

# Sporotrichosis

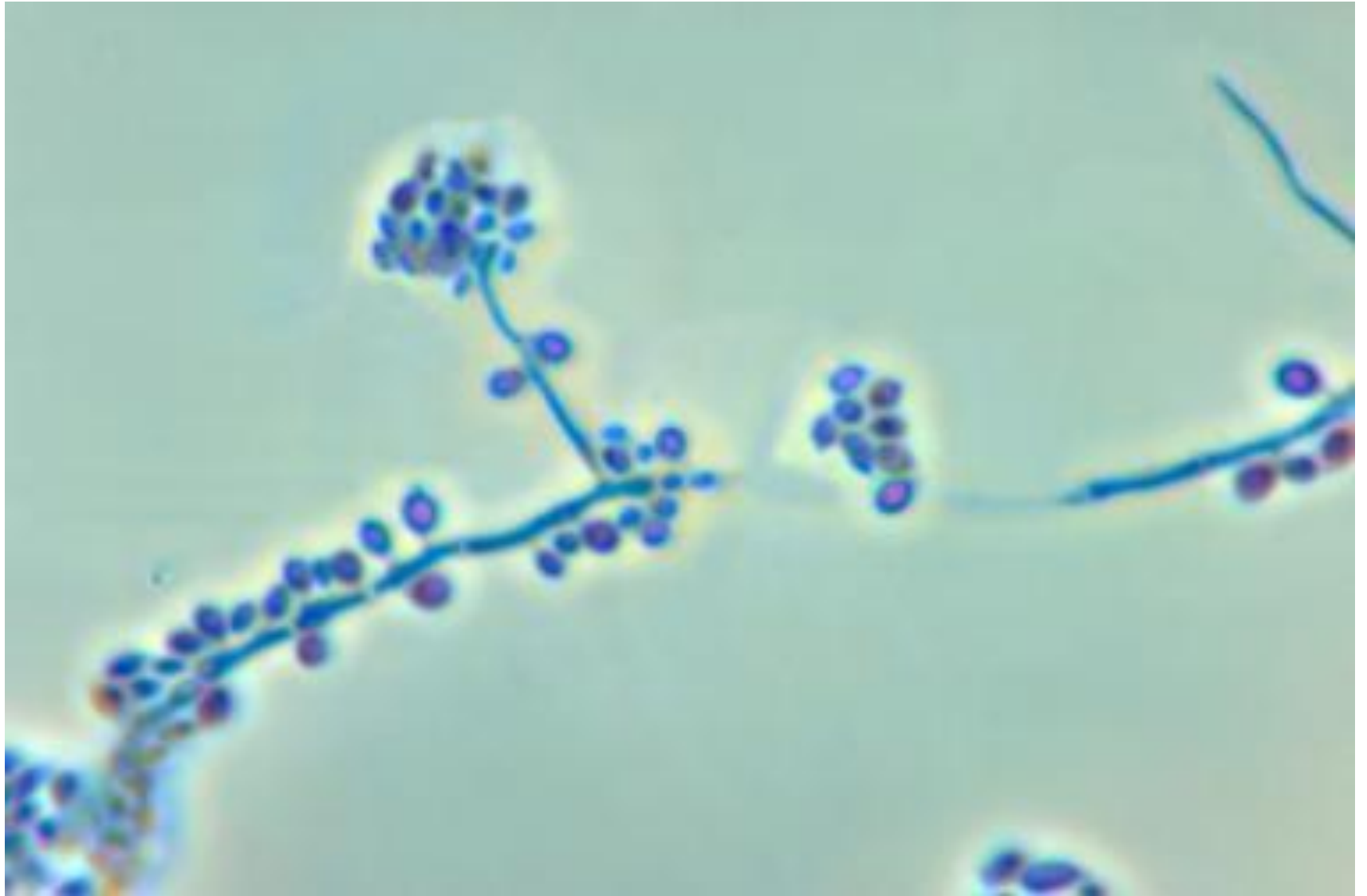
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- Sporotrichosis is a chronic pyogranulomatous infection caused by the thermally dimorphic fungus *Sporothrix schenckii*.
- Infection is usually limited to the skin and subcutaneous tissues, but can involve virtually any organ in its disseminated form.
- Less common localized forms of sporotrichosis include arthritis, osteomyelitis, meningitis, chronic pneumonitis, and laryngeal and ocular disease.

# ORGANISM

- *Sporothrix schenckii* demonstrates thermal dimorphism, growing as a mould at room temperature (25–28°C), and as a yeast at 35–37°C.
- There is evidence to suggest that isolates from fixed dermatologic lesions are less tolerant to higher temperatures, growing well at 35°C, but either failing to grow or growing only very slowly at 37°C.
- In contrast, isolates from lung, synovial tissue, or lymphocutaneous lesions and other deep tissues usually grow well at body temperature.

- Colonies grow within a few days to 2 weeks when incubated on Sabouraud's dextrose agar at 25–28°C. The initial colony is moist and whitish.
- Within 10–14 days, most colonies develop a black or brown pigmentation around the periphery of the colony.
- The identification of *S. schenckii* is based on its colonial and microscopic morphology in the mould phase and its conversion to yeast phase at 35–37°C.



# PATHOGENESIS

- The organism produces melanin, which is a virulence factor for other yeasts, including *Cryptococcus neoformans*.
- The organism also produces extracellular proteins, which could possibly play a role in virulence. In addition, *S. schenckii* contains the unique substance L-rhamnose, which complexes with other glycoproteins to form rhamnomannans, which are not found in other fungal cell walls.

- Conditions of growth may also play an important role in virulence.
- In experimental models, conidia grown for 4 days demonstrate more virulence than conidia grown for 10–12 days.
- Thermotolerance is also probably an important virulence factor among selected strains of *S. schenckii* causing visceral or lymphonodular disease, as these organisms tend to multiply at 37°C, whereas organisms that are less thermotolerant tend to be less invasive and cause chronic fixed cutaneous lesions.

# CLINICAL MANIFESTATIONS

## Lymphocutaneous:

- Lymphocutaneous lesions are the clinical hallmark of sporotrichosis.
- Disease typically arises at a site of minor trauma and may begin as a erythematous papule that enlarges over days or weeks. The lesion may become a fixed subcutaneous nodule or plaque, or may develop into a chronic nonhealing ulcerative lesion (Figs. 1 and 2).





- These lesions are usually painless, and systemic symptoms of fever, malaise, weight loss, and chills are usually absent.
- Classically, a “sporotrichoid” eruption of similar-appearing subcutaneous nodules develops along the lymphatic system of the involved anatomic site (Figs. 3)



# Osteoarticular

- Osteoarticular sporotrichosis usually manifests as a slowly progressive, indolent process involving a major peripheral joint, typically the knee, elbow, ankle, or wrist.
- Arthritis has also been reported to follow a penetrating joint injury. Frank bony involvement is a frequent concomitant of sporotrichoid arthritis, usually at a contiguous periarticular site.
- Patients with osteoarticular sporotrichosis often present with localized pain and swelling without significant fever or other systemic symptoms.

- *Sporothrix schenckii* is also a cause of granulomatous tenosynovitis, usually presenting in the wrist with painless swelling and limited range of motion.
- In severe cases, neurologic or musculoskeletal symptoms due to entrapment of the median nerve or tendon rupture can be seen.
- Surgical intervention is necessary for decompression, debridement, and repair of damaged tendons.

## Pulmonary

- Pulmonary sporotrichosis is a rare disorder. In the largest review of this topic, Pluss and Opal reviewed 51 cases, of which the vast majority were middle-aged white males presenting with cough, low-grade fever, weight loss, and upper lobe cavitory disease.
- Preexisting lung disease was common.
- Hemoptysis occurred in fewer than 20%, but could be significant if present.

- Chest roentgenographic findings associated with pulmonary sporotrichosis are nonspecific.
- Cavitory lung lesions, which are common with pulmonary sporotrichosis, are usually single and often involve the upper lobes.
- There may be extensive surrounding fibrosis, which is indistinguishable from the fibrosis associated with other causes of chronic necrotizing pneumonia .

# DIAGNOSIS

- The clinical diagnosis of lymphocutaneous sporotrichosis can be misleading because sporotrichosis is clinically indistinguishable from other common causes of nodular lymphangitis.
- Lymphonodular sporotrichosis may appear identical to cutaneous nocardiosis, mycobacterial infections (especially due to *Mycobacterium marinum* and *Mycobacterium chelonae*), tularemia resulting from direct cutaneous inoculation, and cutaneous leishmaniasis.

- The diagnosis of sporotrichosis is confirmed by a positive culture for *S. schenckii* from an involved site (tissue or body fluid).
- The organism is not considered a colonizer; thus, isolation from a clinical specimen is virtually always considered diagnostic.
- Optimally, clinical specimens for culture should be collected from purulent cutaneous lesions.
- Alternatively, a skin biopsy from a suspicious area is usually sufficient.

- Patients with laryngeal sporotrichosis usually require a biopsy of involved tissue for a definitive diagnosis.
- For patients with osteoarticular disease, the organism is readily recovered from synovial fluid or involved bone or synovial tissue. Isolation of *S. schenckii* from blood and other body fluids, including cerebrospinal fluid, is unusual even among patients with disseminated disease.
- The fungal cell may have a very pleomorphic appearance ranging from spherical to elongated.
- The typical ovoid cigar-shaped yeast forms, which are most suggestive of the diagnosis, are uncommonly seen.
- In many countries, a skin test (sporotrichin test) is available to detect exposure to *S. schenckii*.



# TREATMENT

1. **Supersaturated Solution of Potassium Iodide (SSKI):** for cutaneous sporotrichosis.
2. **Hyperthermia:** for lymphocutaneous sporotrichosis.
3. **Azoles:** for lymphocutaneous sporotrichosis.
4. **Terbinafine:** for lymphocutaneous sporotrichosis.
5. **Amphotericin B:** for people with disseminated or life-threatening sporotrichosis.
6. **Surgery:**
  - Among patients with pulmonary sporotrichosis involving a well-defined anatomic area and no more than one lobe.
  - in the debridement of involved synovial spaces, particularly for synovitis involving the wrist.