

## **Detection of a High Risk Rural Site of Morbidity Due to Spotted Fever Group Rickettsia (Sfgr) in Southern Israel**

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Spotted fever (SF) was described for the first time in Israel in 1946, in the fertile northern coastal plain (Valero, 1949). The disease is characterized by an acute febrile and exanthematic picture, but it usually follows a milder clinical course than Rocky Mountain Spotted Fever. Local spotted fever clinical episodes seem to differ from other rickettsial spotted fevers of the eastern hemisphere in that a "tache noire" (at site of the tick bite) is seldom, if ever reported in cases acquired in the country (Gross and Yagupsky, 1987). Strains of rickettsiae, different by the immunofluorescent method from other members of the SF group, have been isolated, but the epidemiology of the disease in Israel is incompletely understood (Goldwasser *et al.*, 1974).

During 1984-1986 an outbreak of morbidity due to SFGR was observed in a kibbutz community in southern Israel. Thirteen clinical laboratory verified cases were diagnosed during that period comprising an annual average rate of 1.3% which is 21-fold higher than the expected rate (6.2/100,000) in the country. Morbidity occurred mainly in the summer (84%) when hot and dry weather prevails in the area; was higher among children than in adults (6% vs 2% respectively); and 77% of cases clustered in the marginal area of residency, facing the desert environment; This suggested that in endemic areas, the inhabitants of the interface between man's habitat and wild ecological niches have a higher risk of acquiring spotted fever. SFGR IgG type antibodies (by MIF technique) were present in 29 cases (9%) out of 326 inhabitants tested, indicating a relatively high clinical/ subclinical ratio. At a cut-off titer of 1/40, crossovers with *Rickettsia typhi* were detected in 2 cases (0.6%) which might be explained also by double infections (Yagupsky *et al.*, 1989).

In 1985, epidemiological and ecological investigations were initiated. The entire population agreed to undergo annual follow-up tests and interviews regarding relevant information. During the follow-up, 2 additional clinical cases were observed in 1988 and 2 seroconverted during 1989 but did not demonstrate typical symptoms and signs of a clinical case of SFGR. These observations suggest continuous activity of SFGR agents in the study site. In 1989, IgG type antibodies

specific to SFGR were detected in 5% of the population at a cut-off of 1/80 by immunoperoxidase assay (IPA) (Gilad *et al.*, 1988). IgG type antibodies to SFGR were detected in 78%, 75%, 56%, 60% of the 15 clinical cases after 1-4 years respectively. In 6 out of 8 asymptomatic seropositives, with at least 2 sequential annual follow-ups available, IgG antibodies persisted over time at a relatively high level. The follow-up revealed the persistence of IgG antibodies to SFGR in symptomatic and asymptomatic infections in a high site of morbidity due to Spotted Fever in Southern Israel (Sarav *et al.*, 1989).

A neighboring kibbutz with no reported morbidity has been enrolled as a control site. Out of 357 inhabitants interviewed and tested 11 (3% by IPA) were seropositive. All seropositives were adults and none of them recalled a clinical episode with detectable clinical symptoms typical to SFGR.

The nature of asymptomatic infections of SFGR needs to be further investigated in both communities. These could represent mild non-typical infections of Spotted Fever or might result from an asymptomatic infection due to non-pathogenic strains of SFGR. Class specific antibodies to the structural polypeptides or rickettsiae in symptomatic and asymptomatic infections by immunoblotting and immunoprecipitation assays should be examined.

Taking into account the close proximity of the 2 study sites and their similarity in environmental and sociological characteristics, further investigation may reveal some epidemiological-ecological explanation for the differences observed between the 2 sites and indicate a promising area for intervention.

#### LITERATURE CITED

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