

Introduction

- Rickettsialpox is a gram-negative mite-borne urban zoonosis that is prevalent among the house mouse, *mus musculus*, and is transmitted by the house mite *Liponyssoides sanguineus*.¹
- This bacteria, named rickettsial akari, was first identified during the first outbreak of the disease which occurred in a housing complex in Queens, New York City in 1946.²
- Patients presented to local hospitals with an unknown eschar followed by fever, malaise, and myalgia.²
- Since the initial outbreak, cases have been reported both nationally and internationally, with most case reported in New York City.³



Liponyssoides sanguineus

Objectives

Rickettsialpox is known as a relatively rare disease. However, studies have concluded that this disease is arguably under-appreciated and under-recognized as a potential illness and public hazard.⁴

Objectives:

- To popularize this disease, thereby potentially diminishing the unnecessary public health hazards associated with the illness.
- Quantify the periods of heightened reporting to demonstrate that increased diagnostics comes with increased awareness of the disease.
- Propose proper control methods in the case of an outbreak.

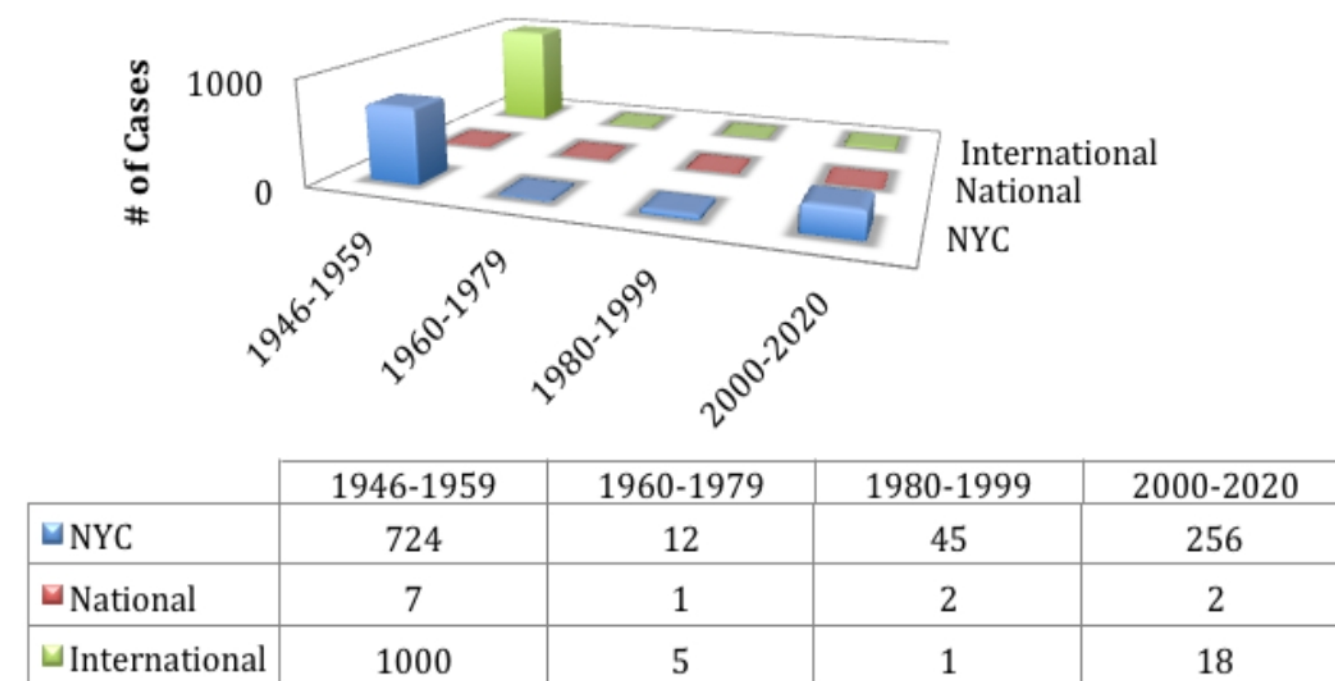
Methods

- SUNY Downstate online library resources and a MEDLINE search of pertinent scientific articles were utilized to research all aspects of the rickettsialpox disease.
- The NYC Department of Health website and EpiQuery was consulted for reporting requirements of the disease.
- A laboratory hematologist at Mount Sinai Medical Center was consulted regarding any recent cases of the disease in New York City.
- Squash Exterminating, an extermination company based in New York City, was consulted regarding general extermination practices of mice and mites.

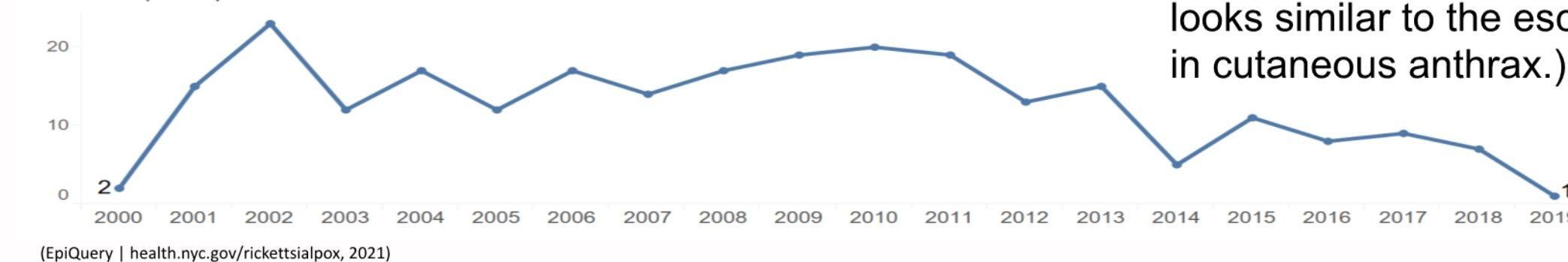
Results

Reported number of rickettsialpox cases coincides with increased awareness of the disease.

Approximate Cases of Rickettsialpox



All available years | 2000 to 2019 Rickettsialpox reported cases in NYC



1946-1959:

Newly discovered disease with outbreaks in NYC and Ukraine led to increased awareness and reporting.^{2,5}

2000-2002:

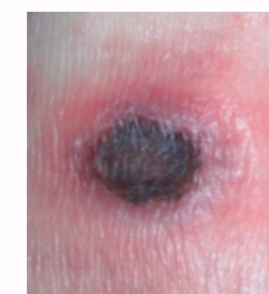
The anthrax scare of 2001 in NYC led to an increase in the number of people inspecting cutaneous eschar lesions, leading to an increase in diagnosis and reporting of cases.⁶

(The eschar of rickettsialpox looks similar to the eschar in cutaneous anthrax.)

Discussion

Clinical manifestations

- Papule 1-1.5cm which morphs into a vesicle that ruptures, leaving a necrotic looking eschar.⁷
- Fever, malaise, myalgia, nausea, vomiting, and a full-body papulovesicular rash (7-10 days after bite).⁷



*Systemic symptoms may be severe, requiring hospitalization

Diagnosis

- Gold Standard:** Acute and convalescent four-fold increase in serum IgG indirect fluorescent antibodies using spotty fever group antigens.⁸
- Immunostaining of eschar biopsy⁸
- Biopsy and PCR testing of eschar⁸

Treatment

- 5-day course of the antibiotic **Doxycycline** resolves systemic symptoms within 48 hours.⁸
- Given limited diagnostic options, treatment is based on identifying endemic geographical regions and clinical manifestations.³



Prevention

- Prevention of mouse harborages by sealing up entry points, cleaning out incinerators, and removing potential food sources.⁹
- Eradication of rodents with insecticides followed by elimination of mites via acaricides must be employed concomitantly to inhibit the mites from seeking a human host and aggravating an outbreak.

Conclusion

- Rickettsialpox continues to be an endemic disease in New York City and is recognized in other national and international geographical regions.
- Although this disease is still relatively rare and underreported, inaccurate diagnoses can lead to unnecessary hospitalizations, superfluous diagnostic tests, and inaccurate treatment protocols, resulting in public health consequences in social and healthcare domains.
- Analysis of literature suggests that increased awareness leads to increased diagnosis and reporting, thereby limiting the morbidity of the disease
- The ease of treatment and prevention of significant outbreaks obligates clinicians, public health professionals, and laymen to familiarize themselves with the disease.
- Heightened public recognition and interest is needed before the actual public health significance of this disease is understood and cases of rickettsialpox are properly quantified.

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