An Unbothersome Rash

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What's Your Diagnosis?

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Introduction. A 3 year-year-old previously healthy boy presents with a rash that abruptly appeared on his bilateral cheeks, upper arms, buttocks and extending slightly to his lower back and bilateral legs.

History: Although the child is unbothered by the rash, he has had 3 days of cough, rhinorrhea, and sore throat. His father and sister were sick with a viral upper respiratory infection around 1 month ago, the family tested negative for COVID-19, and the patient's mother denies the patient himself being sick at that time. Physical examination reveals a sick appearing child with unremarkable vital signs. He has bilateral erythematous 3+ tonsils with exudates, bilateral anterior and posterior cervical chain shotty lymphadenopathy, and nasal congestion. The rash is papular, mildly erythematous, and blanching on his bilateral cheeks, posterior upper arms, lower back, buttocks and bilateral legs. It spares the palms and soles. There are no areas of excoriation. (Figures 1-4).

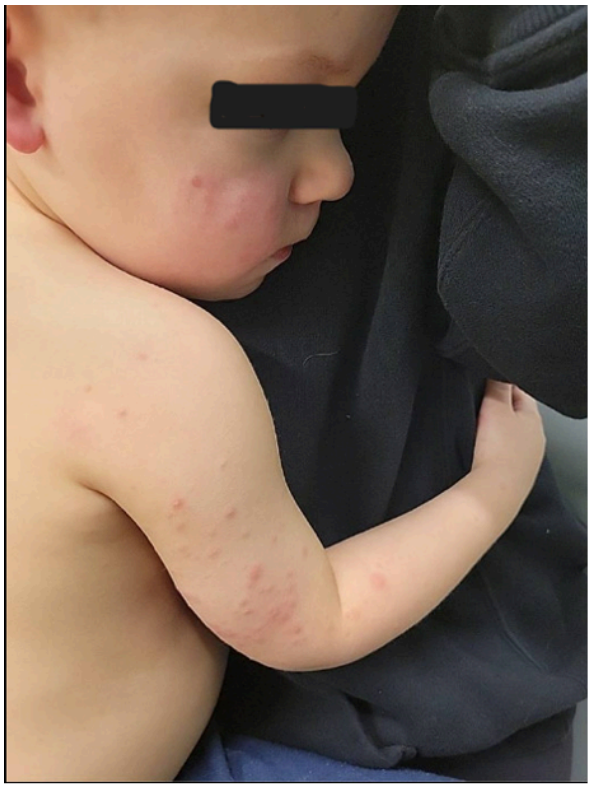

Fig. 1. *Posterior right arm*

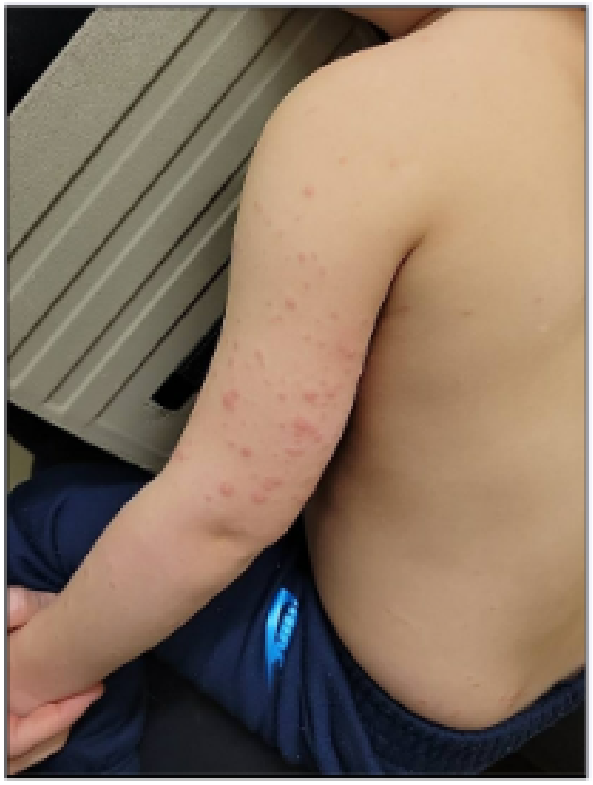

Fig. 2. *Posterior left arm*

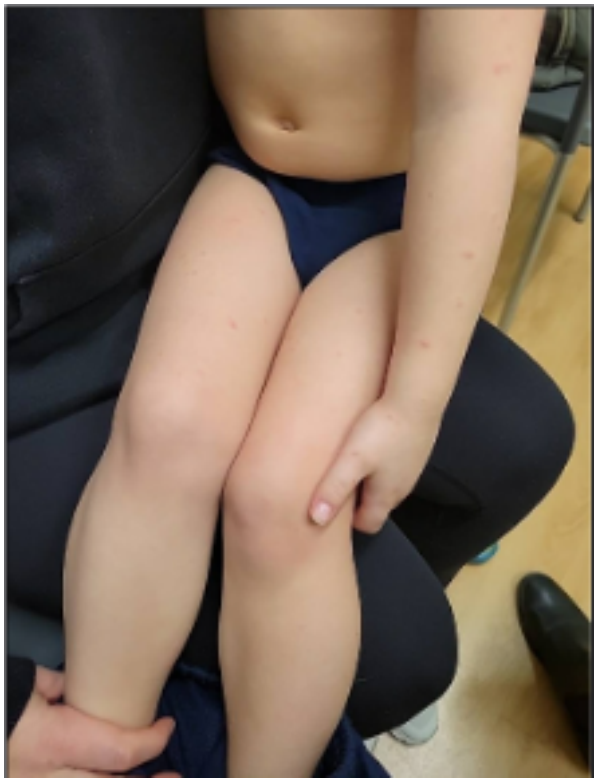

Fig. 3. *Anterior trunk and thighs*

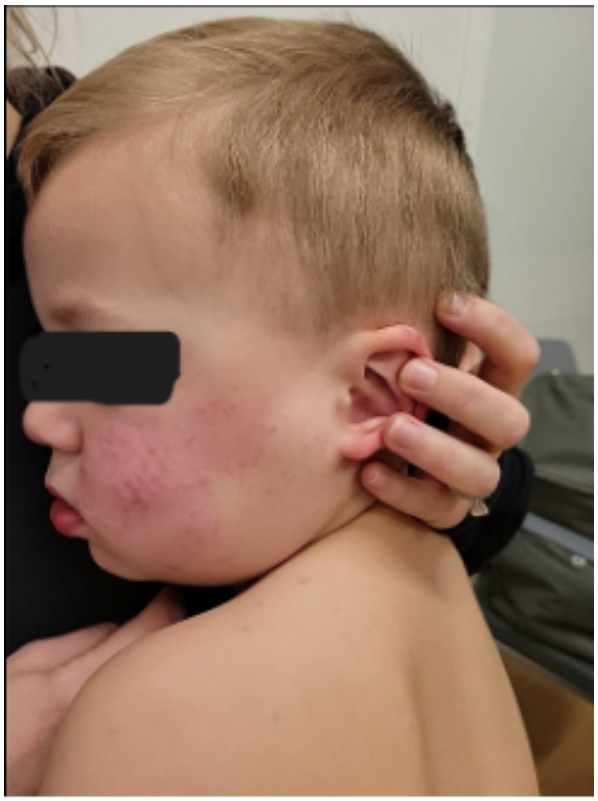

Fig. 4. *Left cheek.*

Diagnostic Testing: Rapid strep testing in office was negative and a strep culture was sent to the laboratory. Complete blood count with differential, C-reactive protein (CRP), basic metabolic panel, monospot, and Epstein-Barr Virus (EBV) titers were ordered and collected at by an outside laboratory. (Table 1).

Table 1. Laboratory results

Test	Normal Range	Patient Results
White blood cell count	5.0 - 16.0 thousand/uL	12.4
Red blood count	3.90 - 5.50 million/uL	4.19
Hemoglobin	11.5 - 14.0 g/dL	11.5
Hematocrit	34.0 - 42.0 %	35.8
Platelet count	140 - 400 thousand/uL	274

Neutrophils	23 - 45 %	18
Lymphocytes	35 - 65 %	68
Monocyte, absolute	200 - 900 cells/uL	**1736/uL**
Monocytes	4 - 10 %	14
Neutrophils, absolute	1,500 - 8,500 cells/uL	2,232
Lymphocytes, absolute	2,000 - 8,000 cells/uL	**8432/uL**
CRP	<8.0 mg/L	1.3
EBV nuclear antigen antibody (IgG)	> 21.99 U/mL	< 18.00
EBV early antigen D antibody (IgG)	> 10.99 U/mL	**>150.00 (H)**
EBV capsid antigen (VCA) IgG antibody	> 21.99 U/mL	**134.00 (H)**
EBV VCA IgM	> 43.99 U/mL	**>160.00 (H)**
Heterophile, mononucleosis screening (REFL)	Negative	Negative

Correct Answer: B. Papular acrodermatitis

The rash is most consistent with papular acrodermatitis (PA), previously known as Gianotti-Crosti (GC). Additionally, the patient's lymphadenopathy, tonsillar exudate, and general upper respiratory infection symptoms were concerning for a concurrent EBV infection. This diagnosis was ultimately supported by testing, which showed atypical lymphocytes, as well as EBV titers positive for both IgM and IgG antibodies, despite negative monospot testing. Strep culture was ultimately negative, ruling out scarlet fever.

Treatment and management: Supportive treatment was discussed with the patient's mother, including oral antihistamines for possible pruritus, topical barrier creams, topical hydration for skin health, and acetaminophen or ibuprofen for discomfort or fevers above 100.4°F. The day after being seen, the rash worsened and the patient stopped tolerating his oral secretions, prompting his parents to bring him to the emergency department. At that time, he was noted to have worsening rash and 4+ tonsils. He remained afebrile. He was given a one-time dose of intravenous dexamethasone dosed at 0.6 mg/kg due to concern for progressing airway compromise in the setting of likely EBV infection. While in the emergency department, infectious disease was consulted and concurred that is his rash was consistent with PA due to the concurrent viral illness.

Outcome and follow-up: The patient recovered well over the next 72 hours with supportive care and no further follow-up was needed. According to his mother, his rash rapidly improved after dexamethasone and remained non-pruritic.

Discussion: Papular acrodermatitis is an easily recognizable post-infectious rash. The classic presentation is a mildly pruritic or asymptomatic papular erythematous symmetric rash without concurrent illness finding, and it is usually located on the face, extensor surfaces, buttocks, and thighs.[1.] Although children between 3 and 17 years of age are typically diagnosed with PA, the rash can be seen in adults of any age. When first described, PA was only associated with Hepatitis B[1] but has now been described in association with various viruses, bacteria, and vaccinations. Hepatitis A, B, C, EBV, CMV, HIV, RSV, *Bartonella henselae, Mycoplasma pneumoniae,* and vaccines like MMR, influenza, DTaP, oral polio, and HiB are a non-exhaustive list of associated pathogens and vaccines.[2] Although the PA diagnosis is clinical, the pathogenesis is not well understood. Previously published studies[2] found that viral particles were not present in biopsies, and both Langerhans' cells and CD4+ T cells were the predominant immune cells present in vesicular biopsies. Treatment is usually supportive, with some case reports of oral or systemic steroids being given for especially pruritic rashes. The rash can resolve from several days to > 6 months, with no clear prognostic factors being identified.

Our case is unique in that it did not follow usual illness scripts where PA follows a viral illness rather than presenting concomitantly. While PA can sometimes present with URI symptoms, it is often present at least 1 week after the diagnosis of the URI.[2] Lymphadenopathy is

uncommon and only present in around 30% of children with PA.[3] Furthermore, lymphocytosis can be present on laboratory evaluation independent of an identifiable virus.[2] The patient being IgG and IgM positive is concerning for concurrent EBV infection that was lasting at least 2 weeks, as this is the time it takes for IgG antibodies to be present in the blood after initial antigen exposure. This presumes that this is the patient's first infection with EBV. The patient's lack of secretion tolerance is most likely secondary to his underlying tonsillar hypertrophy in the setting of his EBV infection and unrelated to PA. This is unusual because PA generally presents following an illness and does not occur concomitantly.

Conclusion. Papular Acrodermatitis is a benign, self-limited cutaneous rash that usually erupts after resolution of a viral illness. The rash Is normally benign but can sometimes be pruritus. It normally resolves spontaneously. This case presented concomitantly with EBV pharyngitis, and the patient's rash Improved after Intravenous steroids were administered.

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