Macular exanthema in a child with rotavirus gastroenteritis. 
A case report

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ABSTRACT
Apart from gastroenteritis, rotavirus has been rarely implicated with some cutaneous disorders such as generalized maculopapular exanthema, infantile acute hemorrhagic edema and Gianotti-Crosti syndrome. We report a 30-month old toddler boy who developed erythematous macular skin eruptions during the course of rotavirus gastroenteritis. To our knowledge, this is the first case in the literature reporting rotavirus-related macular erythematous lesions in a pediatric patient. We therefore would like to share our experience, to keep rotavirus infection in the differential diagnosis of children with gastroenteritis and erythematous eruption.

Keyword: Rotavirus, gastroenteritis, child, erythema.

INTRODUCTION
Rotavirus is the leading cause of acute gastroenteritis in children. In developing countries, rotavirus-related diarrhea and vomiting, together, are the major causes of severe dehydration and eventual death in children.1-3 Apart from gastroenteritis, rotavirus has also been implicated with several systemic disorders such as elevated transaminase,4 convulsion,5,6 encephalitis,7 pneumonia,8 disseminated intravascular coagulation,9 hemophagocytic lymphohistiocytosis,10 nephritis in children with immunodeficiency11 and also with several cutaneous disorders such as generalized maculopapular exanthema,12 infantile acute hemorrhagic edema13 and Gianotti-Crosti syndrome.14 Rotavirus-related exanthem, however, has seldom been reported.12 Herein, we report a 30-month old male toddler who developed erythematous macular skin eruptions during the course of rotavirus gastroenteritis.

Case Report
A 30-month old male toddler was brought to the pediatric outpatient clinic with gastrointestinal symptoms and skin eruptions. His complaints started two days ago with diarrhea and vomiting and were followed, the next day, by an erythematous eruption which began around his cheeks, and spreaded peripherally to the lateral aspect of the thighs and both of his arms. No fever, bloody diarrhea, itching or papular lesions were reported. The patient did not have any chronic disease or history of a drug use. Because rotavirus vaccine is still not introduced into Turkey’s national immunization schedule the child was not vaccinated against rotavirus. The patient was living with his school-age sibling and was not enrolled in a kindergarten. On examination his weight and height were 12 kg (10-25 percentile) and 89 cm (25-50 percentile), respectively. The child appeared dehydrated and physical examination revealed the following results: body temperature: 37.2°C, respiratory rate: 24/min, peak heart rate: 100 /min and blood pressure: 80/50 mmHg. His mouth was dry, the color of mucous membrane was pale and eyeballs were sunken along with an apparently decreased skin turgor and tonus. His consciousness was clear and he did neither have hepato-splenomegaly nor lymphadenopathy. On auscultation he had hyperactive bowel sounds. On dermatologic examination he had symmetrically distributed and morbiliform widespread exanthems around his cheeks, on the anterior aspect of his chest and over both his forearms and the lateral aspect of his thighs and feet. The scalp, his back, proximal arms and legs were free of lesions (Figure 1). Due to his dehydration and impaired nutrition status, he was hospitalized and was supported with intravenous fluids.

Laboratory results were as follows: hemoglobin: 11.8 g/dL (normal range: 11.5-15.5),
white blood cell count: 6500/mm³ (normal range: 6000-17500) (32% neutrophils, 54% lymphocytes, 10% monocytes, 2% basophils, 2% eosinophils), thrombocyte count: 172000/mm³ (normal range: 150000-400000), C reactive protein: 2.61 mg/L (normal range: 0-5), blood urea nitrogen: 31 mg/dL (normal range: 5-18). The biochemical parameters including serum sodium, potassium, creatinine, aspartate aminotransferase, alanine aminotransferase, total bilirubin, and direct bilirubin was normal (Table 1). Urinalysis revealed a density of 1030, while microscopic examination and culture of the urine was unremarkable.

The rapid group A Streptococcus test and the throat culture test were both negative. While the IgM rubella, rubella, cytomegalovirus and Epstein Barr virus antibodies were negative, IgG titers were positive. Rotavirus and adenovirus antigen identification were performed by immunochromatography (Operon S.A., Zaragoza, Spain) in fresh stool specimens. Rotavirus antigen was identified in two consecutive specimens. Stool cultures were negative for potential causative bacterial agents, such as Salmonella, Shigella, and Campylobacter. Initial assessment for serum Antistreptolysin-O titer revealed 161 Todd units (120-160), and repeat assessment performed two weeks later revealed 121 Todd units. Erythematous lesions resolved completely within 4 days without any treatment.

DISCUSSION

Although rotavirus frequently replicates at the surface epithelial cells of the small intestinal villi, where the infection usually tends to be limited, it may also cause viremia. Therefore, systemic manifestations including cutaneous disorders, although rare, may be associated with rotavirus infection. Ruzicka et al., reported the first case of a patient with signs of hepatitis and generalized maculo-papular exanthema which developed one week after his two sons had suffered from rotavirus gastroenteritis. Rotavirus antibody at titers of 1:256 and 1:512 were identified from the patient’s serum. Additionally, Di Lernia has reported rotavirus-related Gianotti–Crosti syndrome in a 7-month old child and also, in a separate report, acute infantile hemorrhagic edema following rotavirus infection in a 11-month old girl.

Our patient presented with erythematous macular skin eruptions, acute gastroenteritis and dehydration. Etiologic examinations performed twice, revealed rotavirus antigen in the stool samples. Because the eruptions were judged to be of a specific nature, further etiologic assessment was performed and neither viral pathogens nor streptococcus antigens were found to be positive. Although the clinical appearance of the eruption was not typically allergic in character, antihistaminic response was tested, and found to be unremarkable. Apart from eruption, no clinic or laboratory findings relevant to any potential systemic diseases was identified.

In brief, given the fact that the skin lesions observed in our patient developed concurrently with gastroenteritis, that rotavirus was positive
in stool samples and that other potential etiologic factors were ruled out we conclude that the skin eruptions were associated with rotavirus infection. An exanthem is a self-limited lesion usually associated with a viral infection and which, by itself, is not an issue of substantial concern. The prognosis depends on the clinical progress of the enteric symptoms. Routine rotavirus vaccination may prevent the occurrence of complications such as described in this report.17
Finally, rotavirus infection should be assessed in the differential diagnosis of children with erythematous eruption.

REFERENCES