

Fusarium: An unexpected pathogen

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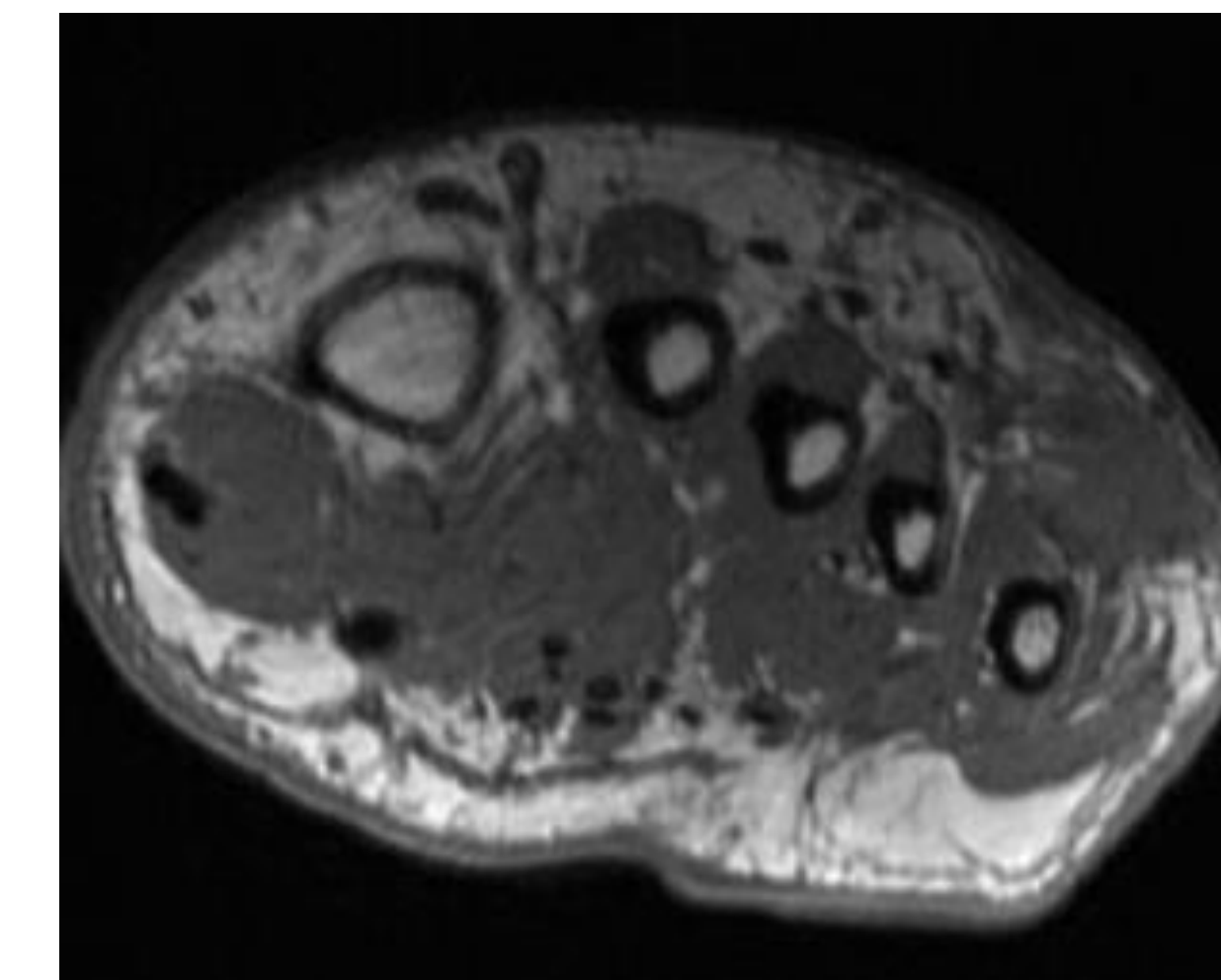
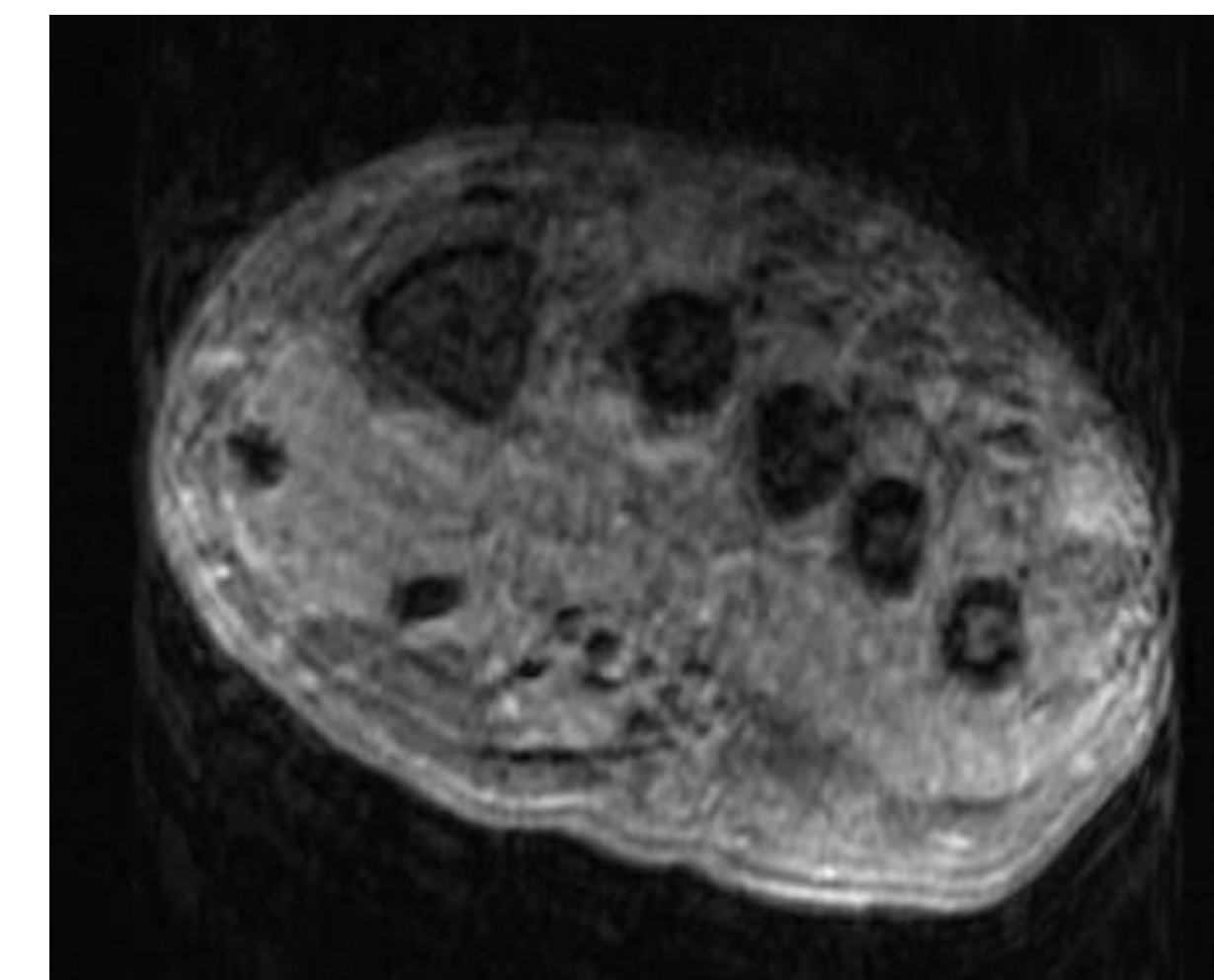
Background

- Fusarium infects plants, animals, and humans and is responsible for significant economic losses in agriculture worldwide.
- Causes broad spectrum of infections in humans including superficial infections, locally invasive and disseminated infections.
- Possesses several virulence factors including mycotoxins, which suppress humoral and cellular immunity and can also cause allergic reactions

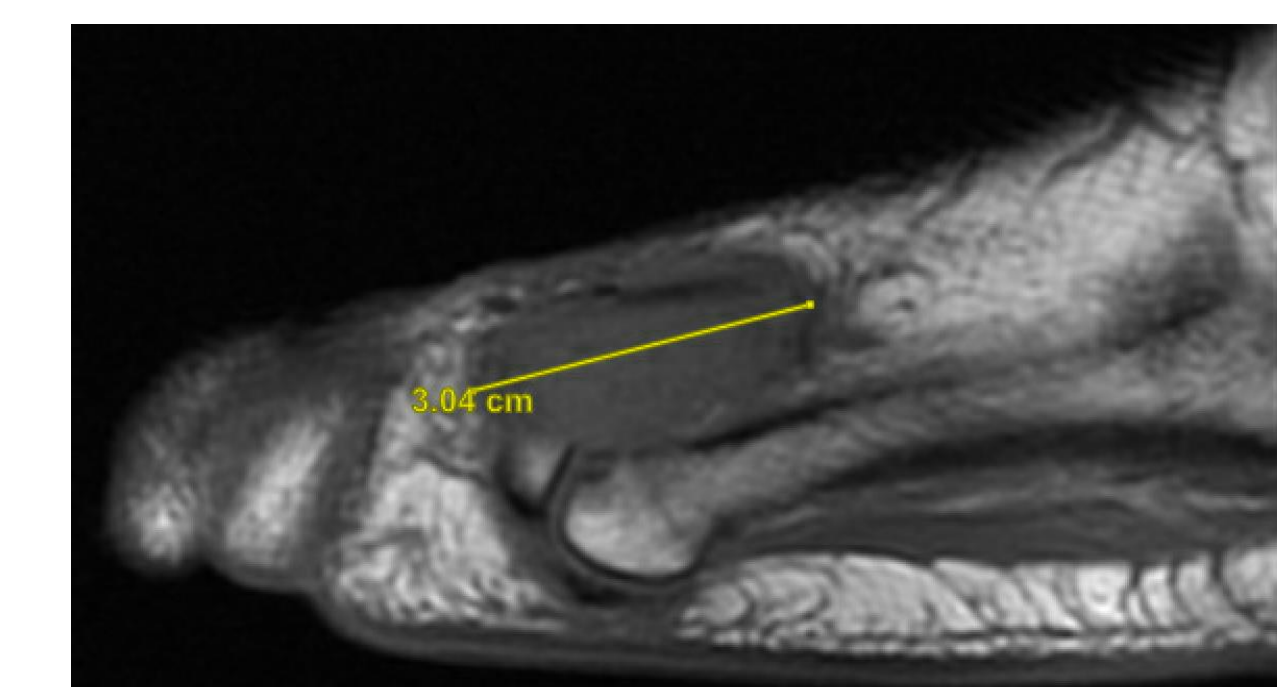
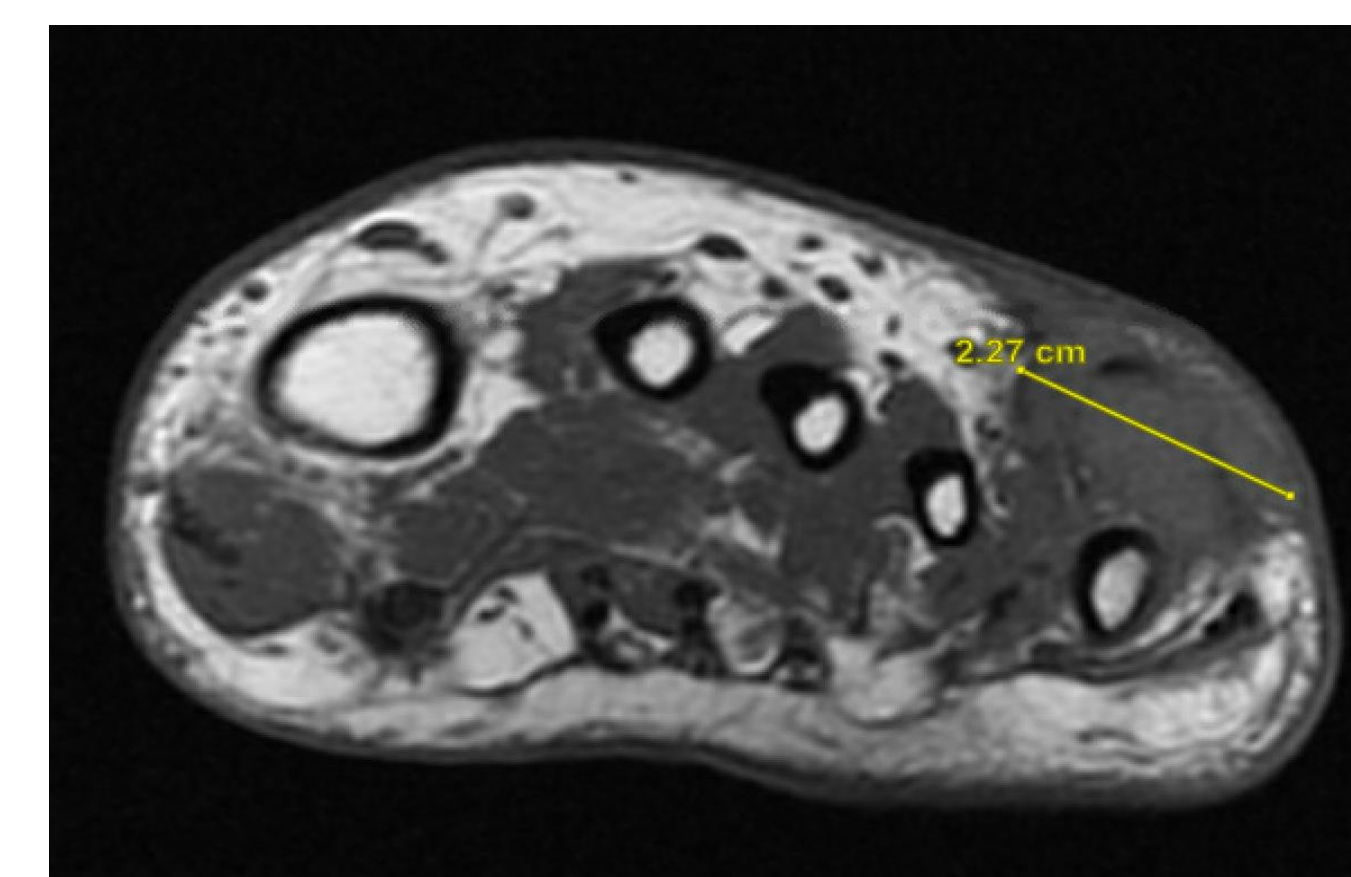
Case Presentation

- 48-year-old man referred to clinic following biopsy of left foot soft tissue mass.
- Mass developed after he sustained minimally displaced fracture at base of second toe proximal phalanx from work accident.
- Patient was using a "cherry picker" moving pallets, tripped forward fracturing his toe.
- He was using tennis shoes and denied any open wounds or bleeding.
- Treated nonoperatively with hard-sole shoe immobilization; however, patient persisted with pain of left foot.
- A repeat MRI showed soft tissue masses at the lateral dorsum of the foot and near great toe which patient underwent excisional biopsy left fifth toe mass.
- Only aerobic tissue cultures were sent, which were negative.
- Surgical pathology showed micro abscesses with septate fungi. Beta D glucan was elevated 236pg/mL.
- Patient was being treated with voriconazole which initially improved patient's pain.
- A month later, patient returns to clinic with worsening pain.
- Repeat MRI showed local recurrence of the previously diagnosed fungal abscess.
- Orthopedics re-evaluated, excisional biopsy was performed, and cultures sent.
- Fungal cultures grew mold after 1 week.
- Mold was later identified as *Fusarium*, sent for susceptibility testing which turned to be pan drug resistant.
- Voriconazole was discontinued.
- His pain improved after surgery and fungal markers normalized.
- Patient is being monitored off therapy as current surgical treatment would consist of amputation.

Imaging



Soft tissue mass surrounding abductor hallucis longus tendon extending to dorsal aspect of distal hallux metatarsal and into hallux MTPJ.



Repeat MRI showing apparent local recurrence of the previously diagnosed fungal abscess about fifth MTP joint

Discussion

- *Fusarium* spp. widely distributed in soil, subterranean and aerial plant parts and debris, and other organic matter
- Over 300 species identified with *F. solani* complex being most common and virulent, causing 40-60% of infections,
- Blood cultures frequently positive in fusariosis, 40% of patients with invasive fusariosis
- Frequently used antifungal agents include natamycin, amphotericin B, voriconazole, and posaconazole
- Depending on clinical case, amphotericin B and voriconazole are drugs of choice
- Newer antifungals are undergoing studies

References

- Bellanger, AP., Rocchi, S., Berceanu, A. et al. Positive quantitative PCR detecting *Fusarium solani* in a case of mixed invasive fungal disease due to *Mucorales* and *Fusarium solani*. *Bone Marrow Transplant* 55, 873–876 (2020). <https://doi.org/10.1038/s41409-020-0819-3>
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