Primary disseminated fusarial infection

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Summary: Among the fungal pathogens the species *Fusarium solani* causing systemic infection is very rare and generally causes systemic infection only in an immuno-compromised host. We report a systemic infection caused by *F. solani* in a non-immunocompromised adult male, to our knowledge the first such case report.

Introduction

Fusarial infection in man can result in local, focally invasive and disseminated diseases.¹ Local diseases such as keratitis,² onychomycosis³ and skin infections⁴ can occur in a normal person where there is a break in surface barriers.

Locally invasive diseases such as endophthalmitis,^{5–9} osteomyelitis,^{10,11} arthritis,¹² peritonitis¹³ and brain abscess¹⁴ occur in immunocompromised hosts or during invasive surgical procedures or trauma. Disseminated infection occurs mostly in the immunocompromised host, especially in haematological malignancy^{1,15,16} and occasionally in severe burns.¹⁷

To our knowledge this is the first published case report of disseminated fusarial infection involving the liver and lung in a non-immunocompromised adult male who presented with obstructive jaundice.

Case report

A 38 year old male farmer was admitted with increasing obstructive jaundice for 8 months. Examination showed an afebrile deeply icteric man. The liver was palpable and firm with a smooth surface 4 cm below the costal margin.

Investigations showed haemoglobin 15.5 g/dl, total leucocyte count $14.1 \times 10^9/l$ with a neutrophil leucocytosis. Serum bilirubin 256 $\mu\text{mol/l}$, aspartate aminotransferase 38 IU/l and alkaline phosphatase 184 IU/l, protein 65 g/l, albumin 32 g/l. Blood urea and glucose were normal. The chest X-ray showed a possible opacity at the left apex and the sputum grew *F. solani*.

Laparotomy, done under general anaesthesia, revealed nodules and pus pockets over the surface of the liver. The gall bladder, bile duct, pancreas and other organs were normal. The pus pockets were biopsied and sent for culture study also. After a course of ampicillin, the jaundice decreased, although 18 months later he was still mildly jaundiced.

Liver biopsy (Figure 1) showed focal haemorrhagic necrosis and a large number of fungal hyphae both on the surface and within its substance. The morphological features of the fungus were suggestive of aspergillosis.

Sputum and liver tissue were cultured on Sabouraud's dextrose agar with chloramphenicol and actidione and incubated at 37°C and room temperature. Slide culture and lactophenol mount of the fungal colonies of both specimens showed hyaline septate hyphae with sickle shape macroconidia and many unicellular microconidic chlamydospores were also seen (Figure 2). Based on these morphological findings the fungus was identified as *Fusarium solani*.¹⁸ The stool and blood culture were negative.

Figure 1 Liver biopsy showing necrosis with fungal hyphae (H & E $\times 400$).

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Figure 2 Culture showing hyaline septate hyphae, sickle shaped macroconidia and unicellular microconidic chlamydospores ($\times 400$).

Discussion

Fusarium species are very common soil organisms and plant pathogens.¹⁹ Disseminated infection (2 or more non-contiguous sites involved) occurs mostly in the immunocompromised host especially with haematological malignancy,^{1,15,16} and occasionally in severe burns.¹⁷ Our case in a 35 year old male with no underlying malignancy or other illness giving lowered immunity, is to our knowledge the first report of primary disseminated fusarial infection.

References

- Richardson, S.E., Bannatyne, R.M., Summerbell, R.C., Milliken, J., Gold, R. & Weitzman, S.S. Disseminated fusarial infection in the immunocompromised host. *Rev Infect Dis* 1988, **10**: 1171–1181.
- Zapater, R.C. & Arrechea, A. Mycotic keratitis by *Fusarium*; a review and report of two cases. *Ophthalmologia* 1975, **170**: 1–12.
- Disalvo, A.F. & Fickling, A.M. A case of non-dermatophytic toe onychomycosis caused by *F. oxysporum*. *Arch Dermatol* 1980, **116**: 699–700.
- Benjamin, G.P., Callaway, J.L. & Conant, N.F. Facial granuloma associated with fusarium infection. *Arch Dermatol* 1970, **101**: 598–600.
- Guss, R.B., Koenig, S., Dela Pene, W., Monx, M. & Kaufman, H.E. Endophthalmitis after penetrating keratoplasty. *Am J Ophthalmol* 1983, **95**: 651–658.
- Liberman, T.W., Ferry, A.P. & Bottone, E.J. *Fusarium solani* endophthalmitis without primary corneal involvement. *Am J Ophthalmol* 1979, **88**: 764–767.
- Mohr, J.A., Nichols, N.B., Jones, J.H., Cherry, P. & Shaver, R.P. Fungal endophthalmitis. *South Med J* 1973, **66**: 685–688.
- Forster, R.K., Zachary, I.G., Cottingham, A.J. & Norton, E.W.D. Further observations on the diagnosis, course and treatment of endophthalmitis. *Am J Ophthalmol* 1976, **81**: 52–56.
- Rowsey, J.J., Acers, T.E., Smith, D.L., Mohr, J.A., Newson, D.L. & Rodriguez, J. *Fusarium oxysporum* endophthalmitis. *Arch Ophthalmol* 1979, **97**: 103–105.
- Page, J.C., Friedlander, G. & Dockery, G.L. Post-operative fusarium osteomyelitis. *J Foot Surg* 1982, **21**: 174–176.
- Bourguignon, R.L., Walsh, A.F., Flynn, J.C., Baro, C.B. & Spinos, E. *Fusarium* species osteomyelitis. *J Bone Joint Surg* 1976, **58A**: 722–723.
- Jackle, C., Leek, J.C., Olson, D.A. & Robbins, D.L. Septic arthritis due to *Fusarium solani*. *J Rheumatol* 1983, **10**: 151–153.
- Kerr, C.M., Perfect, J.R., Jorgensen, J.H. *et al.* Fungal peritonitis in patients on continuous ambulatory peritoneal dialysis. *Ann Intern Med* 1983, **99**: 334–337.
- Steinberg, G.K., Britt, R.H., Enzmann, D.R., Finlay, J.L. & Arvin, A.M. *Fusarium* brain abscess. *J Neurosurg* 1983, **56**: 598–601.
- Cho, C.T., Vats, T.S., Lowman, J.T., Brandsberg, J.W. & Tosh, E.E. *Fusarium solani* infection during treatment of acute leukemia. *J Paediat* 1973, **83**: 1028–1031.
- Anaisie, E., Kantarjian, H., Jones, P. *et al.* *Fusarium* – A newly recognised fungal pathogen in immunosuppressed patients. *Cancer* 1986, **57**: 2141–2145.
- Wheeler, M.S., McGinnis, M.R., Schell, W.A. & Walker, D.H. *Fusarium* infection in burned patients. *Am J Clin Pathol* 1981, **75**: 304–311.
- Rippon, J.W. *Fusarium*. In: Warsicwicz, M. (ed.) *Medical Mycology – The Pathogenic Fungi and the Pathogenic Actinomycetes*, 3rd ed. W.B. Saunders Company, Philadelphia, 1988, p. 757.
- Rippon, J.W. *Fusarium*. In: Warsicwicz, M. (ed.) *Medical Mycology – The Pathogenic Fungi and the Pathogenic Actinomycetes*, 3rd ed. W.B. Saunders Company, Philadelphia, 1988, pp. 732–735.
- Chousm, G.L. & Pore, R.S. Fusariosis, myasthenic syndrome and aplastic anemia. *Neurology* 1975, **25**: 922–926.