SPIROTHRIX SCHENCHII

- It is the causative agent of sporotrichosis
(a chronic, pyogenic, granulomatous infection of skin)
- It is a dimorphic fungus found in soil & on plant materials.
- Dimorphism: two phases, a mould phase at 25-30C and the yeast phase at 37C.

Epidemiology

- Sporotrichosis can be detected in most humid and worm countries.
- ***Spirothrix*** schenchii may be introduced through wounds due to wood splinter or minor trauma.
- Gardiners and florists are often exposed for infection with ***S. schenchii***

Clinical Diagnosis

- Spirotrichosis usually appear as a nodular ulcerating disease of the skin and subcutaneous tissues.
- Lesion starts on the hand and then extend up to the arm.
- Primary lesion may remain localize or disseminate to involve the bones, joints lungs and rarely the central nervous system.
- Immunosuppresed patients are most likely affected.

7–10 days on Sabouraud agar or blood agar at 25–30
the yeast phase develops in 2 days at 37°C. Identificati
depends on the micromorphology of the mould pha
and its conversion to the yeast phase at 37°C.

Treatment

Prolonged therapy is usually required. For the lymp
cutaneous form, treatment with potassium iodide
itraconazole is satisfactory. In disseminated dise
intravenous amphotericin B is required.

OTHER SUBCUTANEOUS MYCOSES

Phaeohyphomycosis is a general term used to desc

Lab. Diagnosis

- Moist swabs from ulcerated lesion or pus which aspirated from subcutaneous nodules and biopsy specimens can be used for culture to isolate the organism.
- The mycelial phase develops within 7-10 day on Sabouraud or blood agar at **25-30 C**
- Direct microscopic examination is of a little value.

Treatment

- In localized infections(Lymphocutaneous forms), potassium iodide or itraconazole is satisfactory.
- In disseminated disease : intravenouse amphotricin B is required.
- In both cases, a prolong treatment is required.

HISTOPLASMA CAPSULATUM

- A dimorphic fungus found in soil contaminated with droping of birds & bats.
- Dimorphism: two phases, a mould phase at 25-30C and the yeast phase at 37C on media supplied with cysteine.
- ***H. Capsulatum var. capsulatum and var duboisii*** mould colonies have a sepitate mycelia which consist of spores either macroconidia (almost predominant) and microconidia of 2-4 um in diameter.

Epidemiology

- Infection results from the inhalation of spores .
- Incubation period is 1-3 weeks.
- Longer & more intense exposure usually result in more severe pulmonary disease.
- The most serious disseminated forms of the disease are more common among persons with HIV infection, transplant recipients & those receiving immunosuppressive treatment.

Clinical Diagnosis

- Higher levels of exposure result in an acute severe flu-like illness, with fever, chills, non-productive cough and fatigue.
- The symptomes usually disappear within few weeks leaving discrete & calcified lesions in the lung.
- **Acute histoplasmosis is fatal if left untreated.**
- Hepatic infection & adrenal gland destruction are the f**requent problems among the infected HIV persons.**

Clinical Diagnosis(cont.)

- Mucosal ulcers are found in more than 60% of HIV patients and central nervous disease occurs in 5-20% of patients.
- The clinical features of *H. capsulatum* var. *capsulatum* is differ from var *duboisii* infection where the skin and bones are affected.
- While widespread infection which affect the liver and spleen is fatal within weeks or months if left untreated.

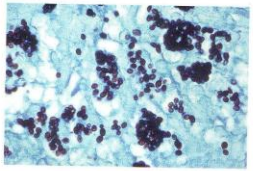

Fig. 60.13 Microscopical appearance of *Histoplasma capsulatum* yeast cells in tissue.

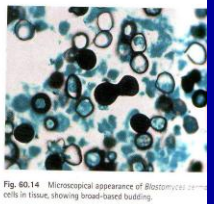

Fig. 60.14 Microscopical appearance of *Blastomyces* cells in tissue, showing broad-based budding.

ulcers are found in more than 60% of these patients; central nervous system disease occurs in 5–20% of patients.

The clinical features of *H. capsulatum* var. *duboisii* infection differ from those of var. *capsulatum* infection. The illness is indolent in onset and the predominant sites affected are the skin and bones. Those with more widespread infection involving the liver, spleen and other organs have a febrile wasting illness that is fatal within weeks or months if left untreated.

Laboratory diagnosis

Microscopy of smears of sputum or pus should be stained by the Wright or Giemsa procedure. Blood smears may be positive for *H. capsulatum*, especially in persons with AIDS. Liver or lung biopsies stained with periodic acid–Schiff or Grocott–Gomori methenamine–silver may provide a rapid diagnosis of disseminated histoplasmosis in some patients. *H. capsulatum* is seen as small, oval yeast cells, often within macrophages or monocytes (Fig. 60.13).

Specimens should be cultured on Sabouraud agar at

useful in disseminated histoplasmosis but are n
available.

Treatment

Intravenous amphotericin B is recommended f
of the most severe forms of disseminated hist
Itraconazole is widely used in non-immune
patients with milder forms of disseminated
for the continuation of treatment in
responded to amphotericin B.

BLASTOMYCOSIS

This disease is caused by *B. dermatiti*
soil-inhabiting fungus. The largest numbe
blastomycosis has been reported from N
the disease is also endemic in Africa, and
and South America. In the USA, the
commonly found in states surrounding
and Ohio Rivers.

Lab. Diagnosis

- Sputum or pus can be examined under the microscope after being stained with Giemsa procedure.
- Blood smear may be positive for ***H. capsulatum*** in AIDS persons.
- Liver or lung biopsies can provide a rapid diagnosis of histoplasmosis in some patients if stained with periodic acid-Schiff.

Lb. Diagnosis(cont.)

- Macro- & Micro-conidia of the growing culture of the *H. capsulatum on* Sabouraud agar at 25-30C.
- At 37C yeast culture may not be used for primary isolation.
- Mould culture of ***H. capsulatum*** is a hazard to laboratory staff. Hence screw-capped slopes rather than Petri dishes
- Should be used or isolation.
- Tests for antigen detection in urine by ELISA are useful but are not widely available.

ogical tests play an important part in diagnosis. cipitin test is most useful for detection of early infection or exacerbation of existing disease; ns appear 1–3 weeks after infection but are detectable after 2–6 months, or in patients with nated coccidioidomycosis. The latex agglu- test gives similar results to the precipitin test, less specific. Complement-fixing antibodies 1–3 months after infection and persist for long in individuals with chronic or disseminated In most cases the titre is proportional to the f infection; failure of the titre to fall during t of disseminated coccidioidomycosis is an sign.

ent

orical standard of treatment is intravenous ampho-, but oral fluconazole is now used to treat many with skin, soft tissue, bone or joint infections. zole is also effective, but less well tolerated. oral fluconazole is so much more benign than al amphotericin B, it is now the drug of choice idioidal meningitis.

PLASMOSIS

ease is caused by *H. capsulatum*, a dimorphic ound in soil enriched with the droppings of birds . Histoplasmosis is the most common endemic in North America, but also occurs throughout and South America. In the USA, the disease is valent in states surrounding the Mississippi and vers. Other endemic regions include parts of Australia, India and Malaysia. *H. capsulatum* var. is restricted to the continent of Africa.

psulatum var. *capsulatum* grows in soil and in t 25–30°C as a mould and as an intracellular animal tissues. The small oval yeast phase cells diameter) can also be produced in vitro by culture n blood agar or other enriched media containing In culture the mould colonies are fluffy, white rown; the mycelium is septate and two types of ar asexual spores are usually produced: large berculate macroconidia (8–15 μm in diameter) t prominent and are diagnostic, but smaller, lliptical, smooth-walled microconidia (2–4 μm in are also present in primary isolates (Fig. 60.12). *latum* var. *duboisii* is morphologically identical *psulatum* var. *capsulatum* in its mycelial phase,

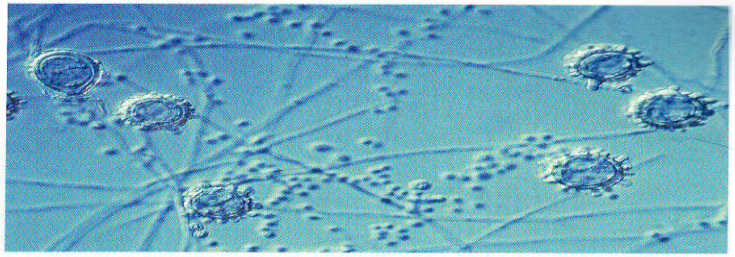

Fig. 60.12 Microscopical appearance of *Histoplasma capsulatum* microconidia and macroconidia.

Epidemiology

Infection results from the inhalation of spores; the incubation period is 1–3 weeks. The major risk factor is environmental exposure; longer and more intense exposures usually result in more severe pulmonary disease. Most reported outbreaks have been associated with exposures to sites contaminated with *H. capsulatum* or have followed activities that disturbed accumulations of bird or bat guano, such as building demolition, soil excavation and caving.

The most serious disseminated forms of the disease are more common among individuals with underlying cell-mediated immunological deficiencies, such as persons with HIV infection, transplant recipients, and those receiving immunosuppressive treatments.

Clinical features

There is a wide spectrum of disease, ranging from a transient pulmonary infection that subsides without treatment, to chronic pulmonary infection, or to more widespread disseminated disease. Many healthy individuals develop no symptoms when exposed to *H. capsulatum* in an endemic setting. Higher levels of exposure result in an acute symptomatic and often severe flu-like illness, with fever, chills, non-productive cough and fatigue. The symptoms usually disappear within a few weeks, but patients are frequently left with discrete, calcified lesions in the lung.

Disseminated histoplasmosis may range from an acute illness that is fatal within a few weeks if left untreated (often seen in infants, persons with AIDS and solid-organ transplant recipients) to an indolent, chronic illness that can affect a wide range of sites. Hepatic infection

TREATMENT

- Most sever forms of disseminated histoplasmosis are treated with intravenous injection of AMPHOTERICIN.
- Itraconazole is widely used for treatment of non-immunocompromised patients with milder forms of disseminated disease.