A Viral Exanthem with Several Consecutive Eruptions and Signs of Gianotti-Crosti Syndrome

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Abstract: We report a case of unusual presentation of a viral exanthem in a 17-month-old girl. The child had signs of Gianotti-Crosti syndrome (GCS)--the long-lasting papular eruption on her extremities and face with non-typical for GCS rash extension to the trunk, enlarged posterior cervical and submandibular lymph nodes, and anicteric hepatitis. Serum polymerase chain reaction (PCR) detected human herpesvirus type 6 (HHV-6) in accord with the exanthem in this child.

Keywords: Exanthem, Gianotti-Crosti syndrome (GCS), human herpesvirus type 6 (HHV-6).

CASE REPORT

A 17-month-old girl was brought for a consult regarding a rash on her body on August 27, 2014. The child appeared to be well otherwise and her eruption, in spite of being extensive, was not painful or pruritic. She did not receive any vaccinations recently and she was not on medications. The child's mother mentioned that the girl was prone to "common cold" episodes, but her medical history was unremarkable.

The mother provided history that the girl's malady started on July 23-26 when the family was on vacation on the seaside on the southern part of Ukraine. The mother noticed that the girl had erythema of her cheeks and thought it was because of "food allergy." On July 30, flesh-toned papules appeared on her back and stomach. The child did not have a fever and she was not fussy. Her 3.5-year-old sister did not have any of these manifestations.

On August 1, the mother noticed that the girl's rash had a different look. Instead of flesh-toned papules, the lesions on the back and stomach became red; there were also new red-toned lesions on her extremities and a small wound in her left axilla, probably from an insect bite. There was no medication intake that could precede possible drug eruption. The girl did not have signs of gastrointestinal dysfunction and her appetite and food intake were normal. She did not have signs of conjunctivitis or arthritis, and her body temperature was not elevated.

Two days later on August 3, the girl's 3.5-year-old sister developed a vesicular rash on her hands, feet, and in the oral cavity. Her malady was clinically diagnosed as a hand-foot-and-mouth disease (HFMD). That child's overall condition was also fine; the mother did not recall any prodromal signs as a fever, cough, pharyngitis, and the vesicular lesions resolved in one week.

By the middle of August, the 17-month-old girl's erythematous papular rash was still present. The mother also recalled that she noticed new papules on her buttocks and in the groin area around August 17-20. The child went through several consults, e.g. rheumatology and hematology, to exclude possible systemic underlying conditions. All her tests, including complete blood count with thrombocyte count and coagulation studies, total immunoglobulin M (IgM), immunoglobulin G (IgG), immunoglobulin A (IgA) titers, were within normal limits. The only discovered laboratory abnormality was mildly elevated level of AST (32 U/L) with normal ALT, bilirubin and alkaline phosphatase levels. The ultrasound exam also revealed that the girl's liver was enlarged +2.5 cm.

On physical examination, the child did not have a toxic appearance. She had palpable posterior cervical and submandibular lymph nodes. Her polymorphic erythematous papular rash was extensive (Figure **1**) covering extremities (A), inguinal (B), axillary (C), umbilical/paraumbilical (D) areas, and her buttocks, chest, chin, and cheeks. There was a healing wound in her left axilla (C).

The girl's knees, elbows, palms, and soles were spared. Some papules and plaques had a flat-topped, polished appearance as lesions appeared days or weeks prior to this consult time, but some papules looked like they were newly erupted. Some rash elements resembled palpable non-blanching purpuric lesions.

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E-ISSN: 2310-998X/14

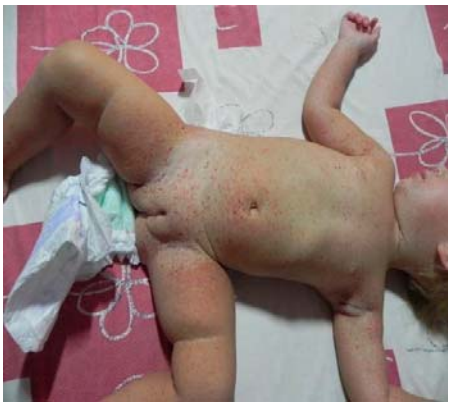
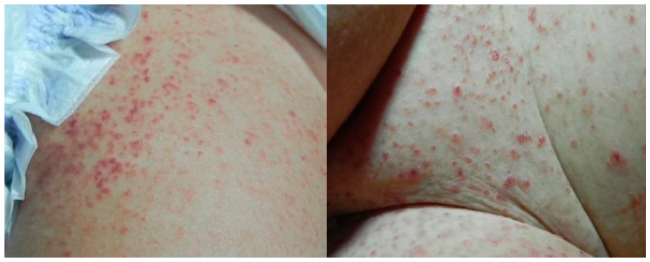
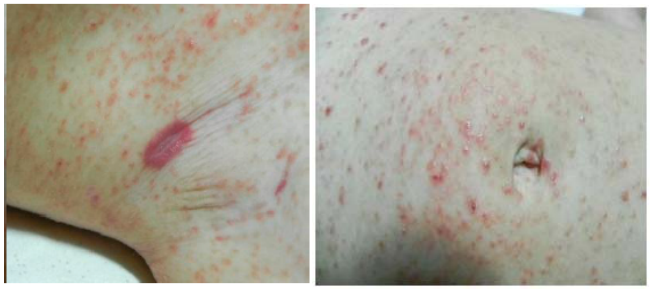


Figure 1:

A **B**



C **D**

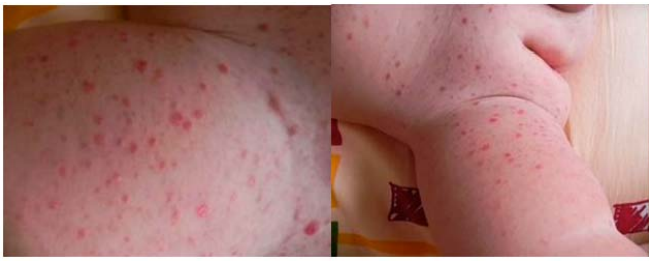


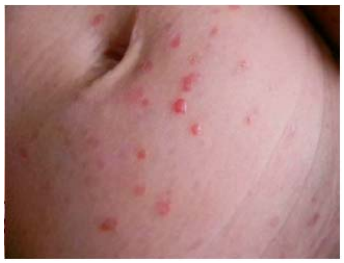
Taking into consideration the rash manifestation with several signs of GCS (papular dermatitis on the face and extremities with extension to the trunk, enlarged lymph nodes, anicteric hepatitis, 4-week rash duration by the time of the consult), but also the trunk involvement and purpuric appearance of some lesions, a punch biopsy was performed. Histologic findings in the specimen were described as non-specific and compatible with an exanthem picture: edema of the papillary dermis and sparse lymphocytic perivascular infiltrates in the upper dermis. There were no extravasated erythrocytes in the papillary dermis in the punch biopsy sample. The epidermis had some artefacts, but its histologic appearance did not reveal any significant changes. The basal membrane looked normal.

In addition, serum PCR revealed HHV-6 in this child.

The mother was reassured that the girl had a benign condition. However, the rash could last up to several months. It was advised to perform a new biochemistry profile at the end of September and the mother reported that all transaminase and bilirubin levels were normal; the liver enlargement was +1.0 cm in comparison with a previous +2.5 cm enlargement.

The mother also reported that the girl developed several new rash elements on her buttocks and groin area at the end of September, and she sent photographs dated on 09/29/14. The mother described that the newly erupted elements appeared mostly in the area where the girl's skin was pressed and rubbed by a potty rim:





On October 24, the mother reported that the girl's rash was gradually disaapearing and she sent us new photographs:

The girl's general condition remains good overall.

DISCUSSION

The patient's rash had unusual presentation: ambiguous signs of GCS with PCR confirmed HHV-6 infection.

Characters compatible with GCS [1, 3, 4] include papular dermatitis with more than 8 week duration on the face and extremities (however, the patient's lesions were extended to the trunk), anicteric hepatits, and enlarged posterior cervical and submandibular lymph nodes. The girl's general condition was non-toxic and she had no constitutional symptoms.

Features non-consistent with a classical presentation of GCS were that her rash had trunk involvement, the elements were polymorphic varying from freshly erupted erythematous papules to flat-topped, polished, older-looking papules, and some rash elements had appearance of non-blanching palpable purpura. The child's mother described several cycles of eruption: new erythematous papular elements were appearing on the child's skin approximately three-four weeks apart for two months. The last eruption was around September 29. The mother connects that eruption on the girl's buttock and groin with pressure from the girl's potty; it can be can considered as Koebner's phenomenon.

The serum PCR was positive for HHV-6 and the punch biopsy result was compatible with a viral exanthem picture. However, the girl did not have a typical presentation of roseola infantum [5] with a febrile prodromal period and a pale small pink maculopapular rash prior to the time she developed the rash with signs of GCS. It is known, however, that HHV-6 can be a cause of GCS [1, 3, 4].

The patient's long-lasting rash with several consequent eruptions might encompass multiple factors: a presence of HHV-6 and possibly other viruses in her body (the girl's sister had clinically diagnosed HFMD), sun-light exposure, and a delayed-type hypersensitivity reaction to the immune complexes deposited in her dermis.

From the history, the girl's malady started as erythema of the cheeks that can be contributed to parvovirus B19 infection; but the girl did not have a classical for this disease lacy eruption [6]. Two weeks later the girl's sister developed a blistering eruption in her mouth and on her hands and feet, clinically diagnosed as HFMD. The patient was in contact with coxsackie viruses or entheroviruses, and these viruses can also be a culprit of GCS [1, 3, 4, 7]. The girl was travelling to the southern area on the seaside and she had prolonged insolation. Medical literature describes that sunlight exposure aggravates viral exanthema. A current explanation of GCS mechanism is based on a delayed-type hypersensitivity reaction to the immune complexes deposited in dermis.

The girl's unusual rash presentation with several consequent eruptions could be due to immaturity of immune system in the 17-month-old child, her immune system response to HHV-6 and possibly other viruses, deposition of immune complexes in dermis, and aggravation of exanthema because of sunlight exposure and creation of Koebner's phenomenon. There was a case of recurrent GCS following influenza immunization described in medical literature [2], but our patient did not have recent vaccinations. We considered possibilities of other diseases as viral hepatitis [9], Epstein-Barr virus infection [8], cytomegalovirus infection [10], and bartonellosis [11]. There was no evidence that the girl had proven coexisting infection other than HHV-6. However, this manifestation of HHV-6 was non-consistent with either a classical clinical picture of roseola infantum, or a classical presentation of Gianotti-Crosti syndrome.

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Received on 09-10-2014 Accepted on 10-11-2014 Published on 25-11-2014

DOI: http://dx.doi.org/10.12970/2310-998X.2014.02.02.2