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# Closing the Brief Case: A Fishy Tale Prevents Digital Doom following Polly's Peck—the Importance of Pets in a Comprehensive Medical History

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## ANSWERS TO SELF-ASSESSMENT QUESTIONS

1. Which of the following organisms is correctly paired with a domestic animal with which it is associated?

   A. *Histoplasma capsulatum* and dogs
   B. *Mycobacterium marinum* and parrots
   C. *Streptobacillus moniliformis* and rats
   D. Hanta virus and reptiles

   Answer: C. *Streptobacillus moniliformis* and rats. *Streptobacillus moniliformis* is caused by rats and leads to rat bite fever (an acute febrile illness often associated with a maculopapular rash). The other answers are incorrect: *Mycobacterium marinum* infection is not associated with parrot bites but rather contact with contaminated water, most commonly fish tank water; *Pasteurella* species are the most common aerobic organism isolated from dog bites whereas *Histoplasma capsulatum* is a fungus transmitted most commonly from the guano of cave-dwelling bats; and Hanta virus is associated with contact with urine, saliva, or feces of rodents including the Deer Mouse whereas *Salmonella arizonae* is associated with reptiles (commonly snakes) found in southern states of the USA, including Arizona.

2. Which of the following is the most common clinical presentation of *Mycobacterium marinum* infection in humans?

   A. Pulmonary disease
   B. Disseminated disease
   C. Gastrointestinal disease
   D. Skin and soft tissue disease

   Answer: D. Skin and soft tissue disease. *M. marinum* infection most commonly presents with skin and soft tissue infections in a hand. This is predominantly due to exposure of skin to contaminated water, especially fish tanks. Often, there will be a clinical history of a skin breach prior to exposure, which helps the entry of mycobacteria into soft tissues. As the disease progresses, a sporotrichoid rash may develop (erythematous fleshy nodules spread proximally from the point of infection along the lymphatic system). *M. marinum* infection rarely manifests itself without skin and soft tissue infection but can be disseminated in immunocompromised hosts (especially people with advanced HIV disease and immunosuppression).

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3. Which of the following regimens is a recognized management option for treatment of *Mycobacterium marinum* skin and soft tissue infection?

   A. Rifampin or clarithromycin and ethambutol
   B. Pyrazinamide
   C. Isoniazid and streptomycin
   D. Trimethoprim

   Answer: A. Rifampin or clarithromycin and ethambutol. Although evidence for the optimal treatment regimen for *M. marinum* is limited to cohort studies, recommended options include a combination of rifampin or a macrolide with ethambutol. Clinicians must consider the drug-drug interactions of rifampin and macrolides and also ensure that color vision and visual acuity are checked prior and during use of ethambutol (which is uncommonly associated with optic neuropathy). Treatment is usually continued for approximately 3 to 4 months or until at least 1 to 2 months following symptom resolution. Second-line treatment regimens include sulfamethoxazole and trimethoprim, but treatment with trimethoprim alone is not recommended. Isoniazid, streptomycin, and pyrazinamide may all be of use in the treatment of sensitive *Mycobacterium tuberculosis* but are not a viable treatment option for *M. marinum*, which is inherently resistant to all three antimicrobials.

**TAKE-HOME POINTS**

- Asking about pet ownership (including multiple pets) is an important part of a comprehensive medical history.
- Bites and scratches from domestic animals, especially cats and dogs, are not an uncommon presentation to the emergency department.
- Clinicians should remain vigilant to potential zoonoses caused by domestic animals in order to minimize harm in those exposed.
- *M. marinum* skin and soft tissue infection is most commonly associated with exposure to fish tank water.
- *M. marinum* has an intermediate growth rate with a lower optimum growth temperature (28 to 30°C) than other mycobacteria.
- Routine antimicrobial susceptibility testing of *M. marinum* is not necessary unless the patient experiences treatment failure or has continued positive cultures after appropriate treatment.