

# The prevalence of antibodies against Sindbis-related (Pogosta) virus in different parts of Finland

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**Objective.** To study the occurrence of Sindbis-related (Pogosta) disease in Finland by serological means.

**Methods.** A total of 2250 serum samples from five different areas were included in the study. Four hundred samples were collected from healthy blood donors and 1850 samples from patients who were suspected to have some viral infection. Antibodies of IgG and IgM classes against Pogosta virus were measured.

**Results.** Eleven per cent of 2250 samples were positive for IgG and 0.6% were positive for IgM class antibodies against Pogosta virus. The antibody prevalence in Finland was almost equally distributed, being highest in western Finland (17%) and lowest in southern and northern Finland (9%). Of all samples with IgG class antibodies, 25% were taken from children under 10 yr of age.

**Conclusions.** The prevalence of antibodies against Pogosta virus was much higher than we expected. Additionally, they were detected from all locations studied and not only in eastern Finland, which has been thought to be the main endemic area for this disease. Pogosta disease has been considered to affect mainly middle-aged persons, but our results indicate a high prevalence also among children.

KEY WORDS: Pogosta virus, Sindbis-related virus, Finland.

Pogosta disease, characterized by arthritis, rash and occasionally fever, was first recognized in the eastern parts of Finland in 1974 [1]. Since then there have been several outbreaks in the country and they seem to occur quite regularly every 7 years. A similar illness has been described in Sweden (Ockelbo disease) and in Russia (Karelian fever) [2, 3]. All three diseases are attributed to Sindbis-related arboviruses [4–6]. The virus causing Ockelbo disease has been isolated from pools of *Culiseta*, *Aedes* and *Culex* mosquitoes, and it is supposed that these late summer mosquitoes spread the Pogosta virus as well [6, 7]. The transmission cycles of arboviruses are complex [8]. Several factors, including viral, vector- and host-related, or environmental variations may contribute to its geographical variation [9]. Vertical transmission appears possible in the case of Ockelbo and Ross River viruses, which are close relatives to Pogosta virus [10–12]. These viruses are able to persist in the environment for a long

period in desiccation-resistant mosquito eggs; therefore, a rapid onset of cases can occur if conditions become suitable [10–12].

In the case of Ross river virus, marsupials such as the western grey kangaroo, wallabies and euros (*Macropus rotundus*) are believed to be the major vertebrate hosts of the virus [13]. A recent study has demonstrated that migratory birds, mainly thrushes, on several continents have a high prevalence of antibodies against the mosquito-borne alphaviruses, and in Sweden almost all passerine species that were collected from forested wetlands and humid forests had antibodies against Sindbis virus [14]. Migratory birds may contribute to the spread of arthropod-borne infections in at least two ways. First, birds carrying infected ticks have been found to spread *Borrelia burgdorferi* efficiently over long distances [15]. Second, a latent borreliar infection may be reactivated during the migratory restlessness of the birds [16].

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