Myositis In HIV infected Patient

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History

- 37/M, presented on 9/11/06 with complaint of
  - Fever
  - Myalgia
  - Weight loss, weakness

  } 2 weeks

- **Past History**:
  - diagnosed to have HIV since 1997
  - He was on AZT+ddi+NVP since 11/7/2002
  - He had immunological recovery with clinical response
  - Lost to follow-up since February 2006

Physical examination

- Vital data: Normal
- RS, CVS: Normal
- Mild hepatomegaly
- Tenderness in thigh muscles
- Inability to stand from sitting position
- DTR: Normal
- Planters: Flexor

Investigations

- CBC: Hb 10.2 gm%, TC 5700 with 39% eosinophils, ESR 80mm/1st hour
- CD4 cell count: 71/cmm
- SGPT: 120 IU/L (5 -40)
- SGOT: 178 IU/L (5-45)
- S.ALPO4: 178 IU/L
- CPK total: 2220 U/L
- S. $Ca^{++:}$ 8.7 mg%

Diagnosis & Treatment

- Myopathy: nucleosides (AZT, ddI), mitochondrial damage

- He was treated with albandazole and supportive care (CoQ, Vit E, B-complex, riboflavin)
- His ART were stopped (clinical and immunological failure)

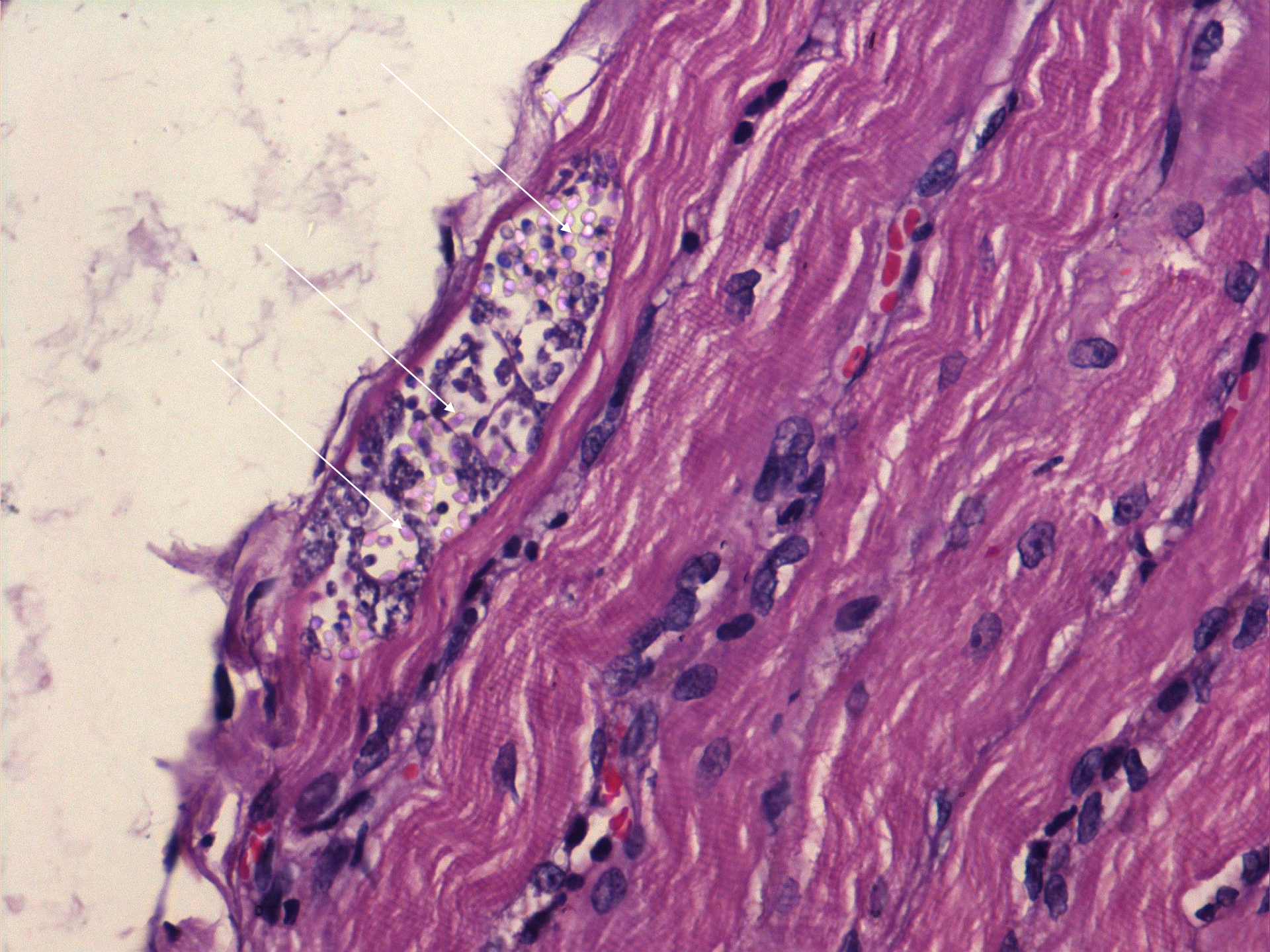
Follow-up

- Clinical worsening: Increasing myalgia and weakness
- CBC: TC 6900, eosinophils 1%,
- SGPT: 167 IU/L
- SGOT: 208 IU/L

- CPK: 1673.1 U/L
- EMG showed myopathic changes

Follow-up

- Biopsy from left vastus lateralis reported candida myositis
- Blood culture (radiometric method) was sterile
- X-ray chest and ultrasound abdomen were normal



Treatment

- Treated with amphotericin B deoxycholate (ABDC)
- Tolerated ABDC well except hypokalemia
- Clinical response: Reduced muscle pain and improved muscle power (able to walk with support)
- CPK returns to base line (78 U/L)

Treatment

- ARV (TDF+3TC+ATV/r) was started after 2 weeks of amphotericin B treatment along with fluconazole 600mg/day
- Again presented after two weeks of ART with generalized weakness with decrease muscle power (G II) and dysphagia
- Muscle tenderness all limbs
- CPK increased to 1460 U/L
- CD4 cell count increased to 121/cmm

Treatment

- Considering immune reconstitution inflammatory myositis, he was hospitalized and started on methylprednisolon 500mg for three days
- Improvement following steroid (power G III/V, reduced pain and swelling)
- Discharged on oral steroid
- Patient lost to follow-up and died there after

Points against the diagnosis

- No evidence of mucocutaneous/ systemic candidiasis
- Deterioration despite ABDC/FLU treatment
- Immune restoration/Steroids

Investigation and correspondence contd.

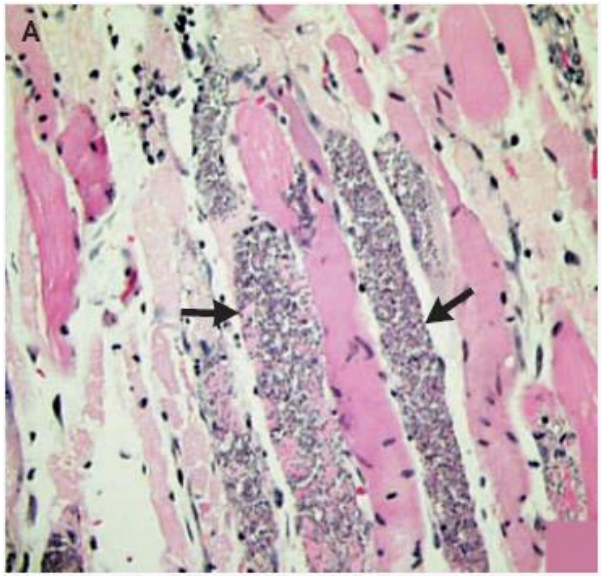
After 2 months

Follow-up from NIMHANS

- Strong suspicion of Microsporidium myositis

Fatal Myositis due to the Microsporidian *Brachiola algerae*

Christina et el, N Engl J Med 2004;351:42-7



- Low-power photomicrograph of the initial muscle-biopsy specimen obtained after the patient presented with myositis and muscle pain shows multiple organisms in the muscle fibers (arrows) with associated cell lysis but little or no inflammation

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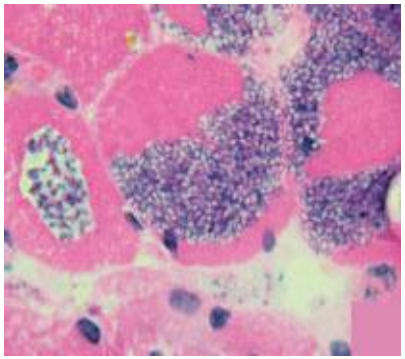
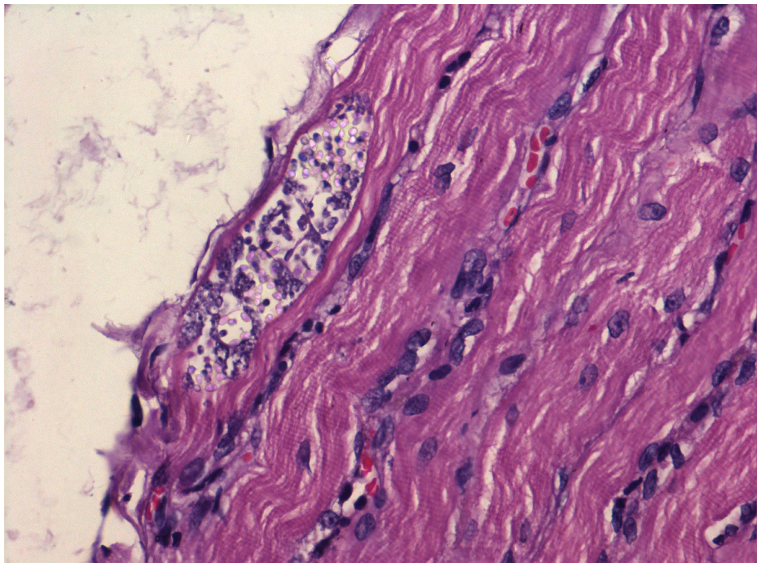
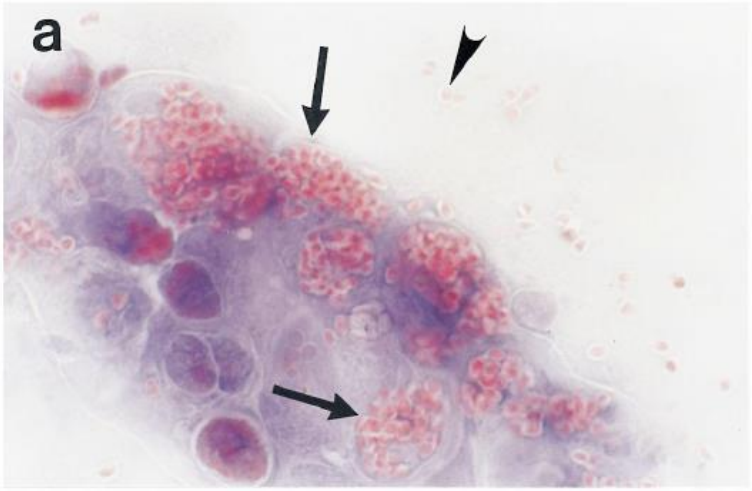


- High-power photomicrograph of the second muscle biopsy specimen demonstrates cytolysis of the muscle fibers surrounding spores

Microscopy





FIELD et al.,

JOURNAL OF CLINICAL MICROBIOLOGY, Nov. 1996, p. 2803–2811

Myositis Associated with a Newly Described Microsporidian, *Trachipleistophora hominis*, in a Patient with AIDS

Microsporidiosis

- Microsporidia were first discovered 100 years ago, 1st well documented case of microsporidiosis was described in 1959
- Ledford et el; (Ann. Intern. Med. 102:628–630) 1st reported myositis in 1985, since then there have several reports in AIDS patients (*E. bieneusi, E. intestinalis)*
- Chupp et el; Myositis due to *Pleistophora* (Microsporidia) in a patient with AIDS. Clin. Infect. Dis. 16:15–21, 1993

Literature Review

- Cali et al. *Brachiola vesicularum* a new microsporidium associated with myositis, J Eukaryot Microbiol 1998;45:240-51
- Field et el; Myositis associated with a newly described microsporidian, *Trachipleistophora hominis*, in a patient with AIDS. J Clin Microbiol 1996
- Cali et el; J Eukaryot Microbiol 2003;50:77-85 (HIV negative patient, *Pleistophora ronneafiei*)

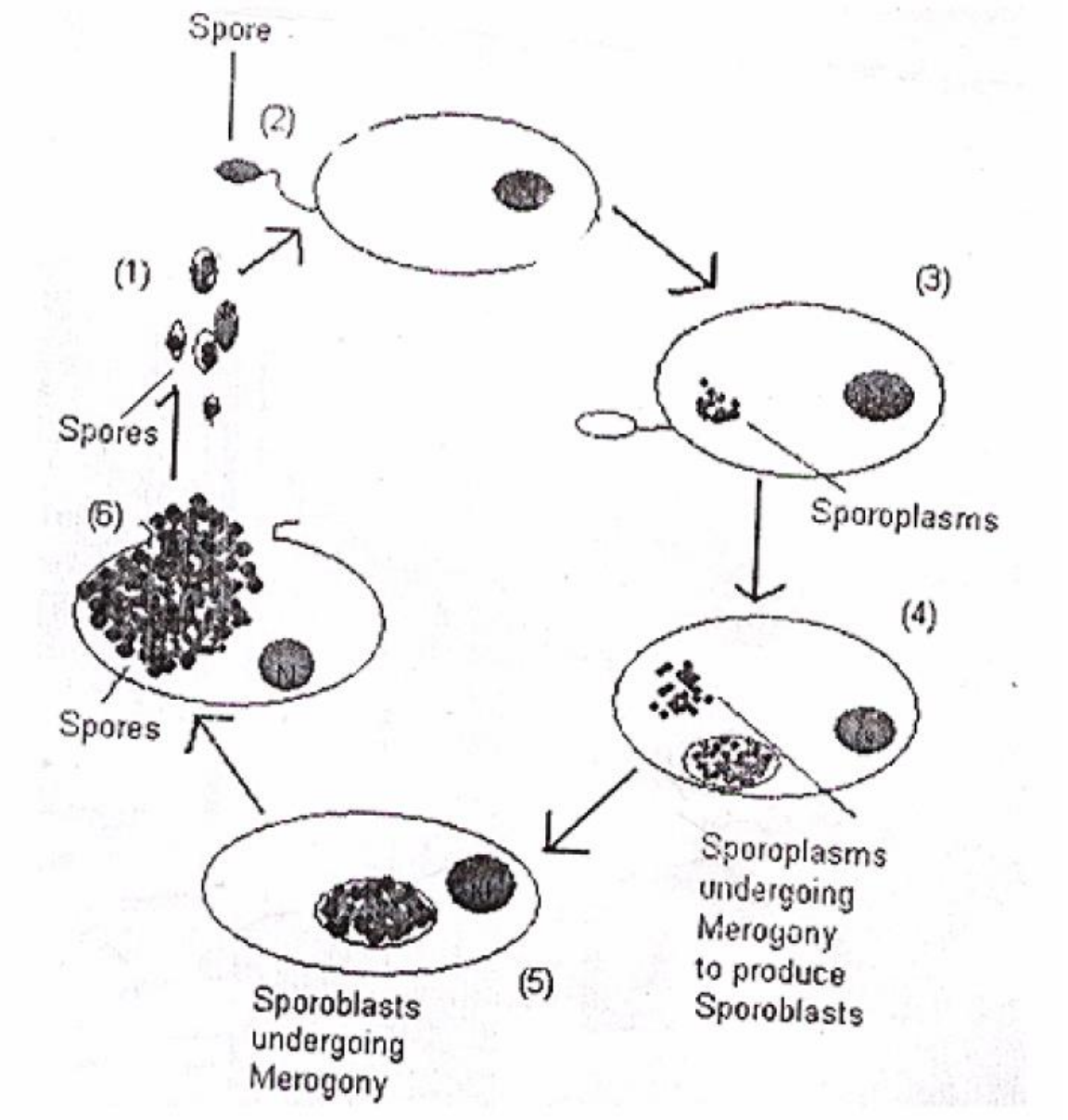
Microsporidia

- Microsporidia are obligate intracellular, spore-forming parasites, closely related to fungus
- Sporadic in humans before the AIDS pandemic
- Now commonly seen in
  - AIDS patients
  - Prolonged steroids therapy
  - Organ transplant patients
- More than 1000 species of microsporidia are recognized
- 12 species has been reported to infect human

Microsporidia

- Spore:
  - The infective form
  - Vary in size, those infecting humans are oval & 1-2 μm size
  - Highly resistant to degradation, and can survive in the environment for up to four months
- Modes of infection
  - Ingestion or inhalation of spores
  - Sexual transmission is possible
  - Transplacental infection (usually very severe)

Microsporidia: Life cycle



Microsporidia: Human disease

- Enteropathy
- Keratoconjunctivitis
- Sinusitis
- Tracheobronchitis
- Myositis
- Encephalitis
- Interstitial nephritis
- Hepatitis
- Cholecystitis
- Osteomyelitis

Clinical Features

Microsporidian species	Clinical manifestation
Brachiola algerae	**Keratoconjunctivitis, skin and deep muscle infection**
Enterocytozoon bieneusi*	**Diarrhea, acalculous cholecystitis**
Encephalitozoon cuniculi* and *Encephalitozoon hellem	**Keratoconjunctivitis, infection of respiratory and genitourinary tract, disseminated infection**
***Encephalitozoon intestinalis* (syn. *Septata intestinalis*)**	**Infection of the GI tract causing diarrhea, and dissemination to ocular, genitourinary and respiratory tracts**
***Microsporidium* (*M. ceylonensis* and *M. africanum*)**	**Infection of the cornea**
Nosema* sp. (*N. ocularum*), *Brachiola connori	**Ocular infection**
***Pleistophora* sp.**	**Muscular infection**
Trachipleistophora anthropophthera	**Disseminated infection**
Trachipleistophora hominis	**Muscular infection, stromal keratitis, (probably disseminated infection)**
***Vittaforma corneae* (syn. *Nosema corneum*)**	**Ocular infection, urinary tract infection**

Laboratory diagnosis

- Light Microscopy: of the stained clinical smears
  - Doesn’t allow identification of microsporidial species
  - Chromotrope 2R method or its modifications is most commonly used stain (stains the spore bright pinkish red)
  - “Quick-Hot Gram Chromotrope technique” (Stain dark violet and the belt-like stripe is enhanced)
- Transmission Electron Microscope (TEM) is still the gold standard
  - Species identification
  - Expensive, time consuming, not feasible for routine diagnosis
- Immunofluorescence assays (IFA): under development
- PCR
- Serological tests: ELISA, IFA

Treatment

- Albendazole is the most effective drug presently used to treat infections due to most species of microsporidia except *E. bieneusi*
- Fumagillin
- Thalidomide
- TNP-470 (also named AGM-1470), an analogue of fumagillin that is less toxic, is being used in breast cancer clinical trials
- Metronidazole
- Furazolidone
- Sinefunmethodgin
- Atovaquone
- Azithromycin
- Itraconazole, fluconazole
- Octreotide
- Sulfa drugs

Thank You

We have more experts, but more problems

More medicine, but less wellness