

# Late Skin Infections in Tsunami victims

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# Tsunami catastrophe

## December 26, 2004

### Stockholm

- 75 patients were admitted to Karolinska Hospital, Solna, Stockholm.

### Gothenburg

- 50 patients were admitted to Sahlgrenska/Östra Hospital, Gothenburg.

# Late skin infections after Tsunami

| Pathogen                                   | Patients<br>Stockholm | Patients<br>Gothenburg |
|--|-----------------------|------------------------|
| Mycobacteria<br>non tuberkulosis           | 7                     | 7                      |
| Cladophialophora<br>bantiana (mould)       | 2 / 7                 | ----                   |
| Melioidosis<br>(Burkholderia pseudomallei) | ----                  | 1 / 7                  |
| Total                                      | 7                     | 7                      |

# **Mycobacterium abscessus, M. fortuitum complex**

- World wide environmental organism, in sweet and salt water
- Rapidly growing, 7-14 days
- Around 40 species linked to human disease
- Resistant to many disinfectants and antibiotics

## **Immunocompromised patients**

- Lung infektion
- Disseminated disease

## **Immunocompetent patients**

- Soft tissue infection, post-traumatic, post surgical, postinjection
- Incubation time 4-6 weeks (3 weeks to 12 months)

## **Diagnosis:**

- Culture of biopsy material, deep swab

# Treatment of Mycobacterium skin infections

- Removal of foreign bodies and non biological material
- Antibiotics for months
- Excision of lesions
  
- Risk of osteitis
- Relapses during and/or after treatment
- Spontaneous resolvement in 5 -20 % (higher?)

# Cladophialophora bantiana

## A mould

- World wide in the environment, especially in decaying vegetation and water in the tropics
- Black colonies. Melanin, virulence factor

## Immunocompetent and immunocompromised patients

- Neurotropic – brain abscesses after inhalation
- Soft tissue infection after contaminated trauma
- Reactivation after years

## Diagnosis

- Culture of tissue biopsy (safety laboratory)

# Melioidosis

## *Burkholderia pseudomallei*

A bacteria ( gram-negative rod) in wet soil and water in south east Asia, particularly in Thailand, and northern Australia

Acquired by inhalation or inoculation in skin injuries

Clinical picture: pneumonia, septicemia (20 % mortality)  
skin ulcers  
"Vietnamese time bomb" ( reactivation)

# Case reports 1

- All 14 patients were previously healthy. Age 15-61
- The traumatic wounds were located on the legs
- Patients were treated with surgical resection and/or primary sutures in Thailand
  
- 8 patients had early bacterial infections, cured before the late skin lesions appeared
- First clinical symptom 6-12 weeks after the trauma
- The lesions were located in virtually intact skin, in skin grafted patients, outside the transplants.
- In half of the cases multiple swab cultures were negative, whereas biopsies were positive

**Table Patient characteristics**

| Pathogen<br>(different strains)                      | No of patients | Grafted patients | Anti-biotics | Duration (months) | Patients with new lesions | Other treatment        |
|--|----------------|------------------|--------------|-------------------|---------------------------|------------------------|
| M abscessus  | 4              | 3                | 2            | 6 - 8             | 2                         | excision(2)            |
| M abscessus & Cladophialobantiana                    | 2              | 2                | 2            | 4 -10<br>1        | 1                         | excision(1)<br>HBO (1) |
| M abscessus & Burkholderia Pseudomallei (septicemia) | 1              | 1                | 1            | 6<br>6            | -----                     | -----                  |
| M fortuitum complex                                  | 7              | 2                | 3            | 3                 | -----                     | -----                  |
| Total  | 14             | 8                | 8            |                   | 3                         | 3                      |

# Medical therapy

- 2-3 months between first clinical symptom and beginning of therapy

## M abscessus

- ampicillin 15 mg/kg/day i.v. and
- clarithromycin 500 mg orally BID

## M fortuitum complex

- ciprofloxacin and
- co trimoxazole, doxycycline

## Cladophialophora bantiana

- voriconazole: 200 mg orally BID

## Burkholderia pseudomallei

- co trimoxazole and ciprofloxacin



050308  
M fortuitum

050318 0  
Vansur low

050307

M abscessus and  
*Cladophialophora*  
*bantiana*

Sand in subcutis



# Summary

## Late skin infections after the Tsunami 2004 in Thailand

- 7 patients with *Mycobacterium abscessus*
- 7 patients with *Mycobacterium fortuitum* complex
- 8 patients were treated with antibiotics 2-10 months
  
- 2 patients also had *Cladophialophora bantiana*, treated with antifungal drug for one month
- 1 patient also had *Burkholderia pseudomallei* treated with antibiotics for 6 months

Sand particles found subcutaneously in patients one year after the trauma could be a breeding ground for remaining microorganisms

**In January 2006 all skin lesions were healed. Relapse?**

# Conclusion

- The microorganisms detected in late skin infections were most probably inoculated with the primary trauma.
- Early surgical biopsy is recommended for microbiological diagnosis in late post-traumatic skin nodules
- When medical treatment of rapidly growing mycobacteria is indicated it should include two drugs to avoid resistance
- Surgical resection is indicated with failed medical therapy or clinical relapse, but could also be primary therapy in selected cases