


Rocky Mountain Spotted Fever and Spotted Fever Rickettsiosis

Merlin disease code: 08309 Rocky Mountain Spotted Fever and Spotted Fever Rickettsiosis

[Paper case report form](#)

 Acute and convalescent sera for all cases must be sent to the Bureau of Public Health Laboratories

Merlin extended data required

Background

Rocky Mountain spotted fever (RMSF) has been nationally notifiable since the 1920s. In 2010, RMSF became nationally notifiable under the category of spotted fever rickettsiosis (SFR), which captures cases of RMSF (caused by *Rickettsia rickettsii*), *R. parkeri* rickettsiosis, Pacific Coast tick fever, and others. In the early stages of disease, it can be difficult to clinically distinguish between RMSF and other SFRs. Commercially available serologic tests are unable to differentiate between these spotted fever group *Rickettsiae* (SFGR) species. There is increasing suspicion that other SFGR species may be responsible for many of the SFR cases, including diseases associated with *R. parkeri*, *R. amblyommatis*, *R. montanensis*, *R. massiliae*, *R. rhipecephali*, and other *Rickettsia* species.

Disease onset occurs 3-14 days following a tick bite. Illness is characterized by acute onset of fever, and may be accompanied by headache, malaise, myalgia, nausea, vomiting, or neurologic signs. A macular or maculopapular rash appears 4-7 days following onset in many (~80%) patients, often present on the palms and soles. An eschar skin lesion develops at the site of the tick bite for many SFR cases but not RMSF.

Imported SFR are identified occasionally in Florida in international travelers, with African tick bite fever being most common. More information about imported cases of SFR is available at www.cdc.gov/otherspottedfever/imported/index.html. Rodent mites are associated with the SFR rickettsialpox which has a broad international distribution and is also present in the U.S.

Clinical criteria for case classification

Confirmatory:

Both of the following lasting less than 30 days:

- Any reported fever or chills
- **And** one or more of the following: rash, eschar, headache, muscle aches, anemia, thrombocytopenia, or any hepatic transaminase elevation.

Presumptive:

Confirmatory clinical criteria in the absence of a more likely diagnosis.

Supportive:

No clinical information available (no medical record or patient interview).

Laboratory criteria for case classification

Confirmatory:

One or more of the following:

- Fourfold change in SFGR IgG-specific antibody titer by indirect immunofluorescence assay (IFA) between paired serum specimens (one taken in the first week of illness and a second 2-4 weeks later),
- **Or** detection of SFGR nucleic acid in a clinical specimen via amplification of a specific target by polymerase chain reaction (PCR),

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- **Or** detection of SFGR antigen in a biopsy or autopsy specimen by immunohistochemistry (IHC),
- **Or** both of the following:
 - Isolation of SFGR species from a clinical specimen in cell culture
 - **And** molecular confirmation (e.g., PCR or sequence).

Presumptive:

Elevated SFGR IgG antibody titer $\geq 1:128$ by IFA in a sample taken within 60 days of illness onset.

Supportive:

Elevated SFGR IgG antibody titer $< 1:128$ by IFA in a sample taken within 60 days of illness onset.

Epidemiological criteria for case classification

Exposure is defined as having been in potential tick habitats within the past 14 days before onset of symptoms. Occupation and travel history should be recorded if relevant to exposure. A history of a tick bite is not required.

Case classification

Confirmed:

A clinically compatible illness in a person with confirmatory laboratory criteria and epidemiological criteria.

Probable:

A clinically compatible illness in a person with presumptive laboratory criteria and epidemiological criteria.

Suspect:

Either of the following:

- A person with confirmatory or presumptive laboratory criteria but no clinical information available
- **Or** a clinically compatible illness in a person with supportive laboratory criteria and epidemiological criteria.

Criteria to distinguish a new case from previous reports

A person previously reported as a probable or confirmed case-patient may be counted as a new case-patient when there is an episode of new clinically compatible illness with confirmatory laboratory evidence.

Comments

SFRs do not result in chronic or persistent infections. Symptoms do not last more than 30 days, even without treatment.

An IgM antibody response has been shown inaccurate in identifying acute illness and therefore insufficient to diagnose SFR. In addition, data suggest that the prevalence of IgG antibodies reactive to SFGR in asymptomatic individuals may be more common than previously assumed. The presence of these IgG antibodies may reflect past exposures rather than acute cases thereby confounding the interpretation of a single IgG antibody test result.

Sensitivity for whole blood SFGR PCR is not well defined. False negative results may also occur if the specimen is collected after doxycycline treatment is given. Therefore, dual testing with PCR and paired serology should be conducted.

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Anaplasmosis, ehrlichiosis, and SFR can cause non-specific febrile illnesses. Therefore, all three diseases should be tested for if an infection is suspected in cases with exposure in Florida. *Anaplasma*, *Ehrlichia*, and *Rickettsia* serology can cross-react, creating false positives. Confirmatory testing and epidemiologic investigation can help determine the causative agent.

Occupation and travel history should be recorded if relevant to exposure.