A Killer Darling

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• 41F homemaker
• Transferred to RPAH from Centre Hospitalier Territorial Gaston-Bourret, Noumea
  – 1/12 admission with febrile illness and respiratory symptoms
  – Rapid respiratory deterioration
  – Consideration for ECMO
• B/G
  – Living related renal transplant (interstitial nephritis/dysplastic L kidney)
    • HBV sAb pos, sAg neg, cAg pos
    • CMV IgG neg
    • Immunosuppression: tacrolimus 5mg, prednisolone 10mg
• Centre Hospitalier Territorial Gaston-Bourret
  – Bronchoscopy x2
  – Bone marrow biopsy
  – CMV sero-conversion since transplant
  – Unspecified NTM in urine isolated
Image courtesy of Dr Caroline Dix, haematology AT RPAH
DDx

• Histoplasmosis
• Coccidioidomycosis
• Paracoccidioidomycosis
• Blastomycosis
• Talaromycosis
• Cryptococcosis
• Candidiasis
Histoplasmosis

- Dimorphic fungus
- Samuel Taylor Darling, 1905
- *H. capsulatum* var. *capsulatum*, *H. capsulatum* var. *duboisii* (Africa)
- Soil (enriched with bird or bat guano)
- Asymptomatic vs. pulmonary vs. cutaneous vs. disseminated disease (immunocompromised)
- Well-described through Asia-Pacific region

Source: https://www.cdc.gov/fungal/diseases/histoplasmosis/index.html
**H. capsulatum var. capsulatum**

- Sputum, BAL, blood, urine, bone marrow, CSF
- Microscopy
  - Granulomas
  - GMS or PAS stains
  - Ovoid yeasts (2 - 4 µm)
- Culture
  - Gold standard
  - Up to 6 – 8 weeks
  - Mycelial form tuberculate macroconidia (7 - 15 µm) and smooth-walled microconidia (2 - 5 µm)
  - Sequencing, PCR, DNA probe

Source: https://mycology.adelaide.edu.au/descriptions/dimorphic-pathogens/
H. capsulatum var. capsulatum

- **Serology**
  - Immunodiffusion (H and M bands)
    - Sens 80%
    - Spec 70 – 100%
  - Complement fixation
    - Sens 95%
    - Spec 70 – 80%
  - Cross-reactivity
- **Direct antigen**
  - EIA, polysaccharide antigen (HPA)
  - Urine, serum, CSF, BAL
  - Sens 30% up to 95%
  - Spec 98%
  - Cross-reactivity
- **PCR?**

Safety

**Handling**
- Risk Group 3 organism
- PC3 laboratory
- Class II (or above) BSC

**Cleaning**
- 1% sodium hypochlorite
- Hydrogen peroxide

**Risk assessment**
- Exposure
- Predisposing factors
  - Solid organ transplant
  - Haematologic malignancy
  - AIDS
  - Immunosuppression (TNF-α)

**Management**
- Serology
- Monitoring
- Post-exposure prophylaxis
  - Itraconazole
Summary

DISSEMINATED HISTOPLASMOSIS IN AN IMMUNOCOMPROMISED HOST

DIAGNOSIS – ISSUES

SAFETY ASPECTS
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*Talaromyces marneffii*
*Coccidiodes immitis*
*Histoplasma capsulatum*
*Burkholderia pseudomallei*
*Candida auris*