SHORT REPORTS

Fifth disease: report of an outbreak

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THERE was an outbreak of erythema infectiosum (fifth disease) in Brechin in January 1984. A total of 41 cases were seen over a period of 12 weeks, and this relatively large number of cases occurring in a small town was considered to be worth reporting. The majority of the cases occurred in the town itself but five were in the country area. The general practitioners working in Brechin serve a population of about 10,000 people, and the town and surrounding area covers about 75 square miles.

Fifth disease is also known as 'slapped cheek' disease. The clinical picture of the cases that we saw was very characteristic and consisted of bright red cheeks, which had the appearance of having been slapped with the hand, and an erythematous reticulate-type rash on the upper arms and sometimes the thighs; the rash was usually of a paler dull-red colour. In our outbreak, the condition occurred in children between the ages of two and 14 years, with isolated cases among young people in their late teens and early twenties. The children affected were not fevered and remained well for the duration of the rash, which was from two to seven days. The rash recurred in some cases over the next three weeks. We found no other complications in the cases seen. There were at least 10 further cases but the details have not been recorded as these children were not brought to the health centre by their parents.

The condition got the name of fifth disease because it was the fifth erythematous rash to be described, the first four being rubella, scarlet fever, measles and erysipelas. Another condition has been called sixth disease, but this is usually known as roseola infantum. It occurs in young children who have been fevered for about two days and consists of an erythematous rash on the trunk and periphery which appears when the fever subsides. It has been associated with echovirus type 16. This clinical picture was seen in two small children during the study.

From informal discussion among the general practitioners in Brechin in late January, it became apparent that there was a sudden increase in the cases of fifth disease being seen, and it was then decided to record details of all patients and to search the records of those who had already been seen. Dr Urquhart, a consultant virologist at Ninewells Hospital in Dundee, was consulted and he advised that blood should be tested for human parvovirus IgM, the presence of which is indicative of recent parvovirus infection.[1] Blood was taken at random from five patients and was positive among all those tested. Each general practitioner undertook one blood test, in fact. One further blood test was also confirmed as positive; this sample was from a parent aged 38 years who had no illness or rash. We did not carry out this test in any more cases for two reasons: to avoid unnecessary expense to the National Health Service; and in order not to subject small children to blood tests unnecessarily.

Figure 1 shows the distribution of new cases of fifth disease during the 12 week outbreak, while Figure 2 shows the distribution by age. Although sometimes all the children in one family were affected, the condition did not appear to be infectious among children at the same school or even in the same class at school.

Fifth disease is said to occur every six to 10 years, but two of us who have been practising in Brechin for 20 and 13 years respectively do not remember seeing more than the occasional case over this period. There was also an outbreak of fifth disease in the Grampian Region,[2] and Friockheim reported one case; Edzell and surrounding area reported eight to 10 cases—one patient a woman 26 weeks pregnant who had positive parvovirus IgM and was being followed up carefully by virologists and obstetri-

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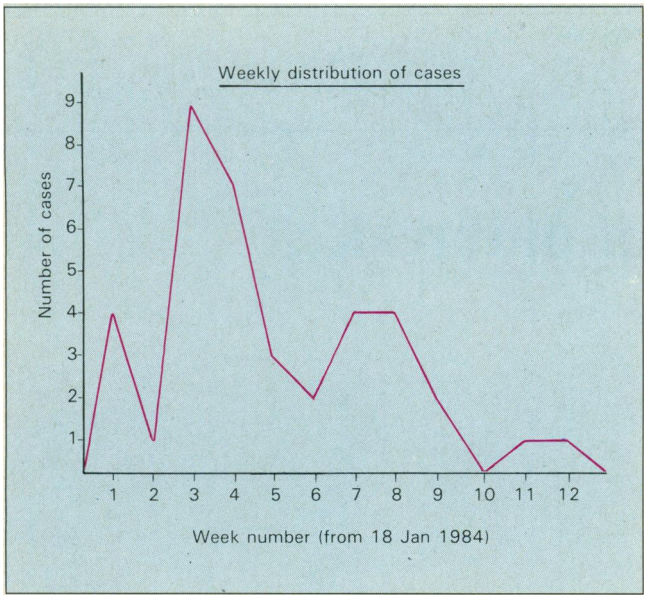

Figure 1. *Distribution of new cases of fifth disease over the 12 weeks of the study.*

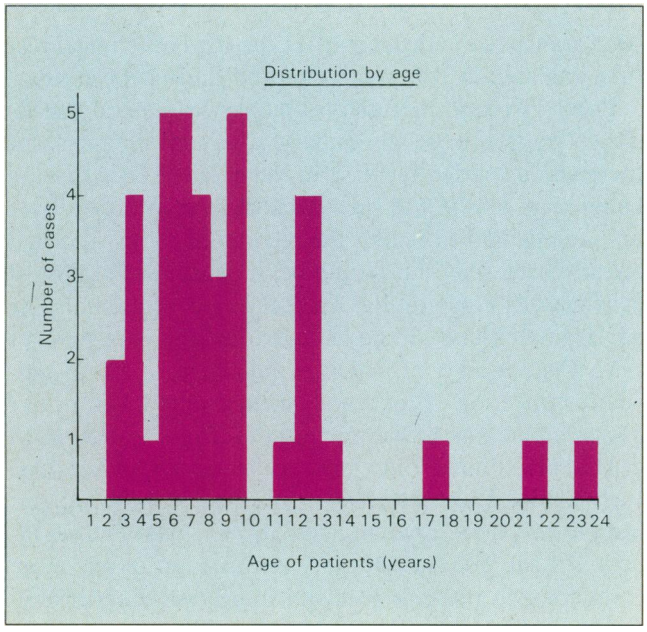

Figure 2. *Distribution of cases of fifth disease by age of patients.*

cians. A nearby American base also reported three cases of unusual rash—in a woman of 32, a boy of five and a man of 25 years of age.

The human parvovirus was discovered in 1975. It was discovered by chance during screening for hepatitis B, when nine blood donors' sera were found to contain an antigen distinct from hepatitis B antigen.[3] Infection with parvovirus is prevalent wherever it is looked for and some 30–40 per cent of blood donors in Britain have antibody against this virus. It is thought that peak acquisition of antibody occurs in children aged between four and 10 years. The parvovirus was first investigated by counter immunoelectrophoresis, immune electron microscopy and more recently by solid phase immunoassay based on monoclonal antibodies.[4]

Aplastic crises which were due to cross infection in a hospital ward have been reported in patients with sickle cell anaemia, hereditary spherocytosis and pyruvate kinase deficiency anaemia.[5] There is a possible danger from contacts between patients with suspected parvovirus infection and known cases of haemolytic anaemia. There was also concern over the relationship between parvovirus and rubella-like rashes. However, these have been described in cases of infection by echovirus type 9 and none of them has been associated with fetal abnormalities. Nevertheless, when fifth disease or a non-rubella rash occurs in a pregnant woman, the pregnancy should be carefully followed up with the possibility of intrauterine infections in mind.

It is thought that infection with human parvovirus depresses the reticulocyte count. In one of our cases the reticulocyte count was 0.5 per cent at the onset of the rash and 1 per cent one week later; this patient showed an otherwise normal blood film.

Comment

Our experience was that fifth disease is a minor illness affecting children; it is not particularly infectious and does not justify the exclusion of patients from schools. Complications do arise in the rare individuals with haemolytic anaemia. It is now known if parvovirus has any adverse effect on pregnancy: we did not observe an increase in the number of miscarriages during the three month period from the beginning of January. By adulthood about half of the population have developed antibodies to the human parvovirus.

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