination (643 ng/mL), then negative at follow-up. His eosinophil count reached 8800/ μ L.

Upon second interview, about possible ingestion of raw fish, they reported a full Sushi meal 14 days before. Therefore, to explore the diagnostic hypothesis of anisakiasis, specific IgE to *Anisakis* spp. was determined by ImmunoCAP, which turned out to be positive (0.16 kU/L; n.v. <0.10 kU/L). This result was then confirmed by a Western blot aimed at identifying the *Anisakis* spp. proteins present in ethanol fractions recognized by specific IgE.⁴ Moreover, the reactivity of the sera versus the recombinant Ani s1 was also tested. The serum sample reacted with both, the recombinant Ani s1 and a protein of an apparent Mw of 20–22 kDa present in a 50–66% *Anisakis pegreffii* alcoholic fraction. Serum level of total IgE was 3288 kU/L.

Esophagogastroduodenoscopy showed diffusely hyperemic gastric mucosa, with some erosions at the duodenal bulb, and eosinophilic infiltrate (40–50 Eos cells/high power field) on duodenal biopsies; no anomalies on esophageal and gastric mucosa, but no evidence of *Anisakis* parasite. Visualization of the small intestine, performed by PillCam endoscopy video capsule 1 week later, was also negative for intestinal parasites or lesions. The boy was treated with i.v. hydration and pantoprazole 40 mg i.v. twice daily for 1 week, and discharged on day 10, in good condition. At early follow-up, he remained asymptomatic and his eosinophil count progressively reduced (800/ μ L on day +24 from admission).

In this case, the association of gastroenterocolitis and hypereosinophilia raised the diagnostic hypothesis of intestinal parasitosis and addressed the diagnostic work-up. Despite thorough investigation, no evidence of a parasite was found at direct microscopy nor at polymerase

chain reaction investigation of parasitic genomes. Yet, the presence in sera of specific IgE able to react with Ani s1 present in a 50%–66% ethanolic fraction from *A. pegreffii* proved a parasite sensitization. This serological finding together with the clinical manifestations and the recent Sushi meal strongly suggested an intestinal anisakiasis.

Anisakis spp. should be kept in mind as a possible causative food allergen in adult patients presenting with urticaria, angioedema, and anaphylaxis following the consumption of raw fish or seafood. Although infrequent, anisakiasis should also be considered in the differential diagnosis of hypereosinophilia, especially if living in the coastal regions and when assumption of raw fish is reported.

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SARS-CoV-2 Seroprevalence Among School-Age Children in Milan: How Has It Changed With the Fourth Pandemic Wave?

To the Editors:

Starting from December 2021, Italy was hit by a new pandemic wave of SARS-CoV-2 infection, mostly sustained by the omicron variant. To date, in Italy, around 1,168,868 equals to the 9.4 % of the total SARS-CoV-2 reported cases were found among children 0–9 years of age,¹ but, due to the fact that the infection is often asymptomatic in pediatric age, the real impact of this infection among children is difficult to estimate.

We aimed to estimate the SARS-CoV-2 antibody seroprevalence among children in February 2022 and to compare the results to those previously reported by our group in September 2020 and February 2021.

A cross-sectional SARS-CoV-2 serologic testing program using dried blood spots was implemented across 11 pre-schools and primary schools in the province of Milan. Participants 2–11 years old were investigated from the 16th of February to the 28th of February 2022. Filter papers were tested by automated GSP/DELFI anti-SARS-CoV2 kit (PerkinElmer) targeting IgG antibodies to SARS-CoV-2 Spike protein.² Results were classified according to ratio values of sample absorbance over calibrator (ODs/Cal), as recommended by the manufacturer, into 3 categories: negative (<0.9), borderline (≥ 0.9 and <1.19) and positive (≥ 1.19).³

A total of 687 pupils participated in the study; 22 of them (2.9%) were excluded from the analysis because the blood sample collected was insufficient. Of the remaining 665 pupils, the majority (80%) were enrolled in primary schools and half (51%) of them were males. Five hundred eighteen (77%) pupils were not vaccinated for SARS-CoV-2, 42 (6%) were vaccinated

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TABLE 1. Characteristics of Study Population

	Total N = 665	Pre-schools N = 128	Primary schools N = 537
Male	343 (51%)	68 (53%)	275 (51%)
Not vaccinated	518 (77%)	128 (100%)	390 (73%)
Vaccinated 1 dose	42 (6%)	0 (0%)	42 (8%)
Vaccinated 2 doses	105 (16%)	0 (0%)	105 (19%)
Previous infection	183 (27%)	26 (20%)	157 (29%)
Reported infection during the IV pandemic wave	106 (16%)	13 (10%)	93 (17%)
SARS-CoV-2 serology			
Negative	251 (38%)	61 (47%)	190 (36%)
Borderline	37 (6%)	10 (8%)	27 (5%)
Positive	377 (57%)	60 (45%)	317 (59%)

with 1 dose and 105 (16%) had received a full course of vaccination. Overall, 183 of 665 (27%) participants reported a known previous infection, whereas among the 232 nonvaccinated pupils with positive serology, 93 (40%) were not aware of having had SARS-CoV-2 infection. Among 518 nonvaccinated participants, 233 were positive corresponding to a seroprevalence of 45% (95% CI: 0.40–0.49%). Complete characteristics of the study population are shown in Table 1.

Considering the average SARS-CoV-2 IgG ratio, values among fully vaccinated pupils (104) were higher than in those who reported a previous infection (136) (median 56.8, ODs/Cal vs. 6.9 ODs/Cal, respectively; T-test $P = 0.0001$).

The seroprevalence of SARS-CoV-2 of 45% found among nonvaccinated school children in the province of Milan, in February 2022, during the omicron predominant period, indicates a 4-fold increase when compared to data collected among school-children in Milan in September 2020 (2.8%;

95% CI: 1.9–3.9%) and in February 2021 (12.5%; 95% CI: 10.6–14.6%).⁴ Moreover, considering the total number of cases in the age group 0–9 as registered by the National Integrated Surveillance System, using notification of positive nasal swab, and a total population of the same age group, we estimate a SARS-CoV-2 infection cumulative incidence of 27% on February 23rd.¹ The wide gap between our findings and the incidence of documented SARS-CoV-2 infections in pediatric age (0–9 years old), though, highlights once again how the infection is often asymptomatic in the pediatric population. Moreover, we found the average SARS-CoV-2 IgG ratio among fully vaccinated children significantly higher than in those previously infected, suggesting a stronger IgG response induced by the vaccine, even though a boosting effect among vaccinated participants driven by natural infection cannot be excluded.

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