Papular-purpuric "gloves and socks" syndrome caused by parvovirus B19

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This paper presents a 15-year-old boy with an acute febrile illness accompanied by purpuric and papular lesions located mostly on the dorsal areas of his hands and feet with the additional changes on his knees and elbows. Serologic studies confirmed the acute infection by parvovirus B19. Apart from mild leukocytosis there were no other abnormalities in hematologic and laboratory findings. The diagnosis of papular-purpuric "gloves and socks" syndrome (PPGSS) was made. Cutaneous changes completely resolved two weeks later. Herein the patient's condition was described together with a brief overview of the PPGSS literature concerning this relatively rare viral exanthema.

Key words: skin diseases, viral; hand dermatoses; foot dermatoses; parvovirus B19, human; exanthema.

Introduction

A characteristic rash consisting of papular and purpuric lesions covering the acral portions of extremities, descriptively named papular-purpuric "gloves and socks" syndrome (PPGSS), was first reported in 1990 by Harms, Feldmann and Saurat (1). A year later, the exanthema was found to be associated with the acute infection with parvovirus B19 (2). The unique syndrome is characterized by pruritic erythema and edema of the hands and feet with petechiae, fever, and oral erosions (3). This rare exanthema seems to preferentially affect teenagers and adults, and resolves spontaneously within 2 weeks. Lymphadenopathy has been frequently described in these patients (3). Systemic symptoms included asthenia, anorexia, fever and arthralgias. The highest incidence was reported to occur in spring and summer.

This report presents a case of a boy with PPGSS in whom serological analysis confirmed the association of the exanthema with the acute infection with parvovirus B19.

Case report

A 15-year-old boy came to our outpatient clinic for a purpuric maculopapular rash, mild fever and a headache. Skin changes and symptoms had begun the day before. On the examination, multiple purpuric and erythematous macules and papules were seen over the dorsal aspects of his hands and feet, whereas his knees, elbows and volar aspects of his forearms were studded with numerous erythematous and livid papules, some coalescing into smaller plaques (Fig. 1). The lesions were slightly tender. The patient's body temperature was elevated to 37.8°C. There was a pharyngeal erythema and his tongue was a bit swollen and deeply red. Organomegaly, peripheral lymphadenopathy or any other abnormality were not found during the physical examination. Epidemiologic history did not elicit any relevant data.

Results of routine laboratory investigations, including liver and renal function tests and urinalysis, were normal. The only alteration found was leukocytosis (15.3/nL) with elevated absolute numbers of both granulocytes (9.2/nL) and lymphocytes (4.6/nL). Enzyme immunoassay showed significant titers of IgM and IgG antibodies against parvovirus B19, whereas antibody results for cytomegalovirus, measles virus, hepatitis A, B and C virus, rubella virus, herpes simplex virus (HSV), varicella zoster virus (VZV) and Epstein-Barr virus (EBV) were negative or not consistent with the acute infection. Serological tests repeated three weeks later showed a fourfold rise in anti-parvovirus IgG titers.

In less than two weeks the eruption cleared spontaneously.

Fig. 1 – Erythematous and purpuric macules and papules over the volar aspects of forearms.

Discussion

Parvovirus B19, the smallest DNA-containing virus, is known as a causative agent of the fifth disease (erythema infectiosum) in children, whereas in adults it primarily causes acute arthropathy and, less frequently, a non-specific rash (4). Recently, a number of hematologic, rheumatologic and neurologic complications have been recognized, the aplastic anemia being the most serious among them. Parvovirus B19 is thought to be transmitted primarily by the respiratory route via droplet aerosol during the viremic phase (4). Apart from the classical cutaneous eruption seen in children, two other rashes have been associated with parvovirus B19 infection – papular-purpuric "gloves and socks" syndrome, and asymmetric periflexural exanthem of childhood (1-5).

Papular-purpuric "gloves and socks" syndrome is a self-limiting cutaneous eruption which has been linked to the parvovirus B19 infection in at least 15 cases, including the patient described herein (2, 6-10). However, there were a number of patients in whom other viruses were related to the exanthema: cytomegalovirus, measles virus, coxsackie-virus B6, Epstein-Barr virus, human herpes-virus 6, hepatitis B virus and rubella virus (6, 11-13). Papular-purpuric "gloves and socks" syndrome was described in HIV-positive patients coinfectcd with parvovirus B19 (10). Also, in some cases no viral cause was found or a drug (trimethoprim/sulfamethoxazole) was shown to induce the rash (14). It is obvious that papular-purpuric "gloves and socks" syndrome represents a reaction pattern caused by various agents, mostly viruses. It is believed that many clinical manifestations, including skin eruptions, of parvovirus B19 infection are a consequence of immune complex formation (4). Several groups of authors detected parvovirus B19 DNA in cutaneous lesions, and intracytoplasmic staining of dermal endothelial cells, keratinocytes and sweat glands showed an antibody against the virus (8, 15). The direct infection of dermal endothelial cells might result in the purpuric nature of the exanthem. A true vasculitic process has not been described in the syndrome so far, and histopathologic findings still seem nonspecific (8). There are scarce data about Henoch-Schönlein purpura that occur concomitantly with papular-purpuric "gloves and socks" syndrome (16).

Cutaneous changes in papular-purpuric "gloves and socks" syndrome are characteristic enough to permit a straightforward clinical diagnosis. Beside the typical location of lesions on hands and feet, less frequently checks, elbows, knees, inner aspects of thighs, glans penis, inguinal creases, and buttocks might be involved (1). Rarely, superficial skin necrosis might evolve from the typical lesions (9). Mucosal involvement encompasses petechiae on the hard palate, vesiculopustules on the hard and soft palates, pharyngeal erythema, small erosions on the oral mucosa, and swollen lips with painful erosions (8). The exanthema mainly affects young adults, although pediatric cases were also described in the literature, the youngest being 4 years old (7).

The infection with parvovirus B19 might thus induce a variety of cutaneous changes ranging from a nonspecific maculopapular rash to more characteristic exanthems, like the fifth disease and papular-purpuric "gloves and socks" syndrome. Other complications of the infection could be reflected in the skin (thrombocytopenic purpura and vasculitis) (4). Mucosal changes are by no means rare. Papular-purpuric "gloves and socks" syndrome is a self-limiting disease which requires no extensive laboratory work-up in the absence of significant extracutaneous changes. Searching for a viral agent, mainly parvovirus B19, and complete blood cell counts with the differential one are sufficient laboratory investigations, unless clinical status dictates a more extensive check-up. Bed rest, antipyretics and bland emollients are usually the only therapeutic measures required.
REFERENCES


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A p s t r a k t


PAPULOZNO-PURPURIČNI SINDROM TIPA "RUKAVICA I ČARAPA" IZAZVAN PARVOVIRUSOM B19


K l j u č n e r e č i: koža, virusne bolesti; šaka, dermatoze; stopalo, dermatoze; parvovirus B19, humani; egzantem.