Febrile illness due to a parvovirus

A short febrile illness in two patients was accompanied by the presence of a parvovirus in their blood, and afterwards they developed antibody to it. This virus has not been associated with symptoms, although it has occasionally been found in sera being screened for hepatitis-B surface antigen (HBsAg) and antibody to it is common in blood donors.

Case reports

(1) A 19-year-old soldier presented 11 days after returning from Gambia and nine days after being tattooed. He gave a history of nocturnal sweating and feeling hot and cold for a week and a dry cough and pain in the right hypochondrium for two days. His temperature was 37·8°C and his liver, which was just palpable, was tender. After admission he had a rigor and developed a tender occipital lymph node (which was palpable throughout seven months' follow-up). His dry cough persisted for a week and his sweating for three weeks. Investigation showed haemoglobin 15·5 g/dl; white blood cell count (WBC) $3{\cdot}1 \times 10^9$/l (3100/mm^3) with 64% neutrophils, 20% lymphocytes (some reactive), 16% monocytes; erythrocyte sedimentation rate (ESR) 1 mm in first hour; normal liver function tests; and negative serological results in Paul-Bunnell, Widal, brucella, fluorescent treponemal antibody, cytomegalovirus, rubella IgM, and toxoplasma dye tests. Malarial parasites were not seen in thick films and the chest radiograph was normal.

(2) An 18-year-old soldier in the same unit as the previous patient presented feeling unwell and feverish 11 days after returning from Gambia and nine days after being tattooed. The only physical abnormality was a fever of 37·7°C, which persisted for 24 hours. He remained well over the next seven months. Initial investigation showed haemoglobin 13·1 g/dl; WBC $3{\cdot}6 \times 10^9$/l (3600/mm^3) with 55% neutrophils, 23% lymphocytes (many reactive), 19% monocytes, 2% eosinophils, 1% basophils; ESR 3 mm in first hour; and the same range of negative test results as in case 1.

The patients' day 2 sera reacted in counter-current immunoelectrophoresis (CIE) tests with one of two human serum reagents (Pi and Sz) that contained antibody to HBsAg. Other tests for HBsAg, by reverse passive haemagglutination and radioimmunoassay, gave negative results. The day 2 sera also reacted in CIE with sera collected in convalescence (table). On electron microscopy the CIE precipitin lines formed by both patients' day 2 sera contained parvovirus-like particles, and in gel immunodiffusion (ID) tests they and a parvovirus B19-containing serum both reacted with the day 208 sera to give a line of identity.

Comment

In both patients an acute parvoviraemia was accompanied by a febrile illness which was followed by the development of antibody to the parvovirus present in their serum on the second day after presentation and to parvovirus B19. Although 30% of 261 English blood donors[1] and over 40% of 3000 Australian donors (Cossart, personal communication, 1979) have antibody to the virus, this is the first report of a symptomatic parvovirus infection. The absence of reports of symptoms due to parvoviraemia when antibody is so prevalent suggests that the infection is usually asymptomatic and the viraemia transient. The mode of spread of the virus is unknown, though in this instance it may have been due to tattooing.

This parvovirus is likely to be detected only when CIE or ID tests with human serum reagents are used—for instance, to screen sera for HBsAg. More specific and widely available serological tests may show that its role in acute febrile illnesses has been underestimated.

We thank Dr P A Emerson for permission to report on these patients under his care, and Mr A A Porter for the electron microscopy.

[1] Cossart YE, Field AM, Cant B, Widdows D. Parvovirus-like particles in human sera. *Lancet* 1975;i:72-3.

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Persistence of antibody 10 years after vaccination with Wistar RA27/3 strain live attenuated rubella vaccine

The duration of immunity elicited by rubella vaccines administered in childhood is extremely important. Mass revaccination of women who have been primarily vaccinated in childhood is to be avoided, since the vaccine is contraindicated in pregnancy and in women who may become pregnant during the ensuing three months. Furthermore, this population group is not readily accessible for revaccination. To ensure protection during pregnancy vaccination carried out before the age of 13 years should confer immunity for at least three decades. The quality and durability of immunity elicited by rubella vaccine have been questioned.[1 2]

We report the results of a 10-year follow-up study of antibody titres in 20 girls who took part in the first comprehensive study of transmissibility of Wistar RA27/3 strain live attenuated rubella vaccine[3]. The results of titrating sera collected two and six years after vaccination have been reported.[4 5]

Materials, methods, and results

Venous blood samples were collected in August 1978 from 20 of the 21 initially seronegative girls vaccinated in 1968. Eight of these 20 had been revaccinated in school immunisation programmes during 1970-8. The sera collected in 1978 were titrated for haemagglutination inhibition antibody according to standard procedures in parallel with sera collected 46 days after vaccination in 1968 (or alternative sera—see table). The sera had been stored at −20°C and were treated with manganous chloride and heparin to remove non-specific inhibitors before titration. Sera collected 46 days after vaccination were no longer available for four subjects, for whom samples collected two years (three subjects) or six years (one subject) after vaccination were substituted. Haemagglutination inhibition antibody titres of sera collected after vaccination in 1968 and in 1970 or 1974 were identical for three subjects but had decreased fourfold in one (case 12).

Titrations for neutralising antibody were carried out on the sera collected in 1978 from the 12 girls who had not been revaccinated (Dr D Horstmann, department of epidemiology and public health, Yale University School of Medicine).

Counter-current electrophoresis reactions of sera from two patients (case 1, case 2) with parvovirus infection at various days after presentation, two sera containing anti-HBs (Pi, Sz), and serum containing parvovirus B19

Sera reacting as antigen		Sera reacting as antibody											
				day 4		day 13		day 20		day 48		day 208	
		Pi	Sz	Case 1	Case 2	Case 1	Case 2	Case 1	Case 2	Case 1	Case 2	Case 1	Case 2
day 2	Case 1	+	—	—	—	—	—	+	+	+	+	+	+
day 1	Case 2	+	—	—	—	—	—	+	+	+	—	+	+
day 13	Case 1	—	—	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
day 4	Case 2	—	—	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
	B19	+	—	—	—	—	—	+	+	+	+	+	+

NT = Not tested.