Exotic Tropical Infections for Clinicians

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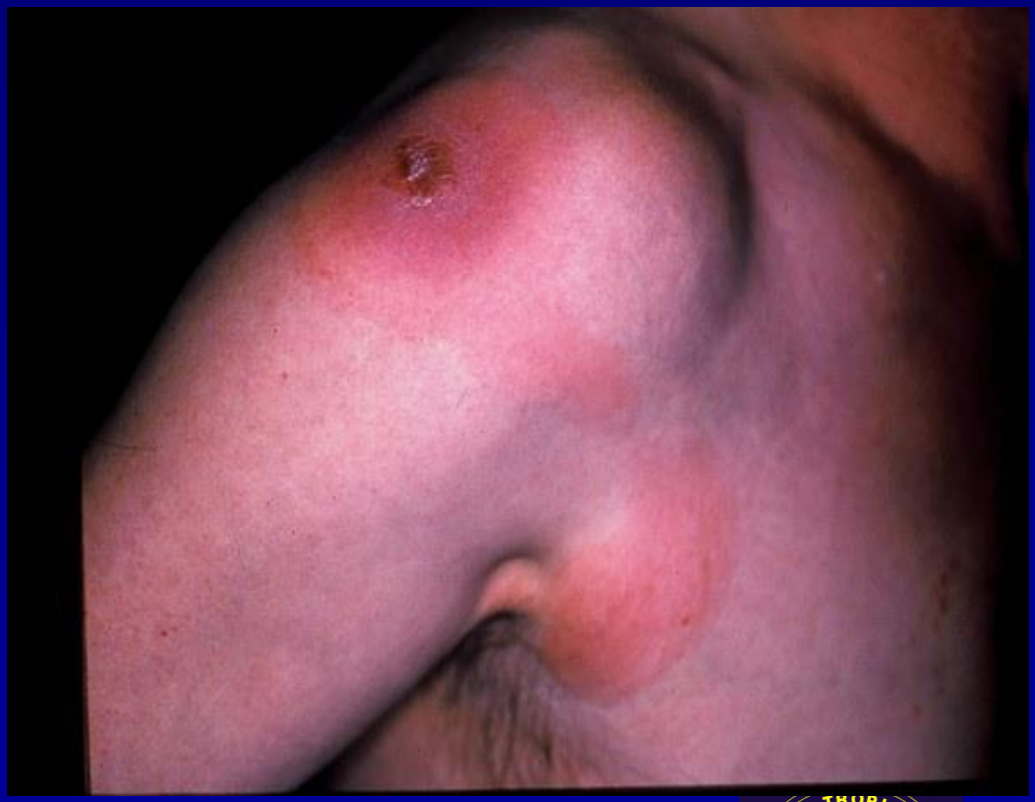
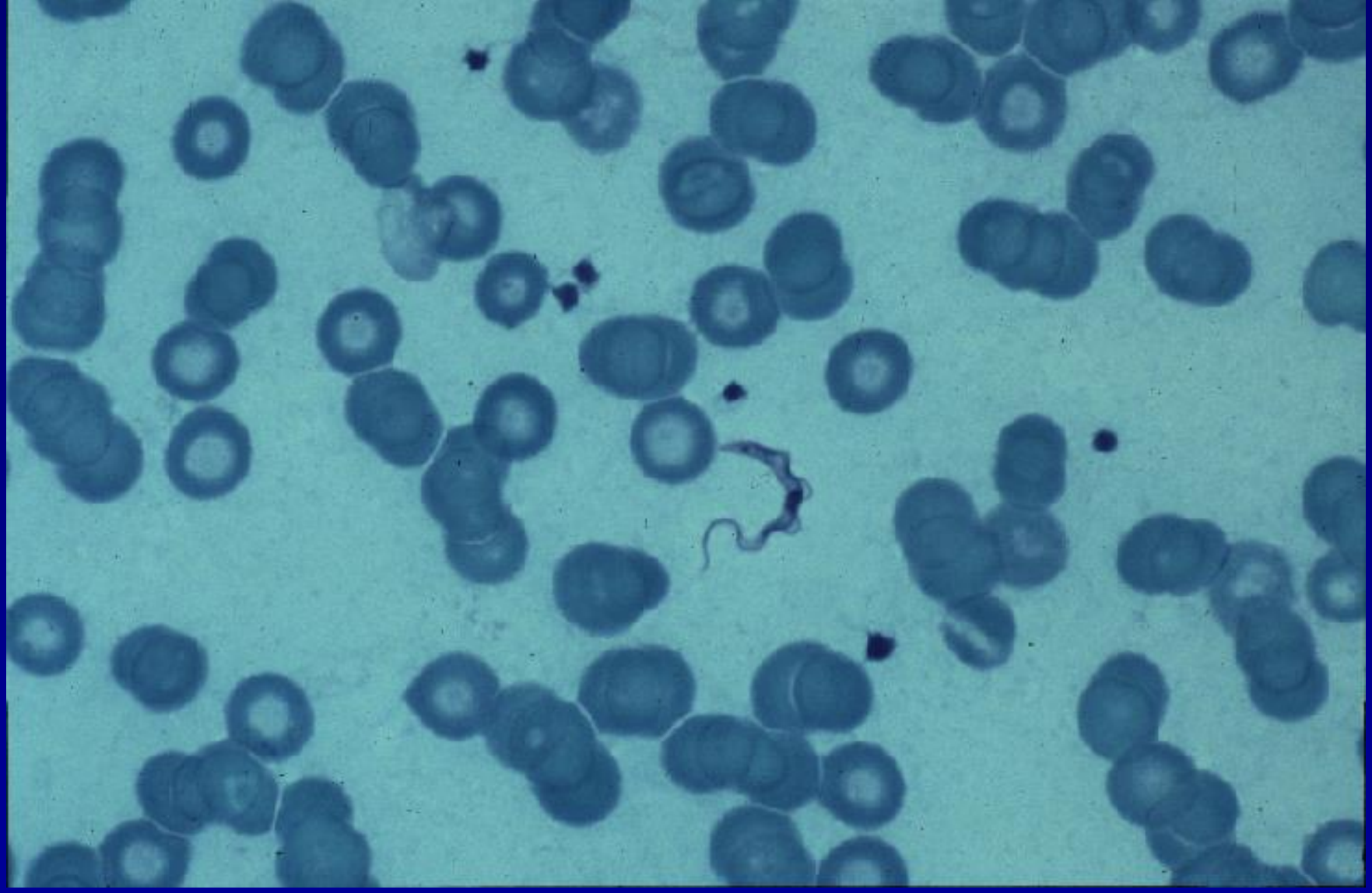
35 year old English Man presents to the Hospital for Tropical Diseases (HTD), London

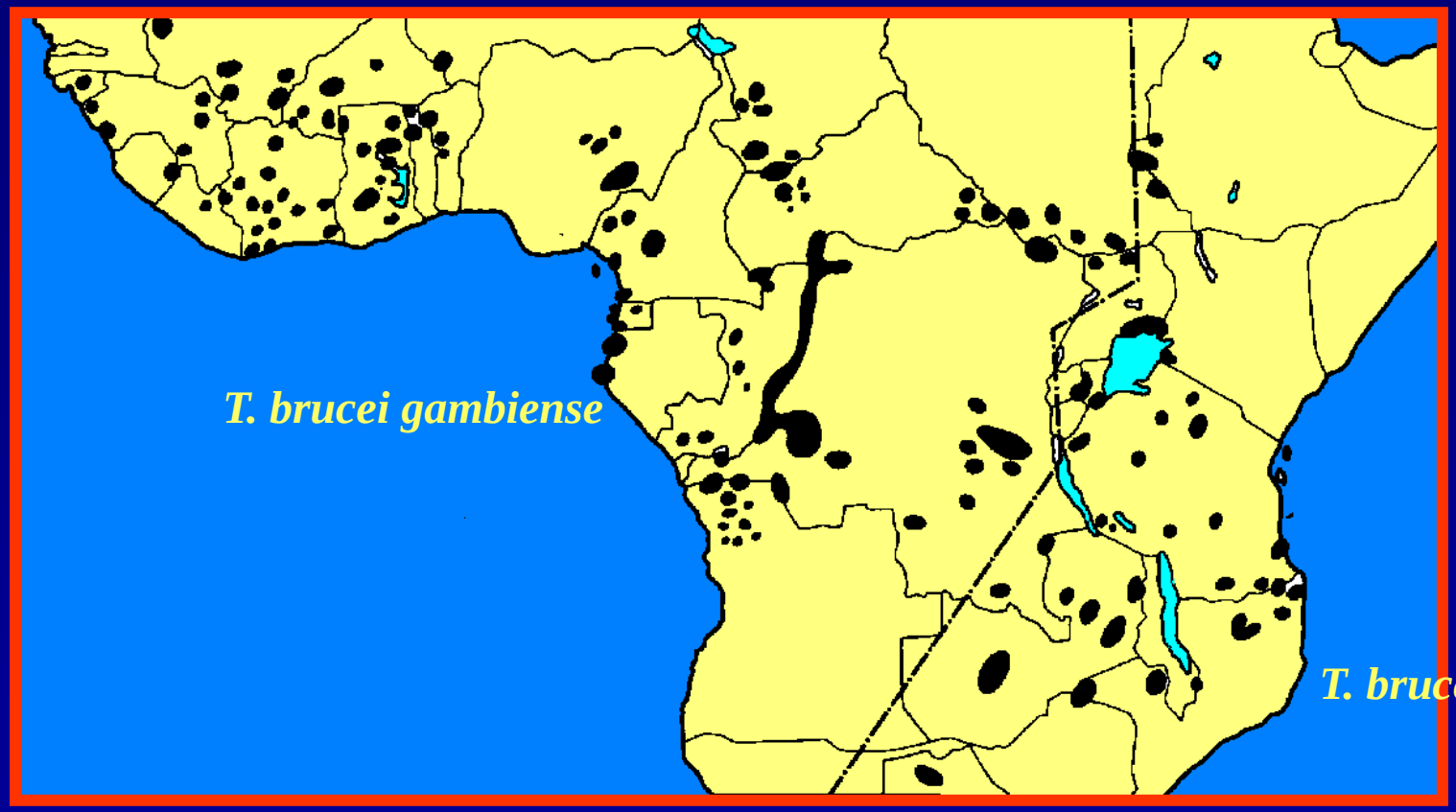
- Two week holiday in Tanzania
- Returned 5 days ago
- Painful arm and fever for 3 days

What else would you like to know?
What signs will you look for?
What investigations will you request?
Differential Diagnosis?





Human African Trypanosomiasis (HAT)



HOSPITAL FOR TROPICAL DISEASES
LONDON

Human African Trypanosomiasis

T. brucei gambiense

- Insidious onset (“sleeping sickness”)
- No confirmed animal reservoir
- POC screening test available

T. brucei rhodesiense

- Acute onset
- Zoonosis
- Blood film usually positive

HAT Diagnosis

T.b. gambiense: Blood film microscopy insensitive

- Lateral flow POC (dipstick) test, HAT Sero-K-SeT, is 98% sensitive and 99% specific against a parasite detection gold standard

  Buscher P et al. Lancet Global Health 2014; 2: e359

T.b. rhodesiense: Blood film microscopy

HAT: Intervention

Case finding and treatment

Treatment depends on stage: is there central nervous system involvement?

Treatment of HAT

T. b. gambiense

- Until recently
  - Stage 1: Pentamidine IM
  - Stage 2: Nifurtimox + eflornithine IV
- Now
  - Fexinidazole is an effective oral treatment for stage 2 *T. gambiense*

Mesu VK et al. Lancet. 2018;391:144-154

T.b. rhodesiense

- Stage 1: Suramin IV (stage 1)
- Stage 2: Melarsoprol IV + prednisone (stage 2)

25 year old English man presents to HTD, London

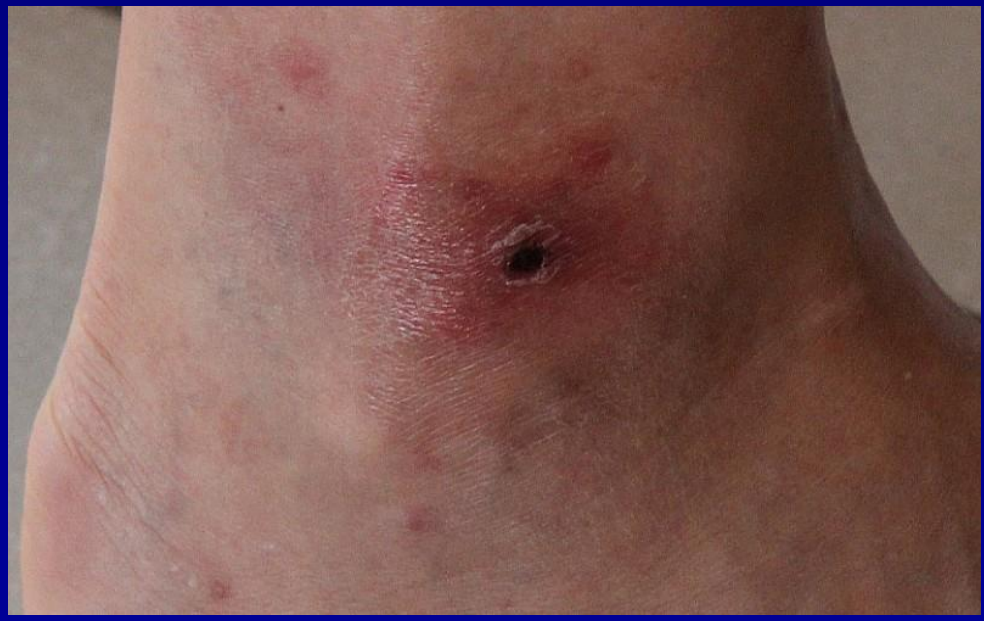
- Returned 5 days ago from a 2 week holiday in South Africa
- Three day history of fever and rash
- Has noticed a lesion on his right ankle

What else would you like to know?

What would you look for on examination?

Additional History

- 5 day safari in Kruger National Park
- Travelled with girl friend
- Did not take antimalarials
- Previously well, no past medical history



Examination

- Temp 38^0C
- Appears well
- Pulse 90, BP 120/80
- Generalised maculopapular rash
- Lesion on right ankle
- Tender R inguinal lymphadenopathy

Investigations?

Investigations

- Blood film negative
- FBC normal
- Serology requested

What are you going to do now?

Clinical Diagnosis: African Tick Typhus

Cause: *Rickettsia africae*

Transmitted by cattle ticks (*Amblyomma* sp.)

Clinical features

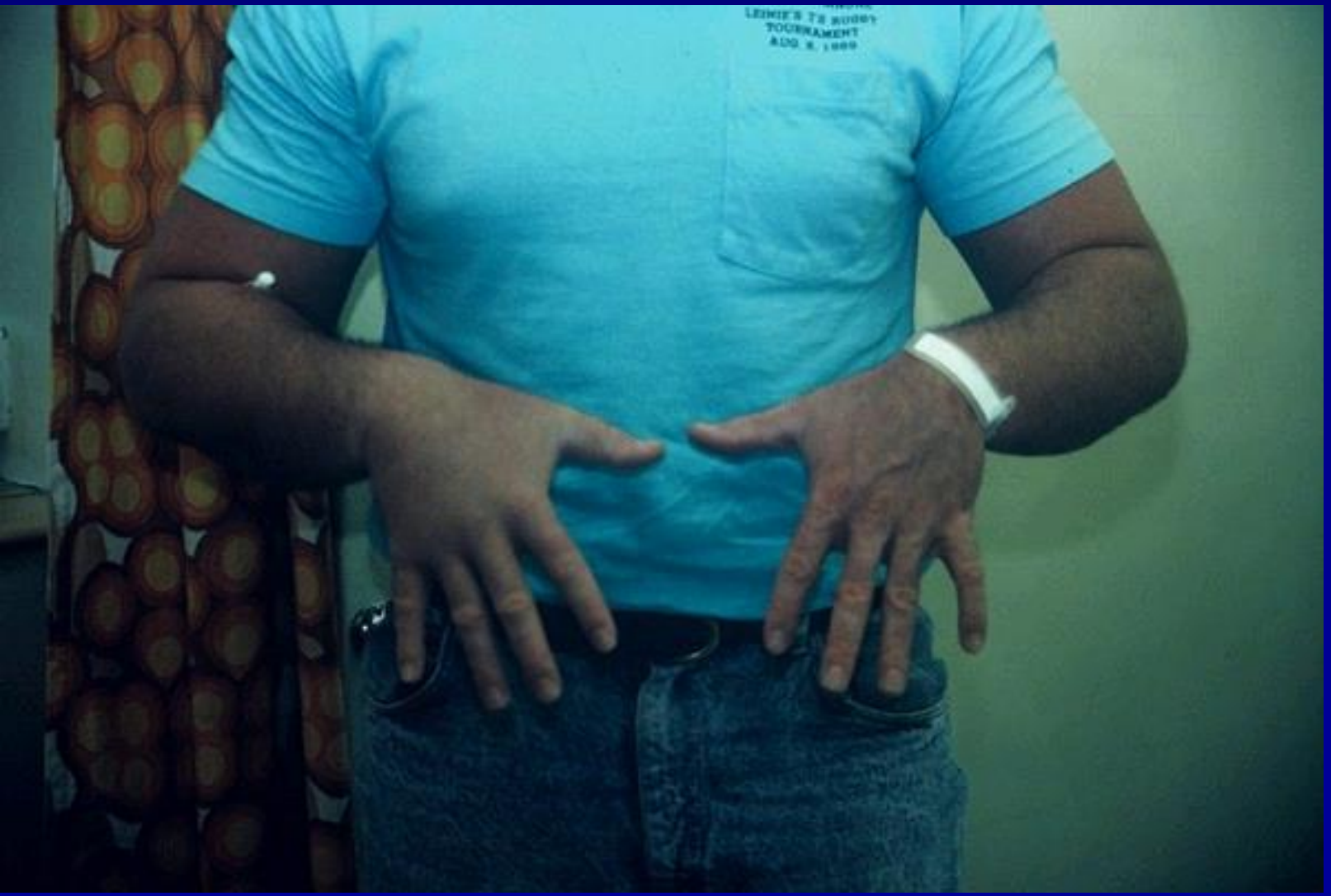
- Eschar
- Rash in about 50% cases,
- Regional lymphadenopathy

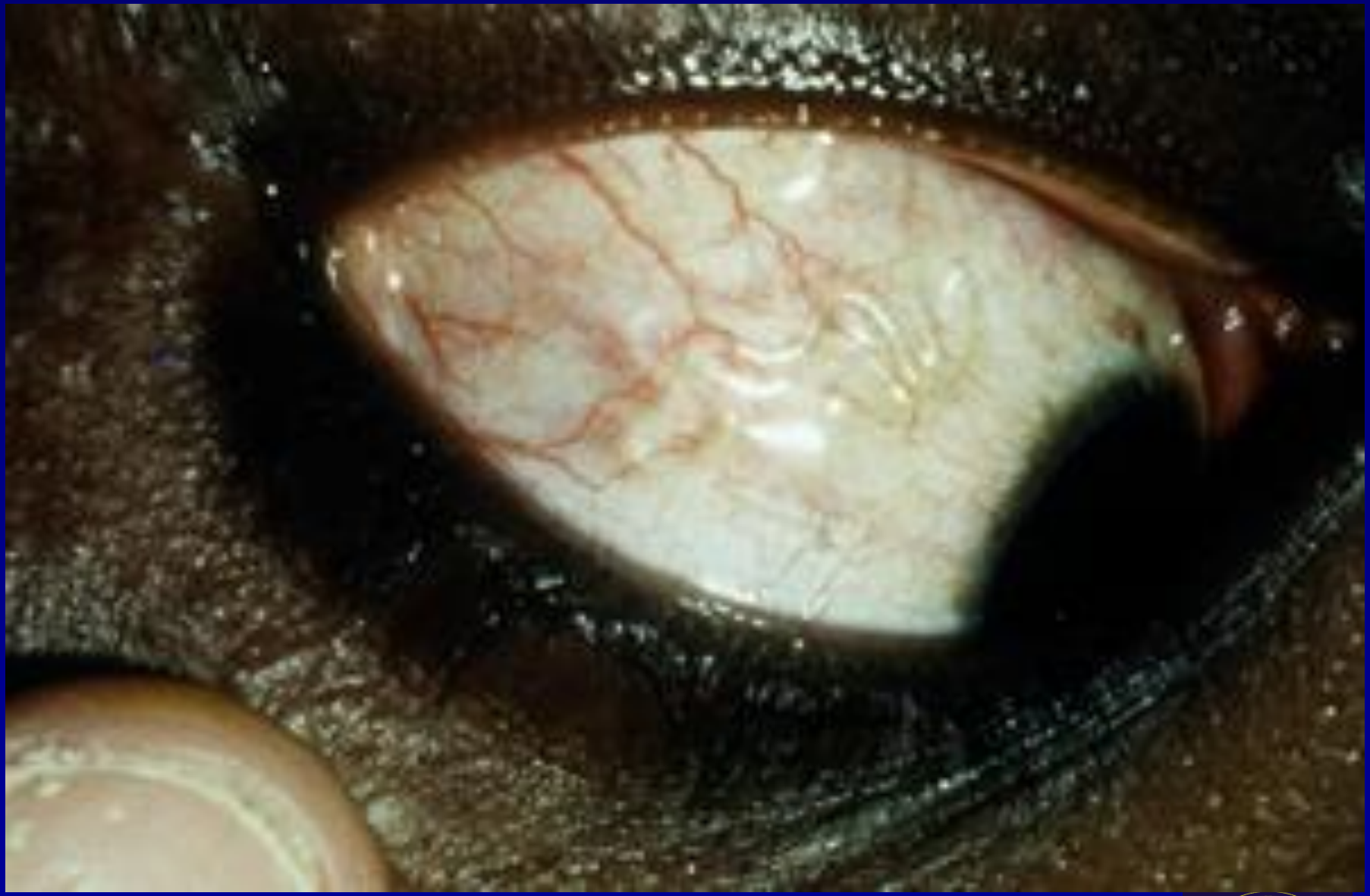
Diagnosis: PCR or serology

Treatment: Doxycycline 100mg bd 5 days

40 year old English man, works on an oil rig in Nigeria
Painless swelling right hand for 5 days

- What else would you like to know?
- What investigations will you request?





Loa loa

Vector

- *Chrysops* flies

Clinical presentation

- Eye worm
- Calabar swelling

Diagnosis

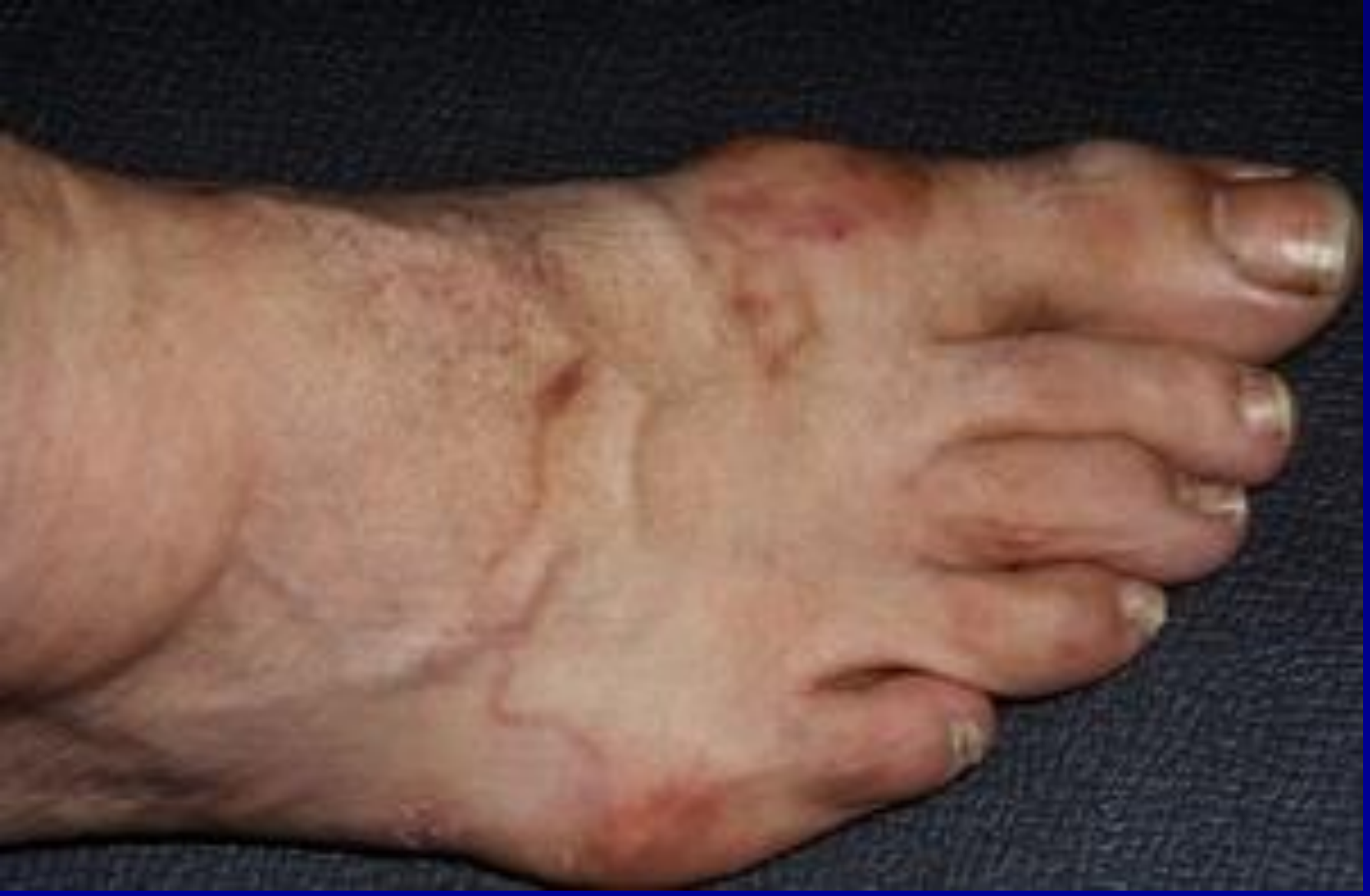
- History
- Blood film for microfilaria

Treatment according to microfilarial load

Low : Di-ethyl carbamazine (DEC) for 3 weeks

Moderate: Ivermectin single dose, then DEC 3 weeks

High: Albendazole 3 weeks with initial steroid cover, then DEC 3 weeks



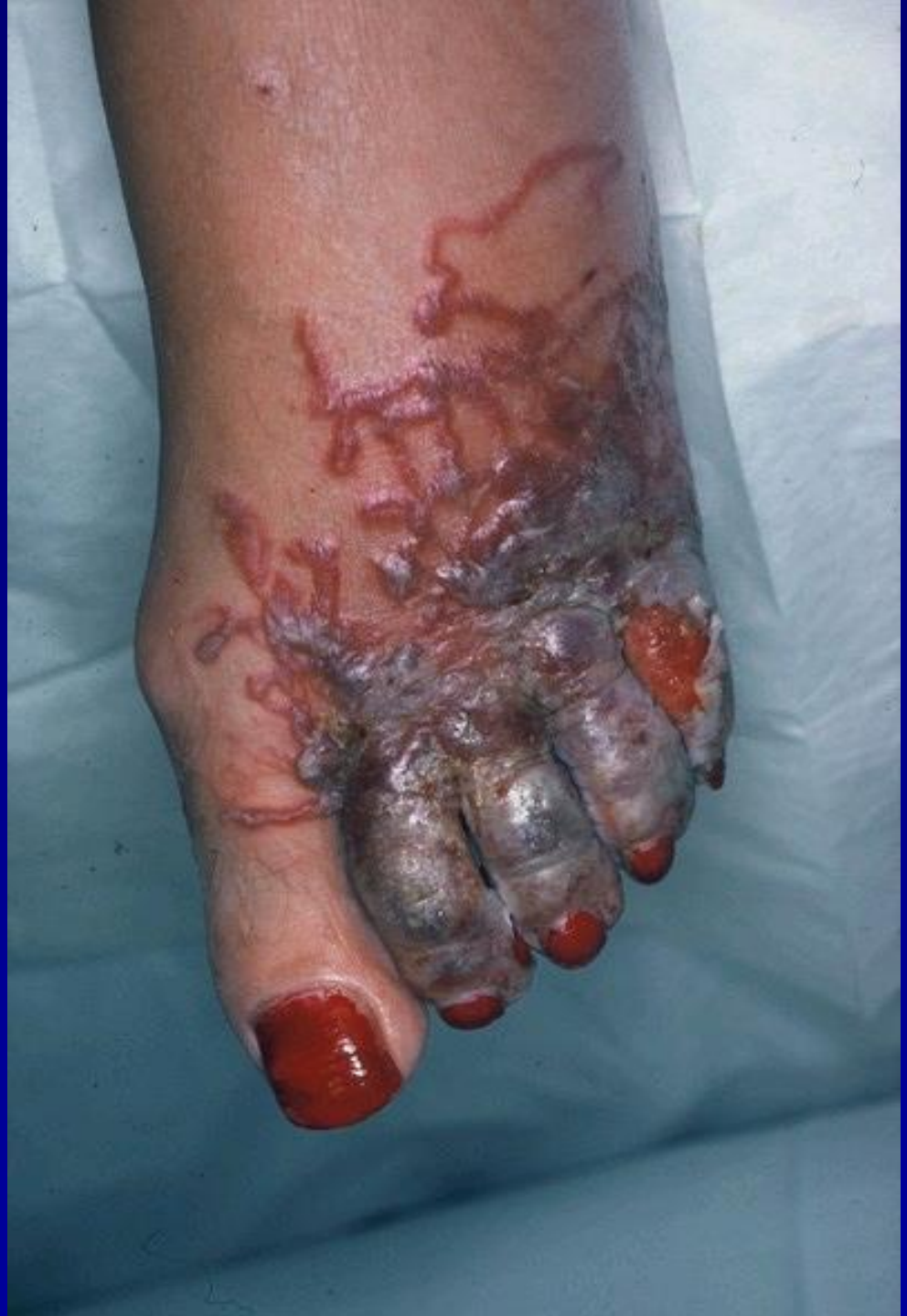
29 year old English man living in The Gambia
Itchy right foot for 5 days
Diagnosis?

Cutaneous larva migrans

- Caused by the dog or cat hookworm
- Itchy lesion that is self limiting but can last several weeks
- Can be diagnosed clinically

Treatment

- Single dose ivermectin (200ug/kg) or
- Albendazole 400mg for 3-7days



September 5th

- 39 year old man presented to HTD with
  - fever
  - headache
  - myalgia
- Had been on the Eco-Challenge trip to Borneo

Eco-Challenge Expedition

The Eco-Challenge is an Expedition Race for teams of adventurers, each team consisting of four men and women combined. The teams race 300 miles non-stop, 24 hours a day… using kayaks, mountain bikes, white water rafts, horses, their feet and climbing ropes..”

Sabah, Borneo

20th August - 3rd September

312 athletes from 26 countries

22 competitors from UK

Exposure:

- Bitten by leeches
- Bitten by mosquitoes
- Waded through caves with bats
- Swam through rivers, living rough
- Scouring the jungle for food and water

Day after coming home

- headache
- rigors
- dry cough
- loose stool for 1 day, slight abdominal cramps
- myalgia

- No other localising symptoms

On examination:

- Seriously fit
- Obvious weight loss
- Alert, orientated
- Temperature 39.4°C, sweaty
- Fungal rash on feet
- Otherwise – Nothing abnormal to find

- Investigations?

Results:

Hb	13.4
WCC	9.5
Dø	Nø 8.4
	Lø0.6
	Eø 0.1
Plts	232
ESR	39
CRP	137

Na	134
K	4.3
Urea	8.0
Creat	129
Bili	9
ALT	47
AlkP	54
Alb	34
Glu	6.9

Results:

- Malaria film negative
- Urine dip-stix 1+ protein
- Urine culture: no growth
- Blood cultures: no growth
- Stool microscopy:
  - Dientamoeba fragilis + Hookworm ova

Results:

- EBV serology: IgG +
- CMV serology: negative
- Hepatitis A, B, C: no acute infection
- Arboviral serology: IgG + for flavivirus
- Toxoplasma: Latex, Dye test negative
- Leptospiral serology: negative

Results:

- Strongyloides Elisa: negative
- Schistosoma Elisa: negative
- Filarial serology: negative
- Histoplasma Antibody: negative
- Hydatid : negative

Clinical course:

- Patient was treated:
  - Mebendazole for Hookworm
  - Topical antifungal on feet
- Improved after rest in hospital
- Discharged home

September 10th:

- 38 year old man
- Same race, same team, same exposure

- 3 days of headache, fever, myalgia & anorexia

On examination:

- Seriously fit
- Apyrexial
- Conjunctival injection ++
- No rash / jaundice / anaemia / palpable lymphadenopathy

Results:

Urea	20.1*	FBC	normal
Creat	317*		
		CRP	93*
LFTs	normal	ESR	72*

- Malaria film negative
- Stool OCP negative
- Stool culture negative
- MSU 8 WBC, 0 RBC
  Culture negative
- Dark ground microscopy negative

Progress

- Improved clinically
- No specific treatment
- Remained afebrile
- Discharged

September 7th

31 year old Primary School Teacher

Same race, different team

Admitted to another hospital

4 day history of fever, rigors, abdominal pain & headache

Febrile 39.0 °C

Nil else on examination

September 11th:

- Haemoptysis
- Slight confusion

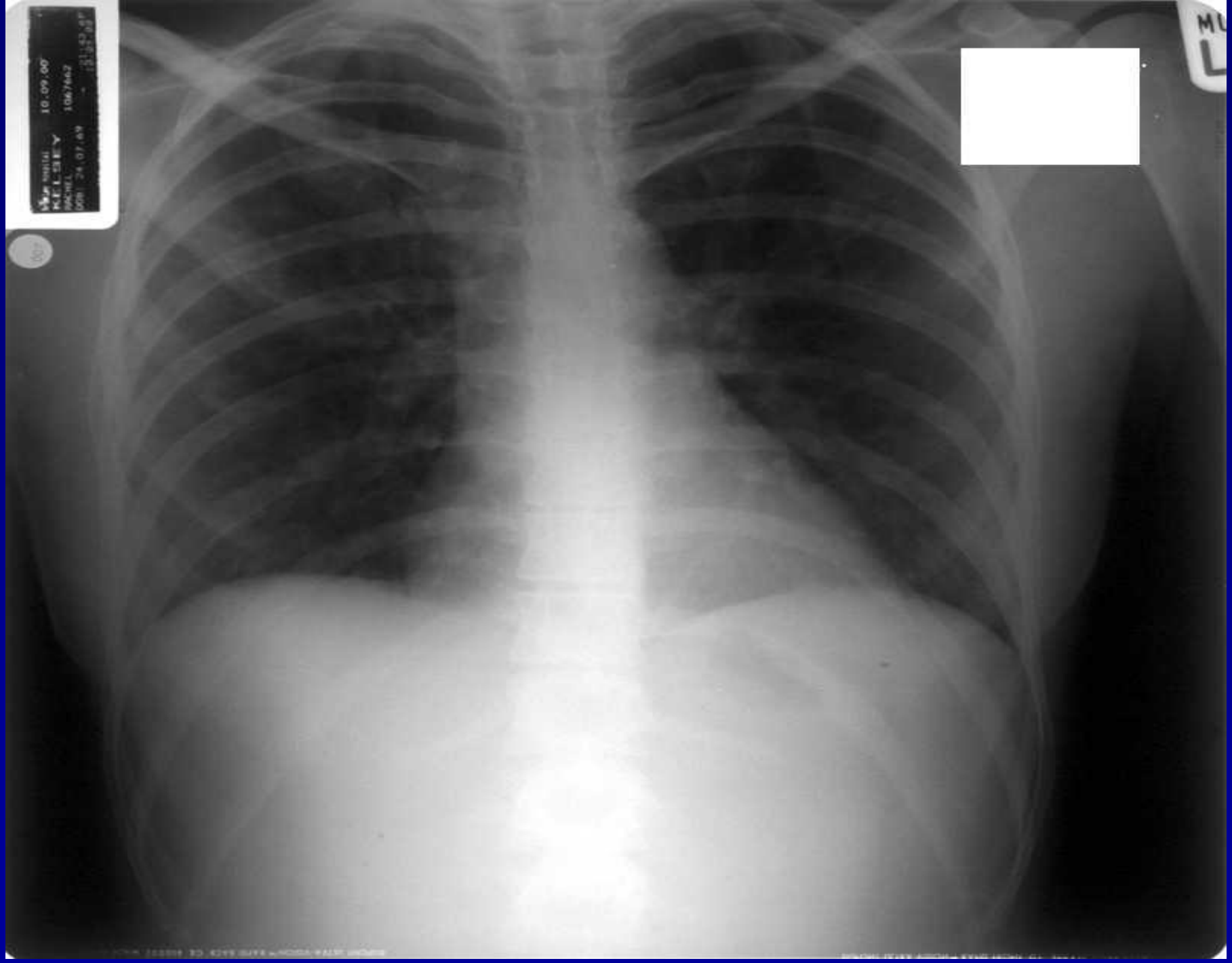
- Transferred to HTD
  - Not unwell
  - Low grade fever
  - No localising signs

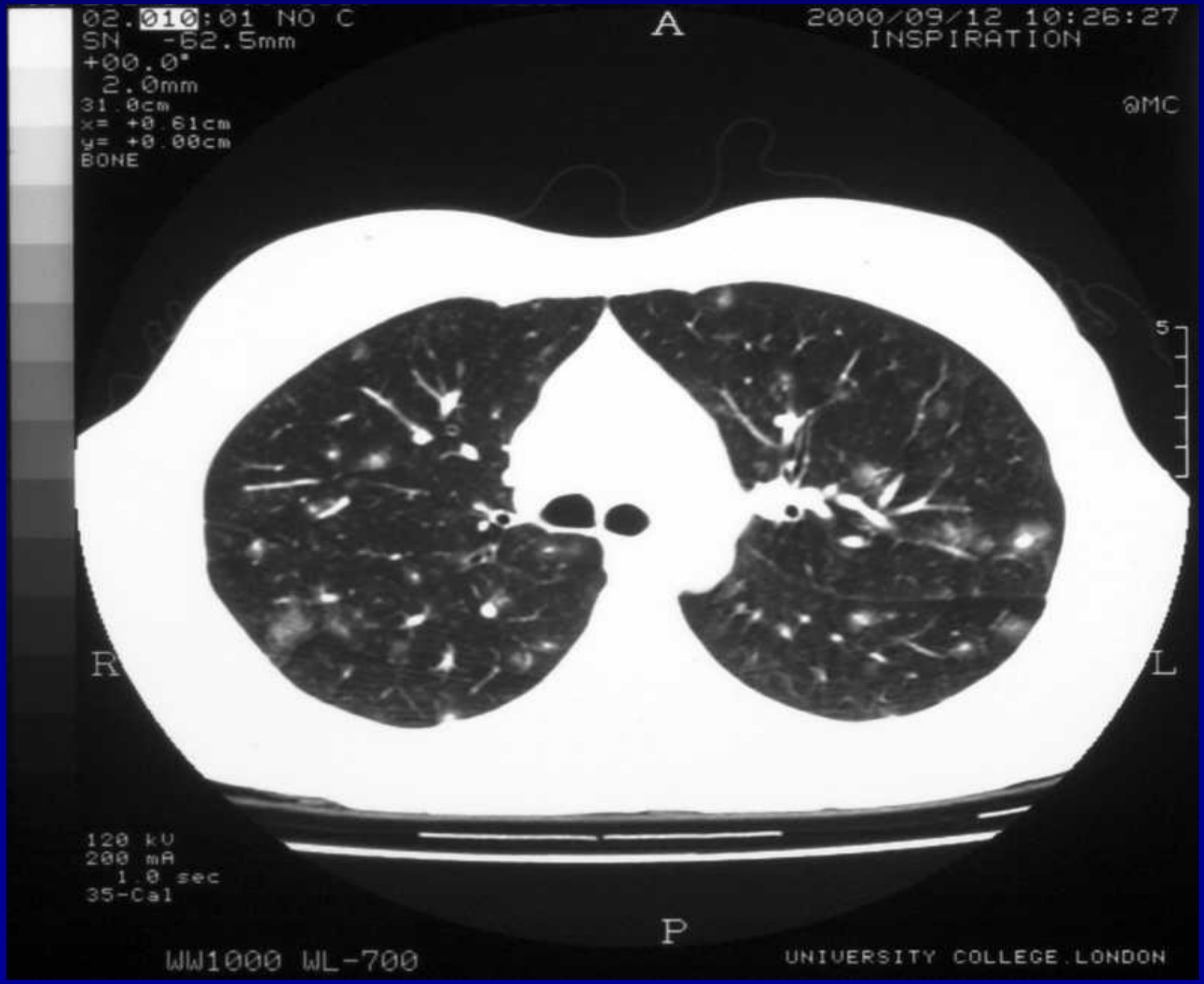
Investigations:

FBC:	normal	no eosinophilia
ESR:	55	
CRP:	68	
U&Es:	normal	
Bilirubin:	6	ALT: 186

Blood, stool & urine cultures - all negative

CXR

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CT Scan report:

There are multiple nodules of varying sizes which are generally small and have a marked halo of ground glass shadowing…

The appearances are typical of haemorrhagic nodules for which there is a wide differential. However, the possibility of acute schistosomiasis should be strongly considered...

Broncho-alveolar lavage: normal

September 15th:

- Dramatically improved
- Afebrile x 36 hours
- LFTs - normalising
- Discharged home

September 18th:

Leptospira microagglutination	positive 1280
Leptospira ELISA IgM	positive 640
L. bataviae microagglutination	positive 1280

Leptospirosis:

Leptospira interrogans

Over 200 serovars

Over 160 mammalian species, birds & reptiles

L. icterohaemorrhagiae	-	rats
L. hardjo	-	cattle
L. canicola	-	dogs

UK	~ 50 cases/year
France	~ 400 cases/year

Pathogenesis:

Survives for weeks in water

Active penetration of abrasions/intact mucosa

Multiply in blood

After Day 7:

- Hepatic necrosis
- Interstitial nephritis
- Meningo-encephalitis
- Myositis
- Haemorrhage

Clinical features:

Mild infection (> 90%):

- Fever, headache, myalgia - often self-limiting

Moderate (~ 9%)

- Sudden prostration, muscle tenderness, pretibial macular rash, jaundice, pneumonitis

Severe (Weil's Disease) (< 1%)

- Almost always *L. icterohaemorrhagiae*
- Acute hepatic & renal failure
- Extensive haemorrhage
- Myocarditis
- 10% mortality

Diagnosis:

Albuminuria
Red & white cell casts
Abnormal LFTs
Polymorphonuclear leucocytosis
Thrombocytopenia
Dark ground microscopy - blood or urine
ELISA

Treatment:

Doxycycline

or

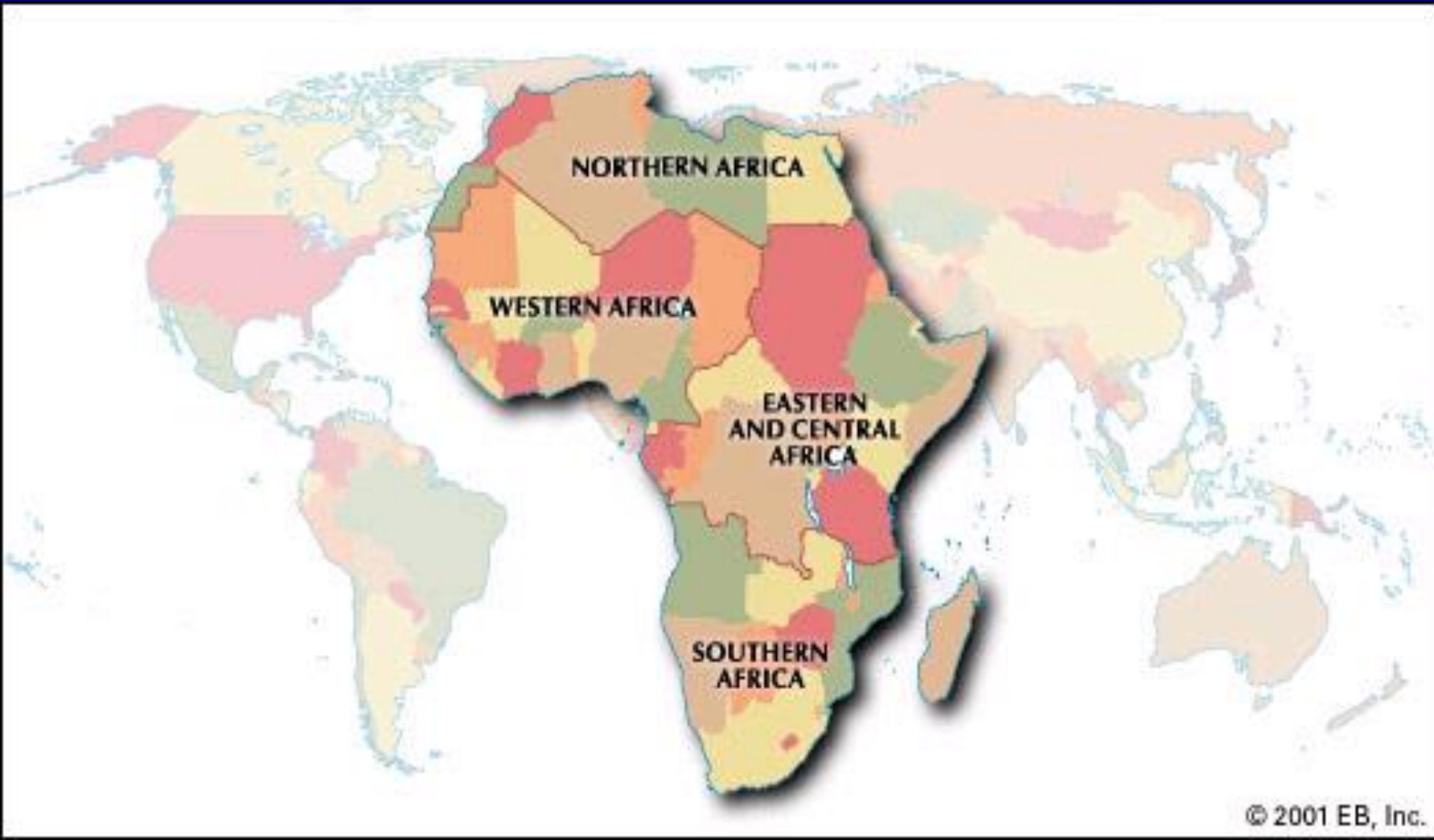
Penicillin

(Jarisch-Herxheimer reactions)

60 year old Swedish woman

- Lives in a small town in Mali where she owns a hotel
- Does not take antimalarials
- Previously well

Africa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60 year old Swedish woman

- 14th August 2015: Fever, diarrhoea
- Self treated with antimalarials and metronidazole
- Diarrhoea improved but fevers continued and felt weak and tired
- After one week went to hospital in Bamako

23rd August

- Investigations: ↑ CRP, ESR, neutrophils
- Possible UTI
- Treated with IV and oral antibiotics
- Fever, nausea, fatigue continued

15th September: Admitted to hospital in Bamako

- ↑CRP, ESR, neutrophils. HIV negative
- Giardia cysts in stool
- CT: oedema of colon and benign liver cyst
- Colonoscopy: suggests inflammatory bowel disease. Biopsies taken
- Treated with metronidazole for giardia
- Diarrhoea improved but fever, nausea and fatigue persisted

October

- Biopsy result: follicular lymphocytic hyperplasia with florid signs of chronic inflammation and islets of histiocytic granulomas
- Impression: Crohn's Disease
- Physician in Bamako advised treatment with steroids

26th October

- Presented to HTD walk in clinic
- Fever, nausea, extreme fatigue, 4-5 loose stools daily
- Has lost 10kg since August

On examination

- Temp 38^0C
- Abdominal tenderness, especially RUQ
- No masses or organomegaly

Investigations?

Investigations

- ↑CRP, ESR, neutrophils. Hb 95 g/l
- HIV negative
- Stool microscopy:
  - Cysts of *Entamoeba histolytica* or *E. dispar*
- Amoebic serology strongly positive
- Stool PCR: *E. histolytica*

<u>Diagnosis</u>:

- Amoebic colitis and liver abscess

Treatment and Follow up

- Tinidazole 2G daily for 5 days
- Paromomycin 500mg tds for 7 days to eradicate cysts from bowel

10 days later

  - Feels well
  - No more diarrhoea and fevers
- Examination
  - Afebrile, abdomen soft
  - Slightly tender right iliac fossa

Case from Thailand

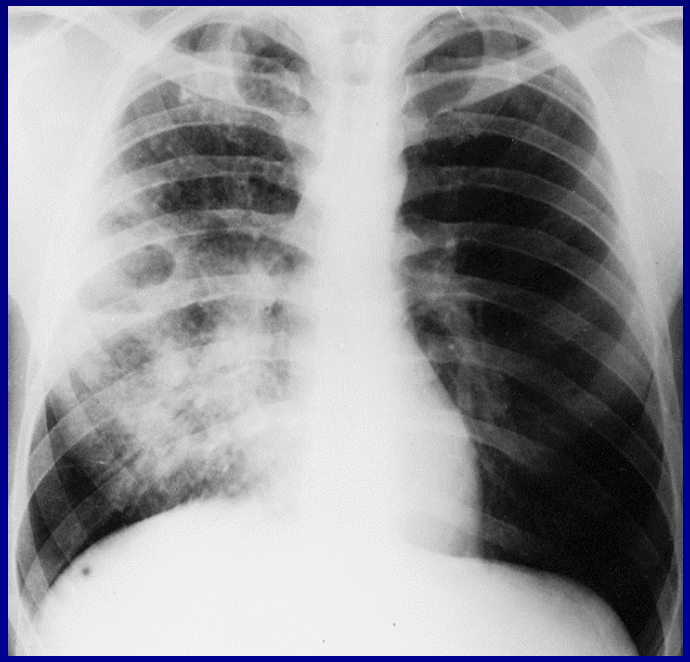
- 49 year old man
- Farmer
- Unwell for 10 days – fever and malaise
- 5 days chest pain and cough

- No significant Past Medical History

- Heavy alcohol consumption

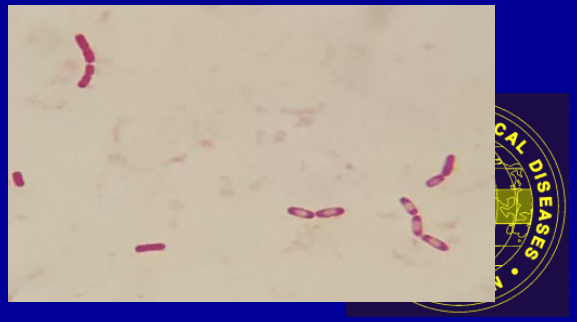
Examination & investigation

- Looks unwell; 39 °C
- RR 30; right basal crackles



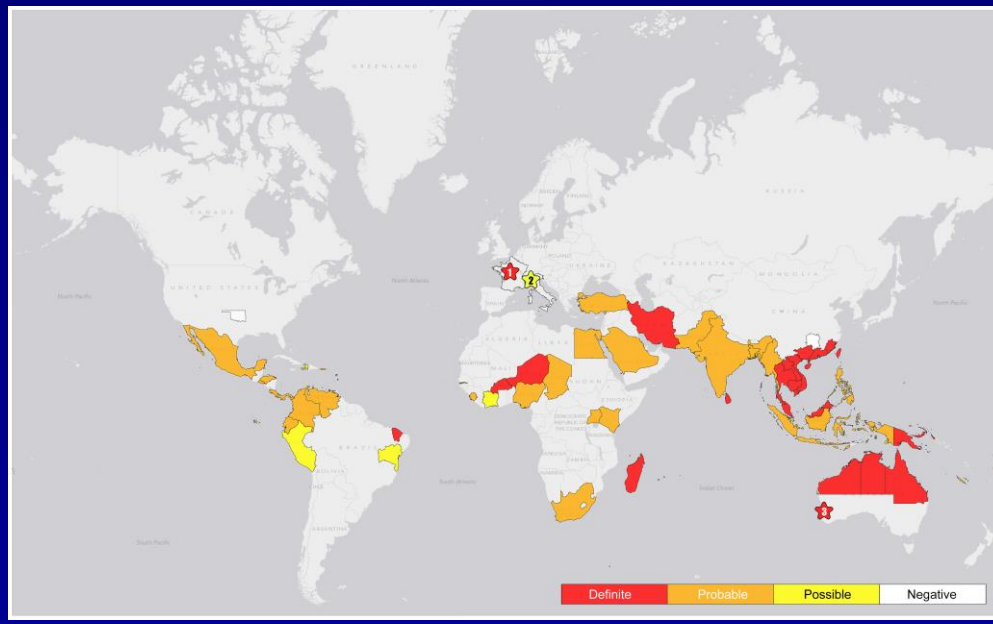
- WCC 16.7 x10^9/L
- Glucose 24 mmol/l

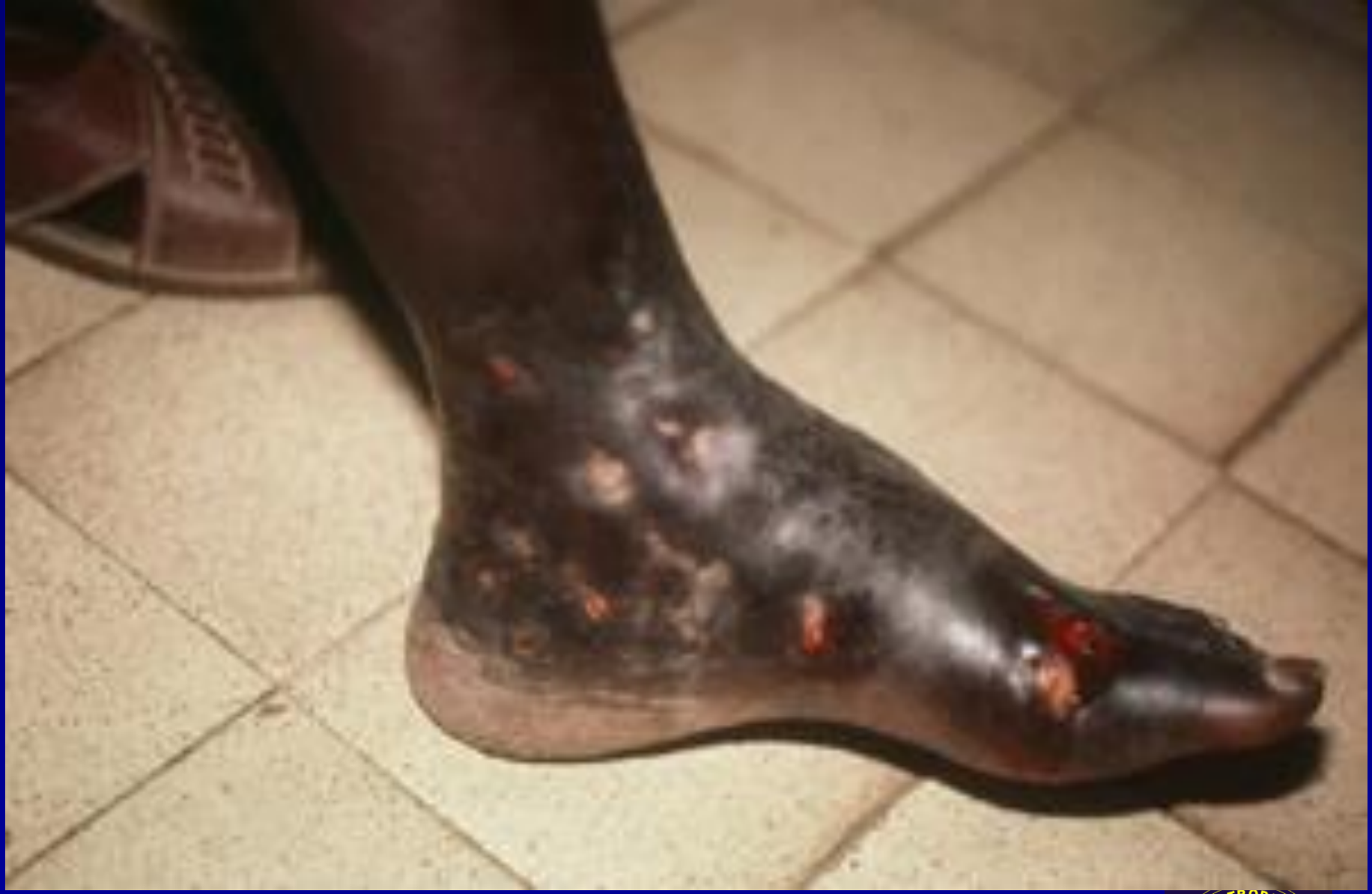
- Day 2: positive blood culture



Melioidosis

- Caused by *Burkholderia pseudomallei*
- Saprophyte found in soil and surface water
- Endemic in regions between latitudes 20°N and 20°S





16 year old girl from rural Sierra Leone
Painful swelling of foot for some months

Melioidosis
Ubon Ratchatani, NE Thailand

- 20% community- acquired bacteraemia
- Commonest BC isolate in rainy season
- Now 400+ cases/year

Melioidosis

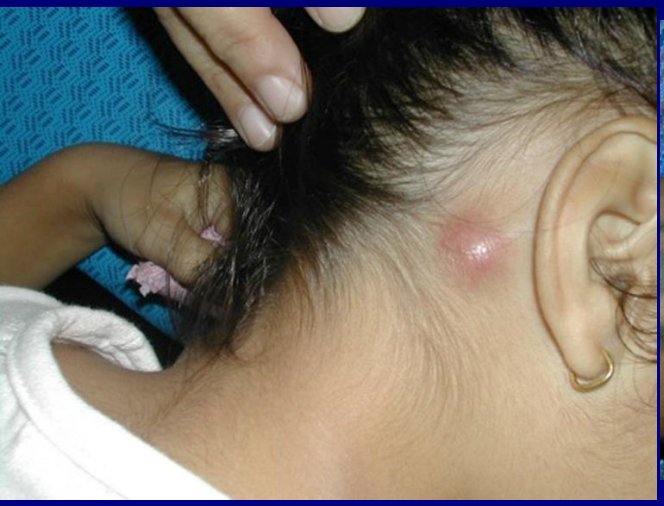
Acquisition

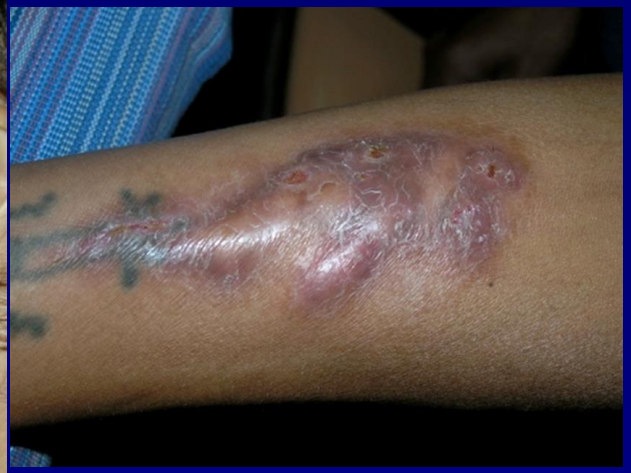
- Majority due to inoculation through skin

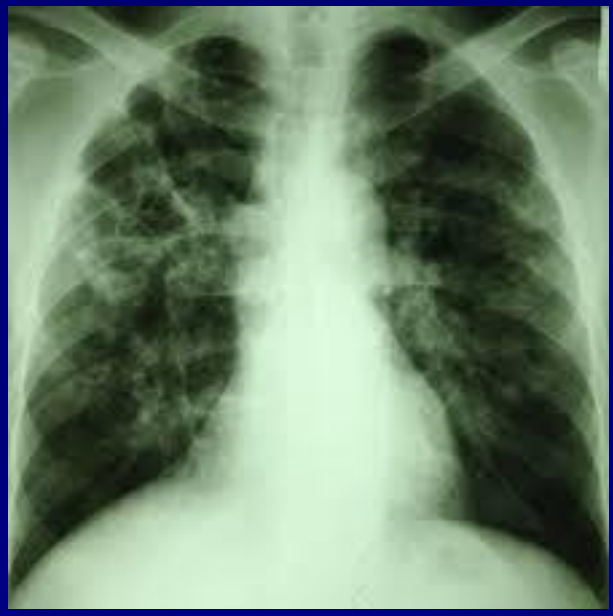
- Aspiration / near drowning (0.5%)
- Inhalation
- Laboratory-acquired

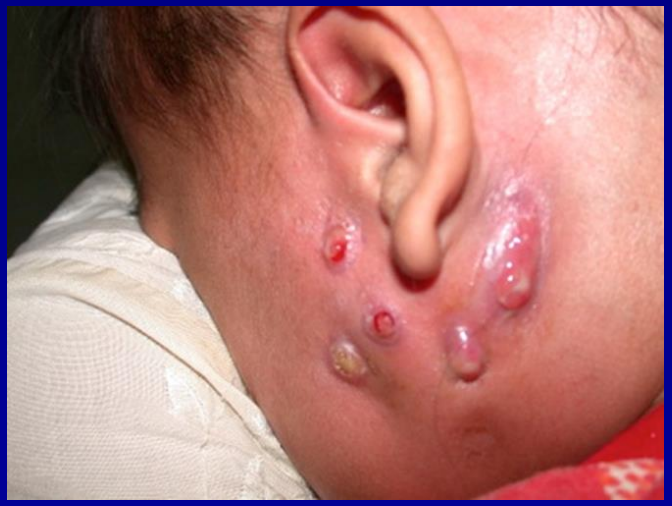
Risk factors

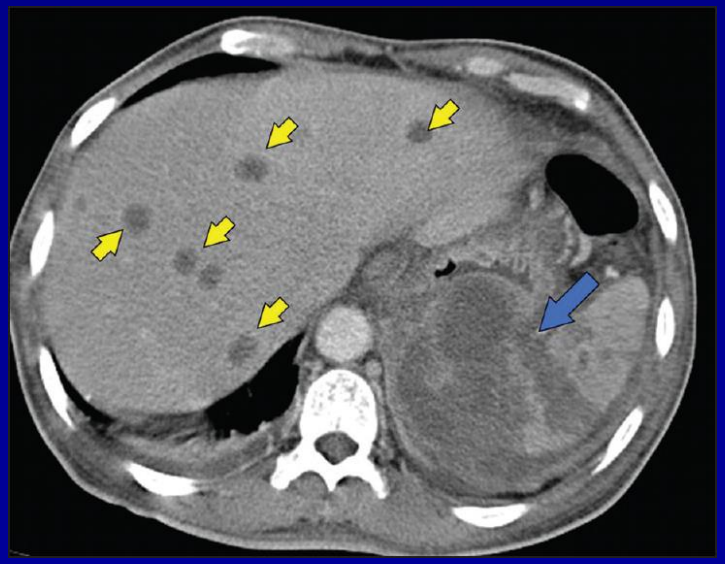
- Diabetes
- Chronic renal disease
- Chronic lung disease
- Alcoholism
- Steroid use
- Thalassaemia
- Malignancy











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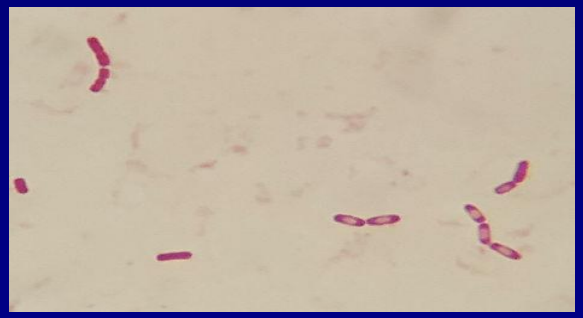
Diagnosis of melioidosis

- Gram negative bacillus
- Culture blood, pus, sputum
- Selective media (Ashdown's)
- Intrinsically gentamicin r
- Hazard Grou



Treatment

Acute parenteral phase

- Ceftazidime, imipenem, meropenem
- Possible role for adjunctive co-trimoxazole in the parenteral phase

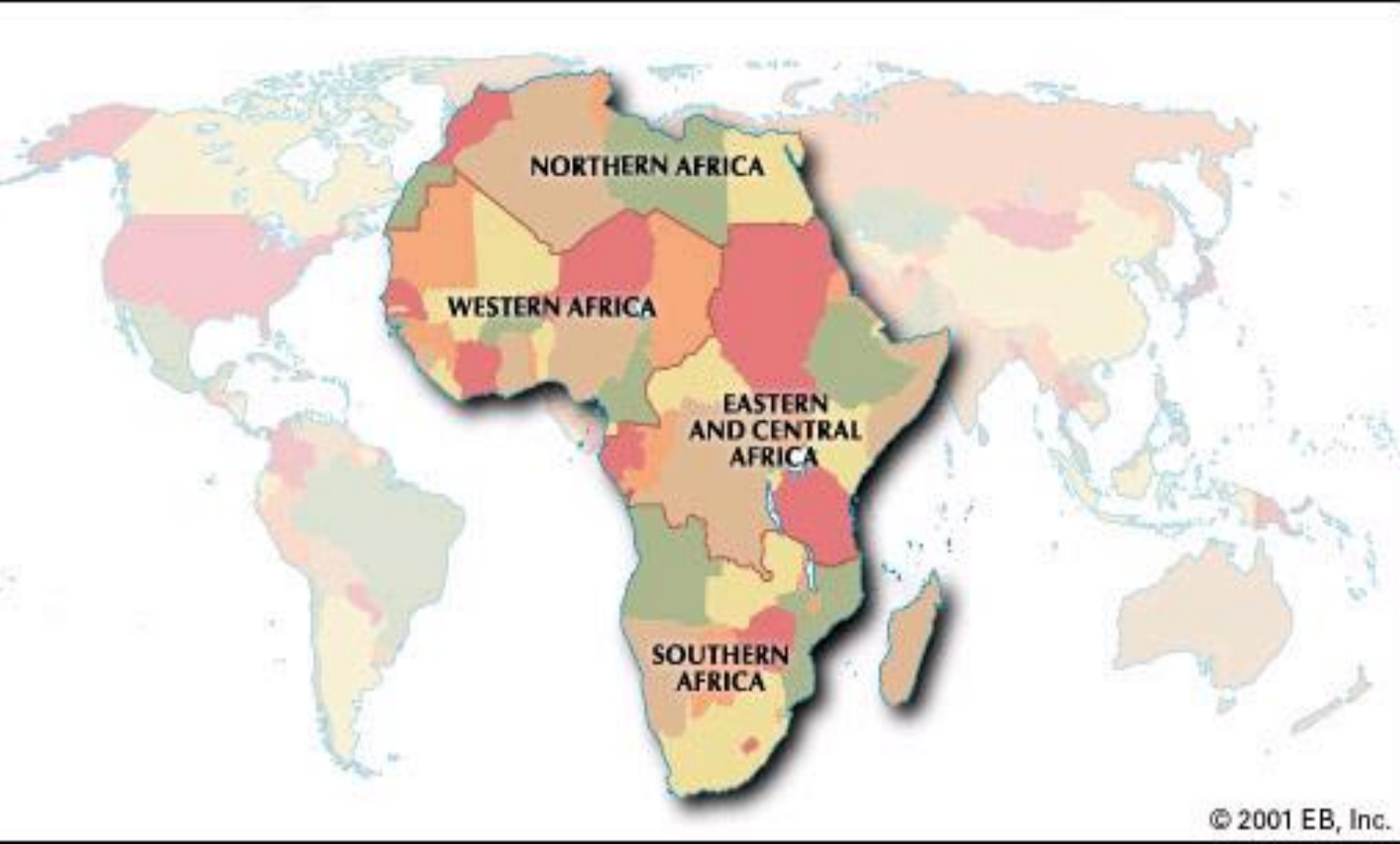
Eradication phase

- 12-20 weeks
- Co-trimoxazole
- 2nd line: co-amoxiclav
- Supportive measures crucial
- Source control!

Angolan Fever

- 30yr British Female
- Angola on & off for 5yrs
- NGO - logistics, not direct healthcare
- Previously fit & well
- Seen in OPD 18th December

Africa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Angolan Fever - Initial History

Early November:

- Rigor then headache, lethargy & fever
- Malaria Film & POC test - Negative
- Vomited blood (and did so for 2 weeks)
- Rx: Artesunate & Doxycycline
- No improvement

Angolan Fever - Further History

- Admitted to hospital in Angola
- Malaria & Typhoid ‘negative’
- 5 days Quinine & Antiemetics
- Fever settled
- Developed ‘blotchy’ rash
- Weight loss (total ~ 5kg)
- WBC = 2.0, Plt = 97

Angolan Fever - Further History

- Transferred to Capetown, S. Africa
- Weak, nauseated, vomiting, headache
- Blood tests ‘Normal’
- Back to UK 8th December
- Tired & weak, some dysuria

Further History...

VACCINATIONS

- Up to date with:
  - Yellow Fever
  - Hep A
- No Hep B vaccination
- Occasional malarone prophylaxis

Further History….

- Rural exposure ++
- No direct contact with dead/ill people or animals

- New Angolan sexual partner with unprotected intercourse 3/12 previously

Examination

- Well. Apyrexial.
- No rash. Mouth normal.
- 1cm slightly tender lymph node left posterior cervical triangle.
- Chest clear
- Cardiovascular system normal
- Abdo: Slight tenderness R iliac fossa

Investigations

- Blood film
- FBC
- LFTs
- Hepatitis & Tryps & Schistosoma Serology
- Viral haemorrhagic fever serology
- HIV serology

Initial Results

- Hb 12.0
- WBC 11.2 (Lym 5.3, Neut 4.5, Eos 0.1)
  - some atypical lymphocytes
- Blood films negative for malaria
- LFTs, U&E normal
- Serology negative for hepatitis, trypanosomiasis, schistosomiasis

Further Results

- HIV positive
- VHF serology negative
- CD4 620
- Viral load 500,000

Diagnosis

- HIV seroconversion illness