CAT-TRANSMITTED SPOROTRICHOSIS: CAN WE PREVENT IT?

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EVIL IN DISGUISE?
Introduction

- Sporotrichosis is a **deep fungal infection of the skin** caused by the fungus *Sporothrix schenckii*.
- Schenck first described the fungus in the United States in 1896.
- This infection was first noted in the United States in 1898.
- *S. schenkii* is present in **soil**, hay, sphagnum moss, and decaying vegetation.
- Classically, infection is caused by **traumatic inoculation of soil**, plants and organic matter contaminated with the fungus.
- Compared to other dimorphic fungi, *Sporothrix schenkii* is unusual in that **zoonotic transmission** occurs, particularly from **felines**.
Sporothrix schenkii

- *Sporothrix schenkii* is a dimorphic fungus.
- Dimorphic fungi exist as molds in the environment.
- Once in the host body, the organisms convert to the yeast phase.
- Thus, dimorphic fungi are typically infectious when in the mold form.
- *Sporothrix schenkii* is unusual amongst the dimorphic fungi in that zoonotic transmission of both the mold and the yeast phases occurs.
Epidemiology

- Sporotrichosis occurs globally, and more frequently in tropical and subtropical regions.
- The global incidence is unknown.
- In the United States, sporotrichosis is considered to be endemic to the Mississippi and Missouri River valleys.
- Epidemics have been described in western Australia, Brazil, and South Africa.
- To date, the largest epidemic of sporotrichosis occurred in Witwatersrand, South Africa, in the 1940s when about 3000 miners were infected from wood timbers in the mines.
Feline-transmitted Sporotrichosis

- Sporotrichosis has classically been described as a disease of occupational risk, affecting farmers, gardeners, and agricultural workers.
- However, recent epidemics have demonstrated the potential for zoonotic transmission of the disease, and have nearly always involved cats as the main source of infection.
Sporotrichosis in Cats

- Singer & Muncie reported the first case of naturally acquired feline sporotrichosis in 1952.¹
- Until the 1980s, feline sporotrichosis was rare.
- Since the 1980s, the role of felines in the transmission of this mycosis to humans has gained attention among animal owners, veterinarians and caretakers.
- **Sporotrichosis in cats tends to disseminate**, leading to the death of the animal.
- The most common presentation is an ulcerative skin lesion on the head and limbs.
- **Outdoor cats** are at highest risk for contracting sporotrichosis via penetrating injury by foreign body or by fighting other cats.

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¹ Singer J, Muncie J. Sporotrichosis. Etiologic considerations and report of additional cases from New York. New York State Journal of Medicine 1952
Epidemiology of Feline-related Sporotrichosis

- In the United States, sporotrichosis is an uncommon feline disease.
- Since the 1990’s, the epidemiological profile of sporotrichosis has changed from a low-prevalence disease to a major health problem that affects people living in neglected urban areas.
- In 2005, Brazilian researchers initially reported on the first known epidemic of cat-associated sporotrichosis.¹
- In the metropolitan area of Rio de Janeiro, sporotrichosis is estimated to account for more than 3,800 feline, 4,000 human, and 120 canine cases in the period from 1998 to 2012².

Local sporotrichosis cases

- The precise local incidence of sporotrichosis is unknown as this disease is not notifiable.
- A 6 year review (2005 to 2010) of sporotrichosis cases at Hospital Kuala Lumpur showed a total of 19 cases reported, with 7 of them recalling a history of cat scratch/bite.
- A 4 year review (Jan 2012 to July 2015) of sporotrichosis cases in Hospital Sultanah Aminah Johor Bahru revealed a total of 25 cases with an alarming number of 19 cases reporting a positive history of contact with cat.
Number of sporotrichosis cases at Dermatology Clinic HSAJB from 2012 to 2015
Mode of Transmission

- Humans can be contaminated by cat's scratch or bite and even by contact with contaminated materials and liquids.
- The high level of contagiousness of cats with sporotrichosis is thought to arise from the typically high numbers of organisms present in the lesions.
- Schubach et al. (2005) evaluated 148 cats with sporotrichosis for the presence of the *S. schenckii*: the fungus was isolated from 100% of the cutaneous lesions, 47% of nasal cavity swabs, 33% of oral cavity swabs and 15% of nail fragment pools.
- Possibly due to the large number of fungal elements typical in felines tissues, the transmission to man can occur even in the absence of a history of trauma.
Is there a risk of transmission from healthy cats?

- Souza et al. (2006) isolated *Sporothrix schenckii* in the nails of 7 out of 24 healthy cats living together with cats showing clinical sporotrichosis.
- A subsequent Peruvian study of 84 cats showed a 2.38% prevalence of *Sporothrix schenckii* isolated from the nails of apparently healthy cats.
- These results demonstrates the importance of asymptomatic carriage in cats in the transmission of the sporotrichosis.
Risk Factors for Cat-Related Sporotrichosis

- **Veterinarians** and **cat owners** are at increased risk of contracting the disease because of the high level of transmissibility from felines to humans as compared with other animal species.
- The **increased proximity between cats and humans** favors the emergence of sporotrichosis.
- A case-control study in Peru identified **cat ownership** as a risk factor for lymphocutaneous sporotrichosis.

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Clinical Features

- **Incubation period is 1 week to 2 months** in humans, with most cases manifesting within the **first three weeks** of exposure.
- Acquired human sporotrichosis from a sick cat exhibits no differences from ordinary human sporotrichosis.
- The clinical forms of sporotrichosis are categorized as localized (or fixed) cutaneous, lymphocutaneous, disseminated (systemic), and pulmonary.
- The **lymphocutaneous form** is the most common clinical presentation, with a **primary ulcerative lesion** and **subcutaneous nodules extending in a linear pattern along the lymphatic channels** (sporotrichoid distribution).
- Disseminated disease may arise from cutaneous inoculation or hematogenous spread from the lungs and most often occurs in immunocompromised patients.
Diagnosis

- **Definitive diagnosis**: isolation of *S. schenckii* in a specimen culture from sputum, pus, subcutaneous tissue biopsy, synovial fluid, synovial biopsy, bone drainage or biopsy, and cerebrospinal fluid (CSF).

- **Tissue biopsy**: granulomatous inflammation with occasional asteroid bodies. Occasionally, *S. schenckii* (cigar-shaped yeast) can be visualized.
Treatment

- **Itraconazole** is the drug of choice for most types of sporotrichosis.
- Dose: **200 mg bd/OD** until 2-4 weeks after all lesions have resolved, usually for a total of **3-6 months**.
- Liposomal **amphotericin B** 3-5 mg/kg/day is used for pulmonary, CNS and disseminated sporotrichosis.
- Pregnancy: **cryotherapy** or amphotericin B for more severe disease
CAN WE PREVENT CAT-TRANSMITTED SPOROTRICHOSIS?

Prevention

Prescriptions

Prevention is better than cure
Current situation...

- The **increasing number of zoonotic transmission** of sporotrichosis locally is alarming.
- Environmental factors and the increase of the feline population in our region may have favoured this situation, although this assumption cannot be confirmed due to the **lack of environmental mycological and animal census studies**.
Possible causative factors...

- Lack of public veterinary services
- Lack of knowledge about the environmental sources of infection and transmission mechanisms
- Lack of public health actions interrupting the chain of animal transmission
- Growing number of feline population
- Abandonment of cats
- Absence of a feline sporotrichosis control program
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Action plan by individual..

- Responsible ownership of cats.
- Regular cleaning of dwellings.
- Proper health care for the cats.
- Confinement of cats inside the home.
- Cremation of dead cats.
Action plan by authorities...

- Treat or eliminate infected stray cats.
- Control of feline population via animal sterilization programmes.
- Limiting the number of cats per household.
- Education of the public regarding cat-transmitted sporotrichosis.
- More accessible public veterinary services.
- Notification of cat-transmitted sporotrichosis.
- Campaigns to avoid abandonment of diseased animals by their owners.
- Imposing penalties such as fining irresponsible owners who abandon their cats.
CAT-TRANSMITTED
SPOROTRICHOSIS:
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YES WE CAN!
THANK YOU

U MUST LEAVE!

PLS, GO ON WITHOUT ME