

## Is Rat Bite Fever Harmful and is it Important to Diagnose

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### Abstract

Rat bite fever is a respiratory disease caused by *Streptobacillus moniliformis* that is characterised by fever, rigours, and polyarthralgias. It has a ten percent mortality rate if left untreated. Unfortunately, because of its nonspecific initial appearance and difficulty in culturing its causative organism, there is a substantial chance of diagnosis delay or failure. The rising popularity of rats and other rodents as pets, along with the threat of invasive or lethal disease, necessitates a greater focus on rat bite fever as a possible diagnosis. The clinical and biological characteristics of rat bite fever and *Streptobacillus moniliformis* are discussed, as well as some identifying characteristics to aid clinicians and microbiologists in diagnosis.

### Introduction

The disease caused by a rat bite has been documented in India for over 2,300 years, but it was only recently named rat bite fever in the rest of the world. This term refers to two disease syndromes caused by *Streptobacillus moniliformis* or *Spirillum minus* that is related but not identical. *S. moniliformis* infection, also known as rat bite fever, is more prevalent in North America, while *S. minus* infection, also known as sodoku, is more common in Asia. The systemic disease Streptobacillary rat bite fever, the focus of this study, is characterised by relapsing fever, rash, migratory polyarthralgias, and a 13 percent mortality risk if left untreated. Rat bite fever has traditionally afflicted laboratory workers and the sick, and is mostly confused with the bite of a wild or laboratory rat. As rats have become more common as pets, this has changed to the point that children now account for more than half of all cases in the US, led by laboratory staff and pet store employees. In the United States, over 200 cases of rat bite fever have been reported, although this is undoubtedly an under-representation since rat bite fever is not a reportable disease. Furthermore, rat bite fever has a nonspecific appearance with a broad differential diagnosis, and is difficult to isolate and identify the causative organism, *S. moniliformis*. As a result, physicians must pay particular attention to this disorder and its causative organism due to the complexities of diagnosis and increased demographic exposure.

### Pathogenesis

No detail about the pathogenesis of *S. moniliformis* occurs due to the low incidence and mortality rate of rat bite fever when detected and handled. The host, on the other hand, seems to be capable of morphological changes not normally associated with bacterial infections. Symptoms of rat bite fever include erythrophagocytosis, hepatosplenomegaly, interstitial pneumonia, and lymph node sinus hyperplasia, according to autopsy findings. [1].

### Epidemiology

In the United States, more than 2 million animal bites occur per year, with rats accounting for around 1% of these. Historically, the average rat bite fever survivor was a boy under the age of five who lived in poverty, and children accounted for more than half of all confirmed cases in the United States. [2].

### Clinical Features

In the literature, three psychiatric syndromes have been linked to rat bite fever. The most common type of rat bite fever in the United States is caused by *S. moniliformis* infection. Sodoku is a disease

caused by *Spirillum minus* that is mostly found in Asia. Haverhill fever is caused by ingesting *S. moniliformis* by infected food. It was named after the first report of an epidemic in Haverhill, Massachusetts.

### Initial Symptoms

Rat bite fever caused by *S. moniliformis* is a systemic disease characterised by fever, rigours, and migratory polyarthralgias. The incubation time after exposure will last anywhere from 3 days to over 3 weeks, but it is usually less than 7 days. During this time, several patients experience signs that are reminiscent of an upper respiratory tract infection. When you've been bitten, it usually recovers easily, with just minor irritation and no major regional lymphadenopathy. If there is substantial induration at the bite site, another diagnosis, such as sodoku, should be considered.

### Treatment

For confirmed or strongly suspected cases of rat bite fever, penicillin is the medication of choice. The disc diffusion process typically reveals immunity to penicillins, cephalosporins, carbapenems, aztreonam, clindamycin, erythromycin, nitrofurantoin, bacitracin, tetracycline, teicoplanin, and vancomycin; intermediate resistance to tetracycline, teicoplanin, and vancomycin, aminoglycosides, fluoroquinolones, and chloramphenicol; and resistance to trimethoprim-sulfamethoxazole, polymyxin B, and nalidixic acid [3].

Rat bite fever, caused by *S. moniliformis*, is an under-recognized and under-reported illness marked by a sudden outbreak of fever, rigours, and migratory polyarthralgias, with a 10% mortality rate. Despite the fact that *S. moniliformis* is very vulnerable to penicillin, most patients face care complications owing to the nonspecific existence of the clinical characteristics, a long list of variable diagnoses, and problems with culture detection. However, given the evolving epidemiology of rodent exposure and the danger of serious, infectious disease if left unchecked, rat bite fever and *S. moniliformis* should be given a higher priority in our diagnostic thought.

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## References

1. Sens MA, Brown EW, Wilson LR, Crocker TP (1989) Fatal *Streptobacillus moniliformis* infection in a two month old infant. *Am J Clin Pathol* 91: 612-16.
2. Roughgarden JW (1965) Antimicrobial therapy of ratbite fever. *Arch Intern Med* 116: 39-53.
3. Wullenweber M (1995) *Streptobacillus moniliformis*-a zoonotic pathogen. Taxonomic considerations, host species, diagnosis, therapy, geographical distribution. *Lab Anim* 29: 1-15.