Trichophyton verrucosum infection after contact with Australian cattle

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Outline

- Case report
- Identification of the fungus
- *Trichophyton verrucosum*
- Take home message

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Case report

- 27-year old male
- Anamnesis:
  - worked on a farm with oxen and sheep during a trip to Australia
  - 2 weeks earlier presentation in other Belgian peripheral hospital with same symptoms
  - treated empirically with IV broad spectrum antibiotics for working diagnosis erysipelas
- Clinical investigation:
  - diffusely red swollen right knee
  - several red spots on the right leg
  - a partially pustulating, non itching, ulcerative lesion on the flexor side of the right leg

Diagnostic tests

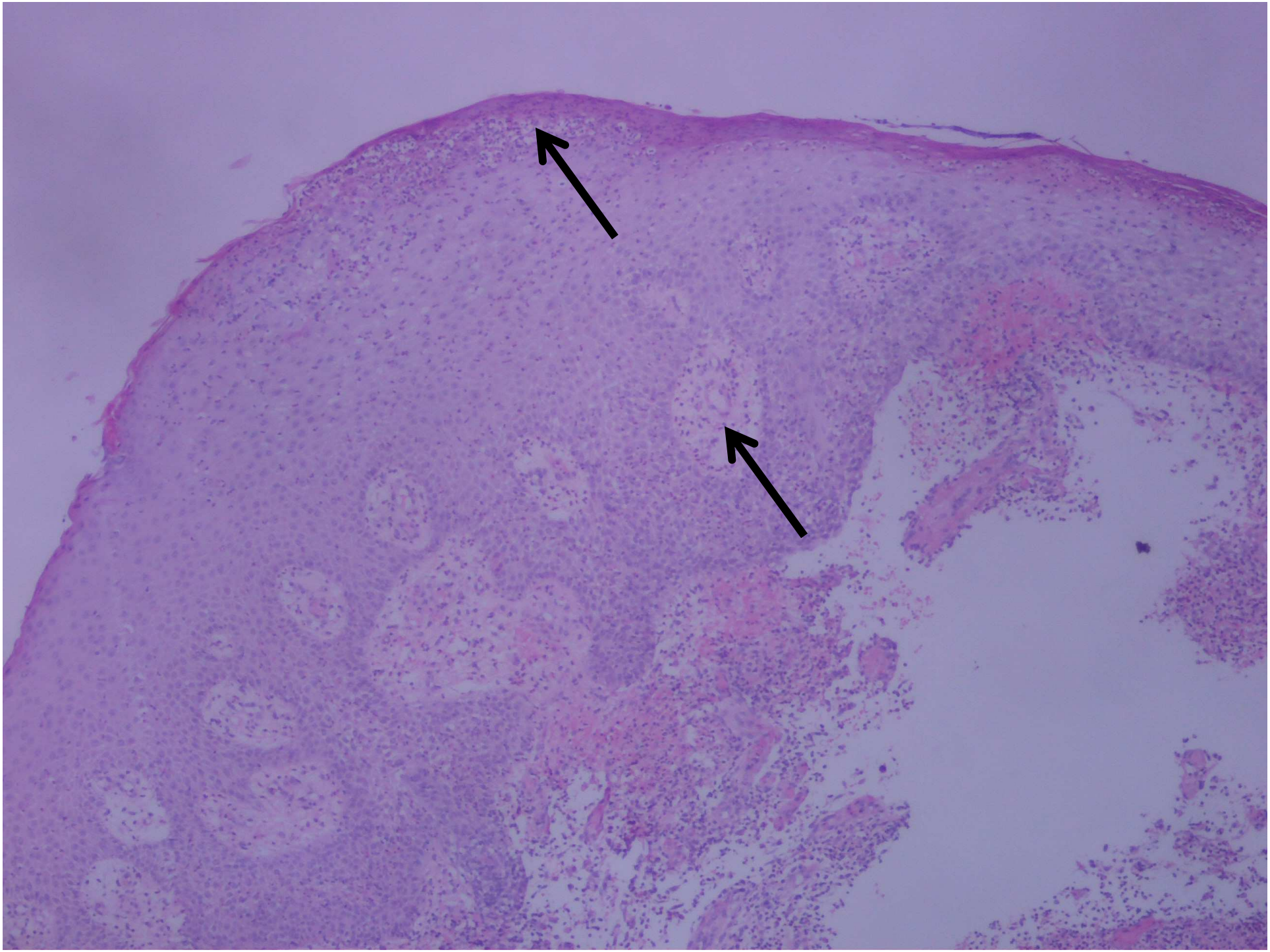
Evaluation aerobic cultures

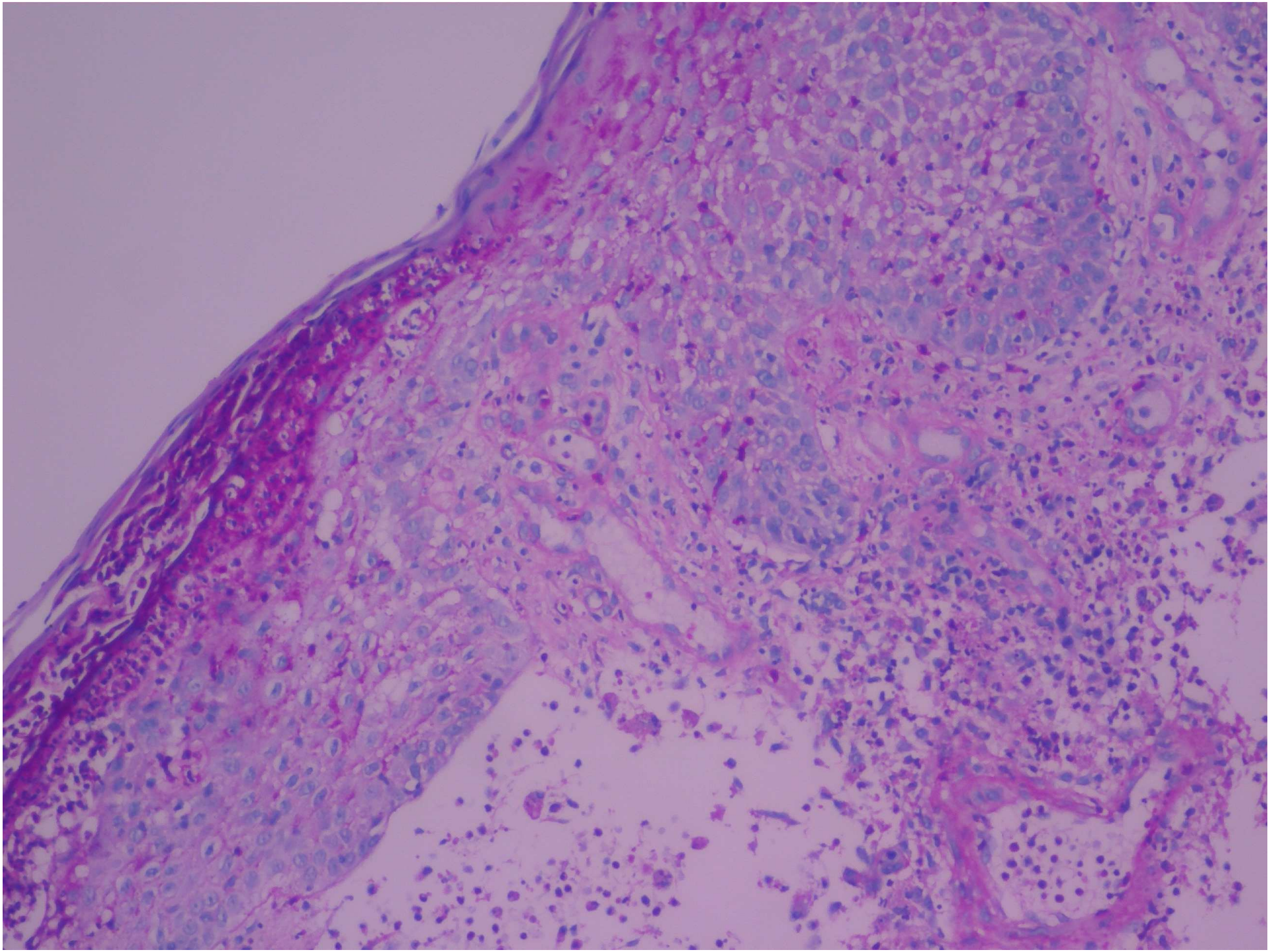
Evaluation anaerobic cultures

Day 1 → Day 2 → Day 3

Start flucloxacillin empirically

Skin biopsy





Diagnostic tests

Evaluation aerobic cultures

Evaluation anaerobic cultures

Day 1 → Day 2 → Day 3 → Day 4 → Day 5 → Day 6

Start flucloxacillin empirically

Skin biopsy

Start antifungal therapy

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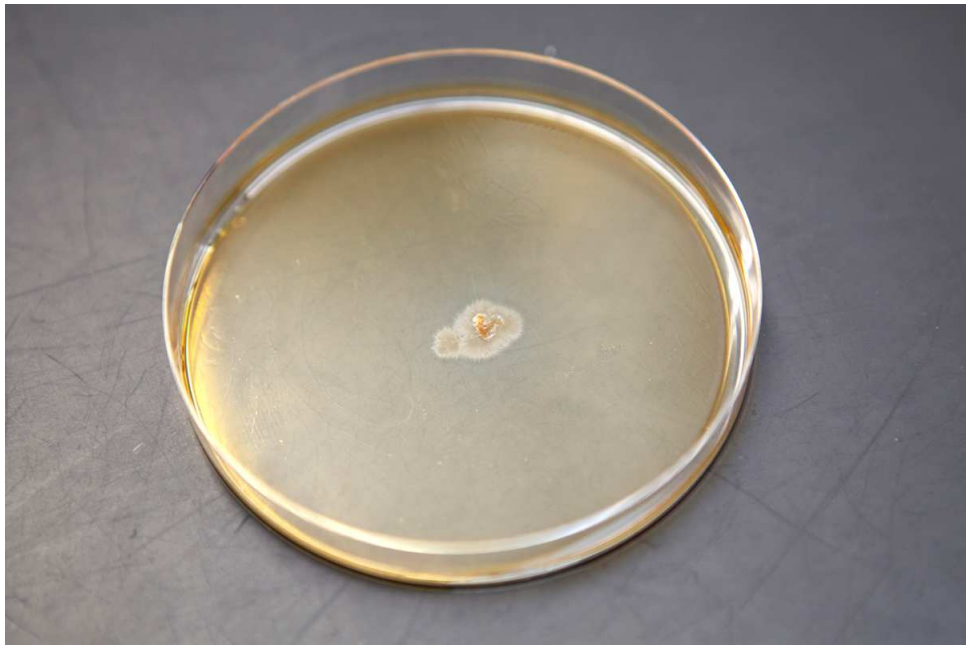
Identification of the fungus

Direct macroscopic and microscopic examination

Macroscopic examination



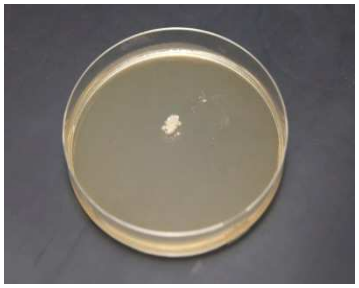
Sabouraud agar with cycloheximide at 30°C after 2 weeks

Macroscopic examination

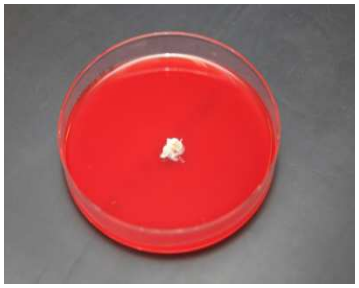
Sabouraud agar with cycloheximide at 30°C after 2 weeks

Culture

After 4 days

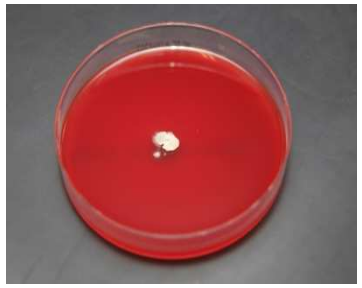


Sabouraud agar + cycloheximide
30°C



blood agar (5% sheep blood)
30°C

Sabouraud agar + cycloheximide
35°C



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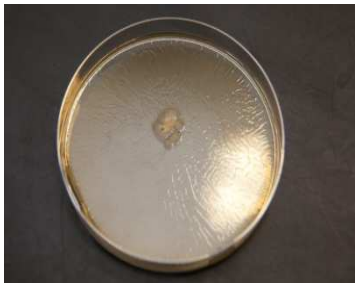
After 11 days



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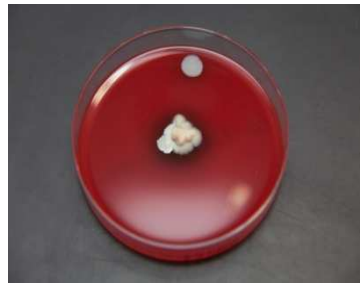

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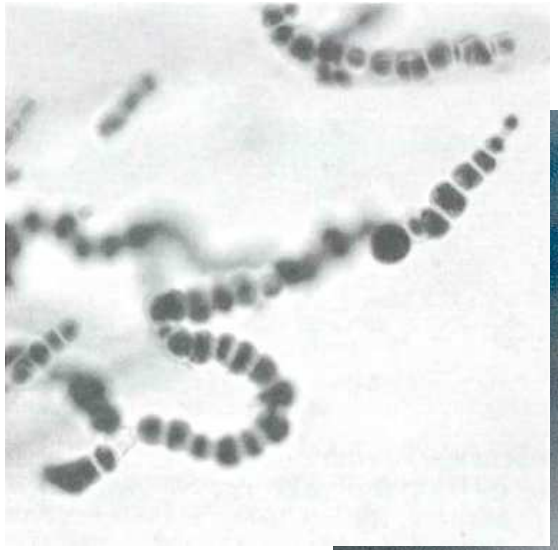
35°C

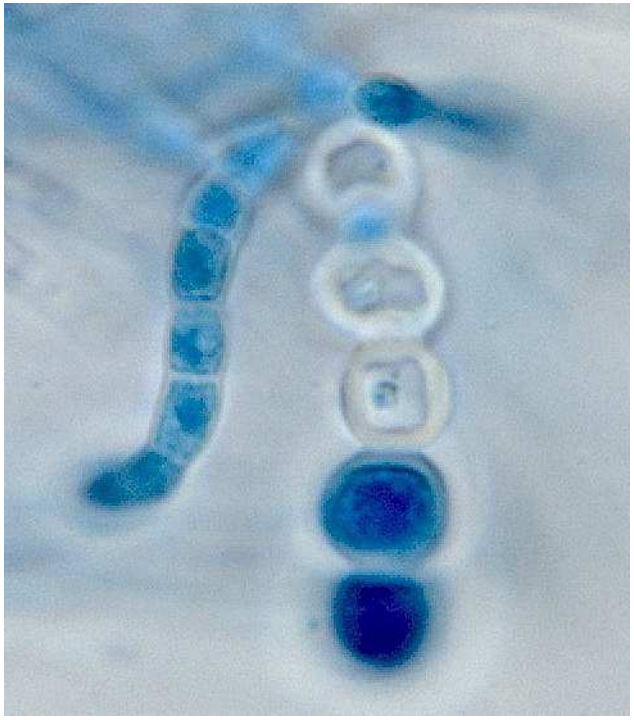
Direct microscopic examination from Sabouraud agar (35°C)



Textbook: Medical Important Fungi (Larone 2011)

-Stained with lactophenol blue
-100x magnification

Direct microscopic examination from Sabouraud agar (35°C)



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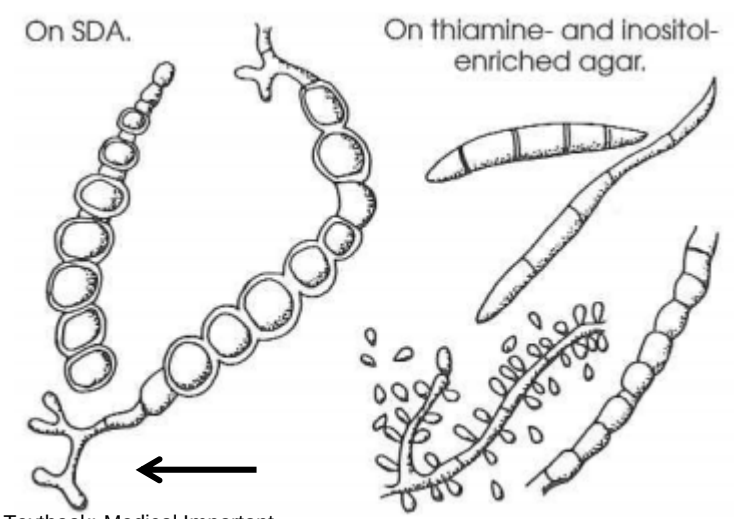
Direct microscopic examination from Sabouraud + actidione (35°C)



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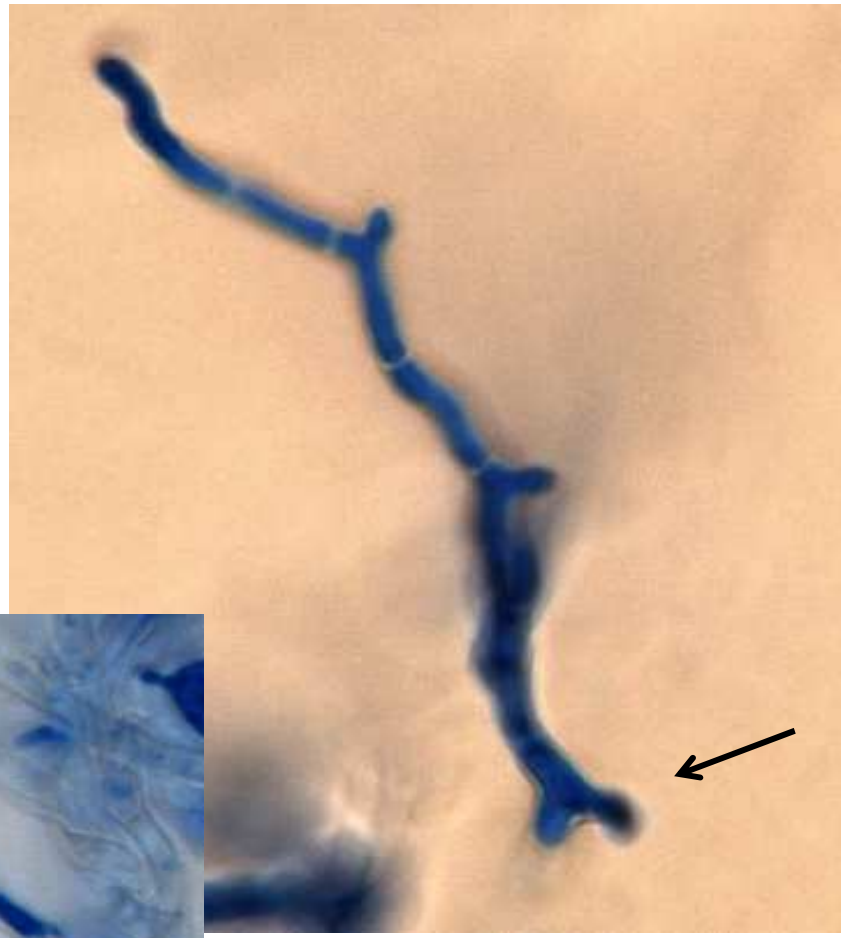

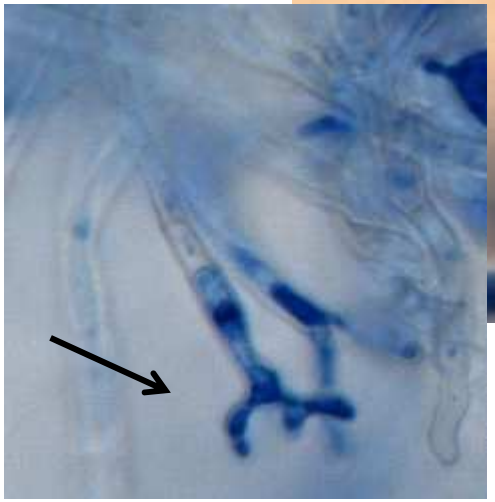

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Identification of the fungus

Direct microscopic examination

MALDITOF

- Validation of fungal library
- Preliminary results:

B4 (+) (B)	T. veri	Trichophyton_mentagrophytes_var_erinacei [ana] Arthroderma_benhamiae[teleo]_CC6	1.977	Trichophyton_mentagrophytes_var_erinacei [ana] Arthroderma_benhamiae[teleo]_CC6	1.782
B5 (+) (C)	T. veri	Trichophyton_mentagrophytes_var_erinacei [ana] Arthroderma_benhamiae[teleo]_CC6	1.993	Trichophyton_mentagrophytes_var_erinacei [ana] Arthroderma_benhamiae[teleo]_CC6	1.895

Identification of the fungus

Direct microscopic examination

Confirmation by national reference laboratory UZLeuven

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Bacteriologie Culturen

Varia

cultuur fungus 28-07-2013 15:50

Gevoeligheidsbepaling fungus

Identificatie doorsturend labo:

C Trichophyton verrucosum

Gevoeligheidsbepaling wordt niet uitgevoerd voor dermatofyten omdat dit zich nog volledig in de onderzoeksfase bevindt (geen gestandaardiseerde procedure beschikbaar).

Test uitgevoerd door Nationaal Referentiecentrum.

Antimycoticum:	niet uitgevoerd
MIC-bepaling:	niet uitgevoerd
Identificatie fungus:	ontvangen op 22-10-2013 16:07

Treatment

- Itraconazole PO 200 mg 2x/day during 28 days
- Sulconazolnitrate topically 1x/day
- Follow-up 3 months later:
  - lesions on the right leg healed
  - subtile discoloration of the skin remained

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Trichophyton verrucosum

- Zoöphilic dermatophyte
- Occasionaly transmitted to humans, mainly by infected cattle and fomites
- Causes tinea capitis, tinea corporis and tinea barbae. Lesions typically suppurative.
- Distribution worldwide, prevalence in Europe infrequent.
- Culture:
  - slowly
  - enhanced on media enriched with thiamine and inositol
  - unlike other dermatophytes, grows better at 37°C

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Table 4 Summary of the European incidence of the most common mycoses identified in these epidemiological studies

	Lange *et al.*[26]	Korstanje[21]	Monod *et al.*[23]	Dolenc-Voljc[37]	Lehenkari *et al.*[22]	Prohic[38]	Jeske *et al.*[27]	Lupa *et al.*[11]
Microsporum canis	62	40.9	5	46.8		90.4	23.5	
M. gypseum							5.3	
M. equinum							0.7	
M. cookei							0.14	
Trichophyton mentagrophytes			24.5		26			
T. mentagrophytes var. *granulosum*							21.6	30.9
T. mentagrophytes var. *interdigitale*				7.9			2.3	10.0
T. mentagrophytes var. *mentagrophytes*		11.4		4.9				
T. mentagrophytes var. *quinckeanum*							6.0	6.9
T. rubrum	12		62.5	36.7	66		17.8	41.7
T. verrucosum		4.5					0.4	
T. violaceum		29.6				1.9	3.7	0.1
T. tonsurans		6.8					10.4	2.3
T. terrestre								0.2
T. schoenleinii		2.3				2.4		
Epidermophyton floccosum					6		7.7	7.4

All values are percentages.

Havlickova, Mycosis 2009.

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- Clinician: think of fungi as potential cause of chronic skin lesions
- Importance of fungal cultures for chronic skin lesions
- Laboratory: fungi, isolated from routine cultures, can be of diagnostic importance