

Laboratory and Epidemiology Communications

Japanese Spotted Fever Cases in Kochi Prefecture

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Communicated by Hiroo Inouye

(Accepted March 30, 2000)

Japanese spotted fever (JSF) is caused by tick-borne *Rickettsia japonica*. It was first discovered by Dr. F. Mahara in Tokushima Prefecture in 1984 (1). Since then, as of 1998, ten prefectures including Kochi Prefecture (2) and Miyazaki Prefecture (3) have reported JSF cases to the National Institute of Infectious Diseases, Japan (NIID).

In Kochi Prefecture, 94 JSF cases were confirmed in 1983-1999; 86 in Muroto City, 1 case in Kitagawa Village, 4 cases in Kochi City, and 3 cases in Sukumo Village. Among the 4 cases reported from Kochi City, 3 were known to be infected in Muroto City. Thus, JSF is as if an endemic disease in Muroto City.

During the same period, only 9 cases of scrub typhus (caused by Chigger-borne *Orientia* (formerly *Rickettsia tsutsugamushi*) were reported; 7 cases in the Reihoku Area (Ohtoyo Town, Motoyama Town, and Tosa Town), 1 case in Kochi City, and 1 case in Touwa Village (Fig. 1, 2). JSF infections were more frequent in the agricultural fields, plains, and mountains along the seacoast, while scrub typhus infections were more frequent in the inland mountainous areas.

In Kochi Prefecture, JSF infection is frequent between April and November, while scrub typhus breaks out in October and November (Fig. 3). Thus, JSF has always to be taken into

account in the differential diagnosis of rickettsiosis occurring in Kochi Prefecture from spring to summer. The seasonal fluctuation of ticks (imago, larva) which mediate JSF was observed in Muroto City. Its occurrence was much higher than in the area where JSF cases are not reported (4). However, the peak of the number of ticks collected and that of JSF cases were different in regard to timing. JSF infection is probably affected by many factors, such as the habits of ticks and their hosts, which are mutually interwoven.

Sixty percent of JSF patients were females. The age range of patients was widely spread from age 3 to 96.

So far, half of the JSF patients reported in Kochi Prefecture did not show bites, one of the three typical symptoms of JSF. Irrespective of the presence of bites, in Muroto City where the patients were most numerous, diagnosis was made within 3 to 5 days after disease onset. However, in Kochi City where JSF was relatively rare, two of four JSF patients without bites had to wait longer than 10 days for definitive diagnosis in spite of the continuous presence of high fever. If presence of bites is over-emphasized in diagnosis, there is a risk of belated diagnosis. Ignorance of the risk of JSF among medical institutions may also cause belated diagnosis.

Our research indicated the presence of other areas showing a high prevalence of antibody-positive population in Kochi Prefecture (5). In such areas, JSF infection could be high though unnoticed. Therefore, preparedness for quick diagnosis

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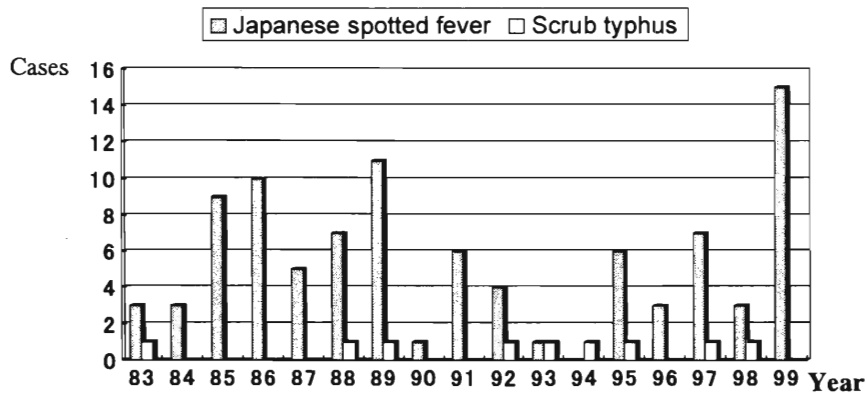


Fig. 1. Yearly cases of Japanese spotted fever in Kochi Prefecture; comparison with that of scrub typhus (1983-1999)

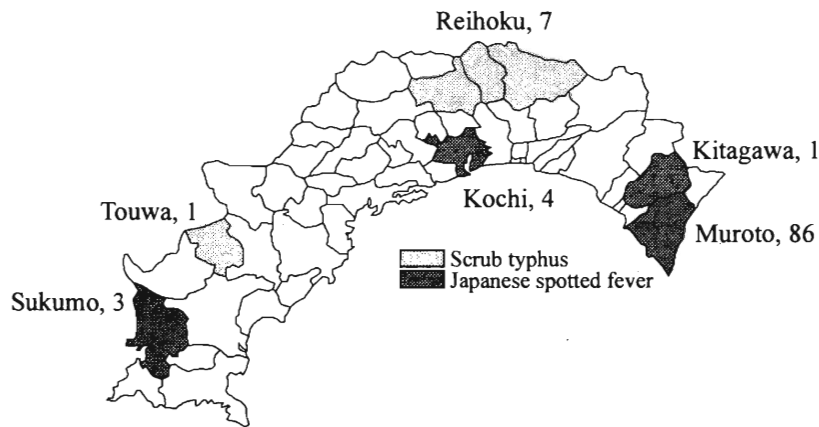


Fig. 2. Cases of rickettsial disease in Kochi Prefecture

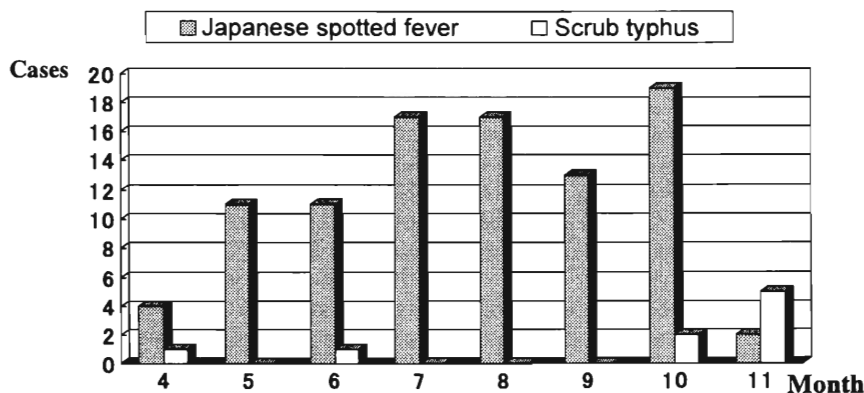


Fig. 3. Incidence of Japanese spotted fever in Kochi Prefecture by month; comparison with that of scrub typhus (1983-1999)

in such areas is necessary. Knowledge of JSF should be distributed throughout the prefecture.

Though the areas of reported JSF infection are expanding, its main focus will continue to be Muroto City. It is warm all year around owing to the Kuroshio Current, and it is a fertile area for the growth of fruits and vegetables. The area provides a suitable environment for small animals which may carry various kinds of ticks which seek chances to suck the blood of humans and small animals in fields and mountains. Moreover, according to our research (6), citizens of Muroto City are ignorant of the risk. This fact may accelerate the endemic of JSF.

A serological survey was performed by the Virology

Department of Tokushima University in 1983-1995 and has been performed by us since 1995. The confirmatory examination we used was the fluorescent antibody method using *R. japonica* YH strain (distributed by NIID) and Tauchi strain isolated in our institute as antigens.

REFERENCES

1. Mahara, F., Koga, K., Sawada, S., Taniguti, T., Sigemi, F., Suto, K., Tsuboi, Y., Ooya, A., Koyama, H., Uchiyama, T. and Uchida, T. (1985): The first report of the rickettsial infection of spotted fever group in Japan; three clinical cases. J. Jpn. Assoc. Infect. Dis., 59, 1165-1172 (in Japa-

- nese).
2. Funato, T., Kitamura, Y., Kawamura, A. and Uchida, T. (1988): Rickettsiosis of spotted fever group encountered in Muroto area of Shikoku, Japan. *J. Jpn. Assoc. Infect. Dis.*, 62, 783-791 (in Japanese).
 3. Yamamoto, S., Kawabata, N., Uchiyama, T. and Uchida, T. (1987): Evidence for infection by spotted fever group rickettsia in Kyushu, Japan. *Jpn. J. Med. Sci. Biol.*, 40, 75-78.
 4. Chiya, S., Takahashi, N., Yasuoka, T., Ideguchi, S. and Suzuki, H. (1998): Survey of tick fauna and rickettsia of tick-borne diseases from ticks in Muroto City of Kochi Prefecture. *Rep. Public Health Kochi*, 44, 53-57 (in Japanese).
 5. Chiya, S., Takahashi, N., Ideguchi, S., Yumura, I. and Fukui, E. (1997): Outbreaks of rickettsiosis of spotted fever group in Muroto City. *Rep. Public Health Kochi*, 43, 43-51 (in Japanese).
 6. Chiya, S., Takahashi, N., Ideguchi, S., Suzuki, H. and Tsuboi, Y. (1995): Prevalence of antibodies to rickettsiosis of spotted fever group in Kochi. *Rep. Public Health Kochi*, 41, 27-31 (in Japanese).