State of Alaska Epidemiology Bulletin

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Outbreak of Parvovirus B19 Rash in Children

Background

On March 15, 2002, the Section of Epidemiology was notified of numerous cases of rash illness in children in a village in Western Alaska. In addition, similar reports of rash illness were subsequently received from nearby villages. Most descriptions were comparable to rashes that were being reported in elementary age children in many other states this winter. (1)

Investigation

Epidemiologic Investigation
On March 26, investigators flew to the village to determine the extent and etiology of the outbreak, clinical characteristics of the illness, and to educate the community about public health issues concerning the outbreak.

Active surveillance involved asking health aides, teachers and students to report recent rash illness. All people who reported illness were given an extensive questionnaire to fill out at home. Completed questionnaires were collected before leaving the village, and arrangements were made to mail those not yet completed.

We defined a case-patient as anyone who developed a new rash from January 1, 2002 to the present date.

Laboratory Investigation
Clinical specimens were collected only from persons who met the case definition for rash illness. We obtained serum samples, nasopharyngeal swabs, and rectal swabs. Serum samples were sent to the Centers for Disease Control and Prevention for viral isolation. Nasopharyngeal and rectal swabs were sent to the Alaska State Public Health Virology Laboratory for viral culture.

Results

Epidemiologic Investigation
To date, we have received 43 completed questionnaires from parents of ill children. The first identified case was on January 26. The median age was nine years; the range was 4-13 years. The gender distribution was 49% male. The mean duration of symptoms was four days; the range was one to eight days. Please see Table 1 for a description of the rash. Prodromal symptoms were reported in 7 of 35 (20%) case-patients, and constitutional symptoms during the rash were reported in 10 of 35 (29%) case patients. These symptoms included, but were not limited to headache, fever, cough, nasal drip, and joint pain.

Table 1. Description of Rash Summarized

	Number of Responses	Number (%) that said, "yes"
Description of initial rash:		
Flat red spots	36	15 (42%)
Raised red bumps	36	3 (8%)
Red skin (solid)	36	10 (28%)
Description of rash at worst:		
Flat red spots	31	9 (29%)
Raised red bumps	31	4 (13%)
Red skin (solid)	31	6 (19%)
Other associated symptoms		
Itchy	38	32 (84%)
Where rash started:		
Extremities	37	17 (46%)
Face	37	7 (19%)
Torso	37	4 (11%)

Laboratory Investigation
We obtained a total of 19 nasopharyngeal swabs, 12 rectal swabs, and 17 serum samples. All nasopharyngeal and rectal swabs for respiratory and enteric viruses were negative. Serum samples from 14 of 17 patients were positive (and one was indeterminate) for IgM antibody against parvovirus B19.

Discussion

Parvovirus B19 infection is common throughout the world, and the prevalence of IgG antibody positivity increases steadily in increasing age groups, with rates of 75-90% in people over 50 years of age. (2) The main mode of transmission is through contact with infected respiratory tract secretions. Erythema infectiosum or fifth disease is the most commonly recognized clinical presentation of this infection. It is usually associated with a malar erythematous rash, and a pruritic, reticulated or lace-like rash on the trunk and extremities, that last from a few days to a few weeks. Additionally, patients may experience constitutional symptoms such as headache, sore throat, and arthritis. The incubation period is usually from 4 to 14 days.

As with many viral infections, very rarely, more severe complications can occur. For example, parvovirus B19 infection may increase the risk of miscarriage or spontaneous abortion in early stages of pregnancy, and severe anemia in people with chronic red blood cell disorders. The incidence of these complications is exceedingly low. We have received no reports of such severe complications during this outbreak. No vaccine or specific treatment exists for this virus.

Recommendations

1. Transmission of parvovirus B19 can be reduced through washing hands, disposing of used facial tissues, and avoiding sharing eating utensils.

2. When parvovirus B19 is circulating in a community, inform pregnant women of the rare possibility of adverse consequences to the pregnancy. Serologic testing for IgG may be considered in order to determine susceptibility to the virus.

3. Due to the high prevalence of parvovirus B19, the low incidence of ill effects on the fetus, and the fact that avoidance of child care or classroom teaching can reduce but not eliminate the risk of exposure, we do not recommend routine exclusion of pregnant women from the workplace where erythema infectiosum is occurring. (3)

4. Children with erythema infectiosum may attend day care or school, as they are no longer infectious after onset of rash.

References

1. M Carter, P Mshar, H Messermith, et al. Rashes Among Schoolchildren-14 States, October 4, 2001-February 27, 2002. MMWR 2002;51(No.8).

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3. American Academy of Pediatrics. [Parvovirus B19]. In: Pickering LK, ed. 2000 Red Book: Report of the Committee on Infectious Diseases. 25th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2000:[p425].

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