LETTER TO THE EDITOR

Outbreak of Kawasaki Syndrome

Sir,

An outbreak of Kawasaki syndrome (KS) in Finland during the period June 1981–March 1982 was recently described by E Salo et al. (1). A similar outbreak of KS as a complication to measles occurred during the same period on the west coast of Sweden (Falkenberg). Fourteen children with suspected KS were examined. Five of these patients fulfilled the diagnostic criteria (2). These patients were aged 7 to 12 years, three patients came from the same family, and all five patients went to the same school.

As a follow-up to this uncommon finding of five patients from one specific group, I performed a virological screening for common infectious virus including serological tests. The patients showed a significant increase of the complement fixation against morbilli virus and also an increase of IgM antibodies against morbilli virus as determined by immunofluorescence technique. All patients had a high temperature which lasted from 5 to 22 days. Two patients were treated with V-penicillin without effect. On ECG signs of carditis were seen in one patient, but no cardiac symptoms were present. Four patients had an increased platelet count (range 361–486 $10^9/l$). In measles the platelet count ranges between normal and decreased level while in KS the platelet count is often increased. Notable findings were a rise of LDH and orosomukoid which for one patient was 245%. In addition symptoms such as strawberry tongue, oedema, redness of palms and soles were present, all patients showed desquamation on the fingertips which has not previously been described in connection with measles.

In an earlier outbreak of KS, described by Bell et al. (3), antibodies against measles were found in 60% of the patients, and in the control group antibodies were found only in 37% of the patients.

The Finnish study failed to mention these aspects and it would be of interest to know whether serological tests were performed in this study. Furthermore, it was not clear from the report which other diagnoses were established in a group of 22 patients.

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The Editor has asked the authors of the article mentioned in this letter to answer Dr Wille's questions.

Sir,

The diagnosis of Kawasaki syndrome (KS) requires that the patient meets at least five of the six main criteria, and that clinically similar diseases are excluded (1, 2). Four of the criteria

(fever, conjunctivitis, rash and lymphadenitis) are met by most patients with measles, but measles does not regularly cause the characteristic mouth and extremity changes. Patients with a diagnostic rise of the measles antibody titre or clinically typical measles should not be diagnosed as having KS even if they fulfil the diagnostic criteria.

Among the cases excluded during the outbreak in Finland in 1981–82, there were 11 cases of measles, 9 of which were from one hospital. The final diagnoses had been made locally, either on clinical grounds or on the basis of serological studies, after the cases had already been reported to us.

Most patients enrolled in the Finnish KS study were carefully examined by one of the authors (TH) for possible viral aetiology of the disease. But, as no general feature was recognizable, these negative results were not included in the original report.

Conjunctival (34 patients) and throat swabs (42 patients) and specimens of faeces (43 patients) and heparinized blood (36 patients) were collected at the earliest possible phase and cultured by standard techniques for cytopathic viruses. Serum specimens (paired 39 sera from patients and single sera from 13 patients) were assayed for complement fixing antibodies to a wide panel of common pathogenic viruses (4), including the measles virus, and to *Mycoplasma pneumoniae*, chlamydia group antigen, Q-fever agent and *Toxoplasma gondii*. Additional methods were used for assaying antibodies to rubella virus (radial haemolysis), *Chlamydia trachomatis* and Epstein-Barr virus (immunofluorescence), and coronavirus OC43 (enzyme immunoassay). Selected but representative sets of specimens from the serum material were kindly screened for antibodies to the following agents by the following colleagues: alphavirus (sindbis virus antigen, haemagglutination inhibition test) and nephropathia epidemica agent by Dr. M. Brummer-Korvenkontio, Department of Virology, University of Helsinki; rickettsiae *Ehrlichia canis* and *Rickettsia sennetsu* by Vet. Dr M. Ristic, College of Vet. Medicine, Urbana, Illinois.

No consistent feature was seen, neither an increase nor a constantly elevated level in antibodies to any of the above-mentioned agents. However, a few individual patients showed an increase in some viral antibodies (1 patient Coxsackie B5 and varicella zoster virus, 1 herpes simplex virus, 1 rotavirus, 1 respiratory syncytial virus). Likewise, Coxsackie B5 virus was isolated from a throat specimen of a boy with KS. There was no rise in the antibody titre in this case. No viruses could be isolated from leucocytes separated from the heparinized blood specimens. The "positive" results did not significantly exceed the expected numbers assessed according to age (4) and epidemiological situation.

In the outbreak of KS described by Bell et al. (3), which Dr. Wille mentions, convalescent sera were studied for antibodies against microbial agents. Titres against measles were frequently positive, in 9/15 patients and 7/19 controls. These numbers argue against measles being an aetiological agent of KS.

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