Fever in returning travellers: clinical cases

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Declarations

• Nil commercial
• Frequent traveller

• One of clinical coordinators of UK Imported Fever Service
• Member of GeoSentinel network
• Member of ESGITM
• Partially supported by NIHR HPRU grant in Emerging Infections & Zoonoses
Plan

• Focus on recently returned travellers
• Brief epidemiology
• Bedside approach
• Interactive cases
• Conclusions
Where is your next holiday? (choose one)

1. Caribbean
2. Egypt
3. Mediterranean
4. South Asia
5. South America
6. Too dangerous to travel
Where is your next holiday? (choose one)

1. Caribbean
2. Egypt
3. Mediterranean
4. South Asia
5. South America
6. Too dangerous to travel
Club ESCMID traveller

- What has he caught?
Unde venis?

UNDE VENIS? *1


Available online 17 October 2003.

Article Outline
- References

*1 * Annual oration delivered before the Reading Pathological Society on Oct. 25, 1962.
Unde venis?
Where have you come from?

THE LANCET
Volume 281, Issue 7278, 23 February 1963, Pages 401-404

UNDE VENIS? *1

Available online 17 October 2003.

Article Outline
- References

*1 * Annual oration delivered before the Reading Pathological Society on Oct. 25, 1962.
Clinical approach to fever

- History
  - patient
  - geography
  - symptoms
- Signs
- Diagnosis
- Hospitalise/not
- Treatment
- Prevention
Clinical approach to fever

• Is it malaria?
• Is it dangerous?
• Is it new?
• Is it resistant?
• Is it reportable?
  – Local & national public health
  – ProMED, TropNet Europe, GeoSentinel
• Is it worth writing up?
Travel history

- **Where** travelled, exact location
- **When** travelled, exact dates
- **Why** travelled, work / leisure
- **What** specific exposures
- **Which** immunisations, malaria prophylaxis, anti-mosquito measures?
  compliance
English units 1998-9

4 centres 390/421 adult travel admissions infectious cause

93% UK domiciled

2918 bed days (21 ITU)

Malaria (29% all cases) 20% bed days & 80% ITU stay

Median length of stay 4 days

W Africa 39/65 (59%) malaria OR 5.22
E Africa 44/72 (61%) malaria OR 5.82
S Asia 8/82 (10%) malaria OR 0.21

Harling R et al. J Infect 2004; 48: 139-144
GeoSentinel fever (n=6957)

28% of 24,920 travellers 1997-2006

Wilson M et al. CID 2007;44:1560-8
# GeoSentinel fever study \( n=6957 \)

<table>
<thead>
<tr>
<th>Region</th>
<th>Fever</th>
<th>Mal</th>
<th>DEN</th>
<th>No diag</th>
<th>Resp</th>
<th>Diarrh</th>
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<tbody>
<tr>
<td>Oceania</td>
<td>51</td>
<td>59</td>
<td>6</td>
<td>12</td>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>SS Africa</td>
<td>41</td>
<td>42</td>
<td>1</td>
<td>19</td>
<td>10</td>
<td>10</td>
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<tr>
<td>SE Asia</td>
<td>33</td>
<td>7</td>
<td>18</td>
<td>22</td>
<td>17</td>
<td>17</td>
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<tr>
<td>SC Asia</td>
<td>27</td>
<td>7</td>
<td>9</td>
<td>20</td>
<td>14</td>
<td>22</td>
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<tr>
<td>N Asia</td>
<td>24</td>
<td>1</td>
<td>0</td>
<td>26</td>
<td>39</td>
<td>11</td>
</tr>
<tr>
<td>N Africa</td>
<td>22</td>
<td>5</td>
<td>1</td>
<td>13</td>
<td>13</td>
<td>38</td>
</tr>
<tr>
<td>All</td>
<td>21</td>
<td>6</td>
<td></td>
<td>14</td>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>

Figures are % of travellers returning from each region.

Wilson M et al. *CID* 2007;44:1560-8
Exposure and infection

- **Raw foods**: enterococci, trichinosis
- **Untreated water, milk**: hepatitis, brucellosis, shigella
- **Fresh water contact**: schistosomiasis, leptospirosis
- **Sex**: HIV, syphilis, GC
- **Insect bites**: malaria, arbovirus, rickettsiae, trypanosomes
- **Animals**: rabies, Q fever, brucellosis, plague
- **People**: VHF, hepatitis, meningococcal
Incubation period < 10 days

- Arbovirus including dengue
- Enteric bacterial
- Typhus (louse borne, flea borne)
- Plague
- Typhoid
- Haemorrhagic fevers
Fever and localizing signs

Rash - dengue, typhoid, HIV, syphilis
Jaundice - malaria, hepatitis, leptospirosis
Lymphadenopathy - HIV, rickettsial infections
Hepatomegaly - amoebic liver abscess, leptospirosis
Splenomegaly - malaria, typhoid, brucella
Eschar - typhus, CCHF
Haemorrhage - VHF, rickettsial infection
Investigations

- Thick and thin films (antigen detection)
- Full blood count, biochemistry
- Blood cultures
- Save serum for serology
- Urine analysis and culture
- Stool microscopy and culture
- Chest X ray
- Scans only as indicated
Common sense

Establish the presence of fever before investigation

Retrospective investigation of fever that has settled is usually pointless

Bryceson A 1988
23 year old woman with fever and headache for 4 days in March 2007
Case 1. 23 year old woman

Candolim & Dudhsagar falls with husband
4-18 Nov 2006
Bed & breakfast
Both:
  Used DEET
  Full CQ/P prophylaxis
She had few mosquito bites, he had many

Fever end of March 2007
Progress

Hospital after 4 days
Temp 39.5° C
Nil else

Hb 12.5 g/dL
WBC 4.5 x 10^9/L
Platelets 105 x 10^9/L
Bilirubin 25 mmol/L (<18)
AST 43 U/L (<40)
Blood film shows:
What is the most likely diagnosis?

1. Dengue
2. Enteric fever
3. Falciparum malaria
4. Leptospirosis
5. Scrub typhus
6. Vivax malaria
What is the most likely diagnosis?

1. Dengue
2. Enteric fever
3. Falciparum malaria
4. Leptospirosis
5. Scrub typhus
6. Vivax malaria
GeoSentinel update 2013

42173 travellers  53 units  23.3% fever

SSA                   Pf malaria    Rickettsial
Latin Am/Carib        DEN          Pv malaria
SEA                   DEN          Pf malaria
SCA                   Enteric       DEN
MENA                   HAV          Pf malaria    Brucella
EUR                   HIV          HAV
N AM                   Cocci         Rickettsial
AUS/NZ/OC             Pv malaria    DEN

What is the diagnosis?
(choose one but vote in a minute)

1. Dengue
2. Falciparum malaria
3. Vivax malaria
4. Ovale malaria
5. Ehrlichiosis
What is the diagnosis?
(choose one - vote now)

1. Dengue
2. Falciparum malaria
3. Vivax malaria
4. Ovale malaria
5. Ehrlichiosis
What is the diagnosis? (choose one – answer)

1. Dengue
2. Falciparum malaria
3. Vivax malaria
4. Ovale malaria
5. Ehrlichiosi
Points in favour of vivax

- Common in India
- Long incubation period
- No complications

Parasitology
- Scanty parasitaemia
- Younger, larger RBC
- Single chromatin
- Schüffner’s dots
- Rest of film shows various stages & amoeboid forms
Progress

Treated with chloroquine 1.5 g over 3 days

Rapidly improved

Glucose 6 phosphate dehydrogenase normal

Primaquine considered

Weight 65kg
What primaquine regimen would you use? (choose one)

1. 15mg per day for 2 weeks after CQ finished

2. 15 mg per day for 2 weeks at same time as CQ

3. 30 mg per day for 2 weeks after CQ finished

4. 30 mg per day for 2 weeks at same time as CQ

5. None
What primaquine regimen would you use? (choose one)

1. 15mg per day for 2 weeks after CQ finished

2. 15 mg per day for 2 weeks at same time as CQ

3. 30 mg per day for 2 weeks after CQ finished

4. 30 mg per day for 2 weeks at same time as CQ

5. None
Figure: Life cycle of the human malaria parasite Plasmodium vivax

Case 2. 26 year old husband

Had been admitted to another hospital in late January (two weeks of symptoms)
Quite ill with vivax malaria
Treated with full dose chloroquine and primaquine 30mg/day for 14 days

Readmitted May 2007 with confirmed vivax malaria (1 day of symptoms)
Weight 92 kg
How would you treat him now? (choose one)

1. CQ 1.5 g and PQ 30 mg/day for 14 days
2. CQ 1.5 g and PQ 30 mg/day for 21 days
3. CQ 1.5 g and PQ 45 mg/day for 14 days
4. Malarone alone
5. Malarone plus PQ
How would you treat him now? (choose one)

1. CQ 1.5 g and PQ 30 mg/day for 14 days

2. CQ 1.5 g and PQ 30 mg/day for 21 days

3. CQ 1.5 g and PQ 45 mg/day for 14 days

4. Malarone alone

5. Malarone plus PQ
Immediate diagnosis & management of malaria in emergency room

- British Infection Society
- Advisory Committee on Malaria Prophylaxis (HPA)

www.britishinfection.org/drupal/
Malaria in Goa

Previously endemic

Risk assessment last 10 years – low risk for tourists so chemoprophylaxis not usually advised

Heavy rains Oct 2006

Falciparum cases in European travellers especially from Candolim area north of capital Panaji

Expect more cases of vivax

Chemoprophylaxis now advised
Rapid communications

CONTINUING IMPORTATION OF FALCIPARUM MALARIA FROM GOA INTO EUROPE

T Jelinek (jelinek@bctopen.de), on behalf of the European Network on Imported Infectious Disease Surveillance (TropNetEurop)
1. Berlin Center for Travel & Tropical Medicine, Berlin, Germany

A case of falciparum malaria acquired in Goa, India, has recently been reported to the European Network on Imported Infectious Disease Surveillance (TropNetEurop, http://www.tropnet.net). The report relates to a Swedish woman in her fifties who had spent two weeks in Goa (Candolim beach) and Kerala in India without taking malaria chemoprophylaxis. In mid-December 2007, approximately two weeks after returning to Sweden, she fell ill with fever and a mild cough. Ten days after the onset of symptoms, thick and thin films were done and an infection with Plasmodium falciparum with a parasitaemia of 1.3% was diagnosed. The patient was admitted to hospital, uneventfully treated with a standard dose of mefloquine and discharged four days later.

life-threatening illness. The diagnosis can only be made if a careful travel history is taken, and testing done early, even for regions where malaria is not normally recognised.

References
Lessons

• Epidemiology of infection continually changing
• Pretravel health advice needs to keep up with this
• Chemoprophylaxis does not always prevent malaria
• Especially vivax/ovale
• Use higher dose primaquine for vivax (and ovale?)
• Give primaquine with chloroquine (not after)
• Clinical chloroquine resistance not yet a major problem with vivax

Lalloo DG et al. (UK guidelines) J Infect 2007; 54(2): 111-21
Griffith KS et al. (US guidelines) JAMA 2007; 297: 2264-77
50 year old woman with fever, rash and chest pain from Mauritius in March 2006

2 week holiday in Mauritius returned 4 days ago
Injured leg and admitted to hospital on day 9 for antibiotics
Many patients on ward with fever
No mosquito bites remembered
4 days later fever and headache for 3 days
Improved as flew back to UK
Full immunisations, no malaria chemoprophylaxis
Now has 2 days of

Fever to 39° C
Migratory joint pains
Headache
Photophobia
Rash
Pleuritic chest pain

Temp 38.9° C  P100
BP 120/85  RR 12
Discrete rash on legs
Chest clear
No neck stiffness
Joints normal
Investigations

Hb 11.0 g/dL (>11.5)
WBC 6.1 x 10^9/L
  Lymph 0.6 (1.5-4)
  Mono 0.2 (0.2-0.8)
  Neut 5.2 (2-7.5)
Plt 270 x 10^9/L (>150)
ESR 12 mm/hr

Malaria smears neg
Liver function normal
CXR normal
What is your diagnosis? (choose one)

1. Dengue
2. Malaria
3. Meningococcal meningitis
4. O’nyong-nyong
5. Something else
What is your diagnosis?
(choose one)

1. Dengue
2. Malaria
3. Meningococcal meningitis
4. O’nyong-nyong
5. Something else
Initial diagnosis & progress

- **Concern about meningococcal disease**
  - CT of head normal
  - Given ceftriaxone
  - No lumbar puncture
  - Transferred to Liverpool

- **Diagnosis presumed chikungunya**
  - Pulmonary embolus excluded by VQ scan

Clinical features chikungunya

<table>
<thead>
<tr>
<th></th>
<th>Malaysia 1998 (%)</th>
<th>Réunion 2005-Feb 2006 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin rash</td>
<td>50</td>
<td>39</td>
</tr>
<tr>
<td>Myalgia</td>
<td>50</td>
<td>60</td>
</tr>
<tr>
<td>Headache, spinal pain</td>
<td>50, 50</td>
<td>70, NR</td>
</tr>
<tr>
<td>Arthralgia (all types)</td>
<td>78</td>
<td>100</td>
</tr>
<tr>
<td>Large joints</td>
<td>18</td>
<td>NR</td>
</tr>
<tr>
<td>Fever</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Number of reported cases</td>
<td>51</td>
<td>504</td>
</tr>
</tbody>
</table>

NR = not reported. Data for Malaysia from Lam and colleagues (2001) and data for Réunion from http://www.invs.sante.fr.

Table: Frequency of clinical manifestations during the 1998 Malaysian epidemic and the 2005 Réunion epidemic

Pialoux G et al. LID 2007; 7: 319-27
**Figure 2** | Usual course of CHIKV disease in adults. The figure shows a schematic representation of CHIKV disease, showing typical symptoms and biomarkers (including usual durations) in boxes. The table lists the symptoms and infection stages.
Dengue

Main differential diagnosis

Dengue from Vietnam

Jan 2008
### Clinical manifestations of chikungunya and dengue infections in returned travelers

<table>
<thead>
<tr>
<th>Clinical finding</th>
<th>Chikungunya (22 cases)</th>
<th>Dengue (16 cases)</th>
<th>Significance (P)*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N (%)</td>
<td>N (%)</td>
<td></td>
</tr>
<tr>
<td>Cephalalgia</td>
<td>9 (41)</td>
<td>11 (69)</td>
<td>0.087</td>
</tr>
<tr>
<td>Asthenia</td>
<td>15 (68)</td>
<td>13 (81)</td>
<td>NS</td>
</tr>
<tr>
<td>Myalgia</td>
<td>7 (32)</td>
<td>8 (50)</td>
<td>NS</td>
</tr>
<tr>
<td>Arthralgia</td>
<td>22 (100)</td>
<td>0</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Pruritus</td>
<td>10 (48)</td>
<td>5 (31)</td>
<td>NS</td>
</tr>
<tr>
<td>Lymphadenopathy</td>
<td>14 (64)</td>
<td>7 (44)</td>
<td>NS</td>
</tr>
<tr>
<td>Macular exanthema</td>
<td>16 (73)</td>
<td>13 (81)</td>
<td>NS</td>
</tr>
</tbody>
</table>

* NS, nonsignificant.
### Fever & exanthems: differences

#### Biological features of chikungunya and dengue infections in returned travelers

<table>
<thead>
<tr>
<th>Biological finding</th>
<th>Chikungunya (22 cases)</th>
<th>Dengue (16 cases)</th>
<th>Significance (P)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leucopenia</td>
<td>8 (40)</td>
<td>12 (75)</td>
<td>0.033</td>
</tr>
<tr>
<td>Neutropenia</td>
<td>2 (10)</td>
<td>13 (81)</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Lymphopenia</td>
<td>18 (90)</td>
<td>9 (56)</td>
<td>0.049</td>
</tr>
<tr>
<td>Circulating lymphocytosis</td>
<td>6 (30)</td>
<td>5 (31)</td>
<td>NS</td>
</tr>
<tr>
<td>Anemia</td>
<td>3 (15)</td>
<td>0</td>
<td>NS</td>
</tr>
<tr>
<td>Thrombopenia</td>
<td>7 (35)</td>
<td>14 (88)</td>
<td>0.002</td>
</tr>
<tr>
<td>Increased ALAT*</td>
<td>13 (65)</td>
<td>14 (88)</td>
<td>NS</td>
</tr>
<tr>
<td>Increased CRP†</td>
<td>9 (64)</td>
<td>10 (77)</td>
<td>NS</td>
</tr>
</tbody>
</table>

* ALAT, alanine aminotransferase.
† CRP, C-reactive protein.

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Which of these is not a vector for chikungunya? (choose one)

1. *Aedes aegypti*
2. *Aedes albopictus*
3. *Aedes vittatus*
4. *Anopheles gambiae*
5. *Culex annulorostris*
Which of these is not a vector for chikungunya? (choose one)

1. Aedes aegypti
2. Aedes albopictus
3. Aedes vittatus
4. Anopheles gambiae
5. Culex annulorostris
Figure 1: Mosquito vectors of chikungunya virus
(A) Blood-gorged A albopictus female feeding on a human host. A albopictus is the primary chikungunya virus vector in the current Indian Ocean outbreak. (B) A aegypti mosquito. A aegypti is the primary chikungunya virus vector in Asian chikungunya outbreaks. Images from United States Department of Agriculture.

How would you treat her?  
(choose one)

1. Symptomatic treatment
2. Chloroquine
3. Interferon
4. Ribavirin
5. Aciclovir
How would you treat her?
(choose one)

1. Symptomatic treatment
2. Chloroquine
3. Interferon
4. Ribavirin
5. Aciclovir
Progress

6 weeks later
Severe fatigue
Mild joint pain
Sore leg wound – osteomyelitis excluded

3 months later
Improving
Compensated by travel health insurance

Serology
Positive IgM & IgG for Chikungunya
Epidemiology

- Tanzania 1953
- Asia
- West Africa
- Réunion, Mauritius etc from 2000
- 1.5M visitors in 2004
- UK importations >130 in 2006

*Figure 2: Chikungunya and dengue incidence in India and Indian Ocean. Status as of March 17, 2006. Data from WHO, http://www.who.int.*
Figure 3: Chikungunya cases in Réunion and imported cases into metropolitan France, April 2005–December 2006. Weekly notifications based on an estimated mathematical extrapolation (http://www.invs.sante.fr and reference 52) and imported cases in France.
Cos’è la chikungunya?
La febbre Chikungunya è una malattia nota per eventi epidemici, il primo dei quali è stato registrato in Tanzania nel 1952. Da allora, sono stati descritti focolai epidemicici in Asia ed Africa.
La Chikungunya è una malattia virale acuta, caratterizzata da sintomi simili-influenzali quali: febbre elevata, cefalea, debolezza, dolori articolari diffusi, che talora costringono il paziente ad assumere una posizione piegata nel tentativo di alleviare il dolore causato dall’infiammazione delle articolazioni, (in swahili, “Chikungunya” significa “che contorce”); tale quadro è accompagnato, in un’elevata percentuale di casi, da manifestazioni cutanee maculo-papulari pruriginose, che talora possono assumere caratteristiche di tipo emorragico benigno (petecchie, ecchimosi, epistassi, gengivorragnae).
I sintomi durano tre-cinque giorni e si risolvono spontaneamente, ma i dolori articolari, accompagnati da astenia, possono persistere anche per mesi. Le complicanze più gravi sono rappresentate dalla meningoencefalite e dallo shock settico da coagulazione vasale disseminata.
La Chikungunya è generalmente a decorso benigno, ma può essere fatale, particolarmente in soggetti anziani con sottostanti patologie di base (pazienti oncologici, trapiantati, pazienti affetti da malattie croniche quali broncampionopatia cronica ostruttiva, cardiopatie, diabete).

Come si trasmette?
Il virus responsabile della Chikungunya è un togavirus (arborvirus) che viene trasmesso dalle zanzare del genere Aedes, come Aedes aegypti e Aedes albopictus, comunemente chiamata zanzara tigre. Queste zanzare possono trasmettere l’infezione punendo una persona malata, nella fase acuta. La zanzara si infetta e successivamente punendo un’altra persona può trasmettere il virus. Il virus non si trasmette invece da persona a persona con i normali contatti di vita quotidiana.

Dopo quanto compaiono i sintomi?
Chikungunya - Italy September 2007

- 197 cases reported (Ravenna Province)
- 1-95 yr old; 52% female;
- 36 laboratory confirmed
- 31 being investigated
- 11 cases required hospital admission (incl. 83yr old man - multiple morbid chronic disease who died)

Index case
- Foreigner arrived Italy June 21 2007
- Travel history - Indian sub Continent
- Developed symptoms 2-3 days later
- Castiglione di Cervia, Ravenna Province

C/o Graham Lloyd
HPA Porton
Public health significance of invasive mosquitoes in Europe

F. Schaffner¹,², J. M. Medlock³ and W. Van Bortel⁴
¹) Avia-GIS, Agro-Veterinary Information and Analysis, Zoersel, Belgium, ²) Vector Entomology Unit, Institute of Parasitology, Vetsuisse Faculty, University of Zürich, Zürich, Switzerland, ³) Medical Entomology & Zoonoses Ecology Group, Emergency Response Division, MRA, Health Protection Agency, Porton Down, Salisbury, UK and ⁴) Emerging & Vector-borne Diseases Programme, European Centre for Disease Prevention and Control, Stockholm, Sweden

Abstract

There are currently five invasive Aedes mosquito species known to be established in Europe, namely Aedes albopictus, Aedes aegypti, Aedes japonicus, Aedes atropalpus and Aedes koreicus. Aedes albopictus and Aedes aegypti are the incriminated vectors in the recent outbreaks of chikungunya and dengue fever in Europe. However, both laboratory experiments and field observations indicate that these invasive mosquitoes have a potential to also transmit other pathogens of public health importance. Increasing travel and pathogen introduction, expansion of vector distribution, and both environmental and climatic changes are likely to raise the risk of pathogen transmission by these invasive Aedes mosquitoes. Their vector status and their involvement in pathogen transmission are dynamic processes that shape the future of mosquito-borne disease epidemiology in Europe. Beside vector surveillance, enhanced disease surveillance will enable the early detection of cases and the prompt implementation of control measures.

Keywords: Aedes, chikungunya, dengue, invasive, mosquito, vector species, vector-borne disease

Article published online: 10 April 2013
Clin Microbial Infect 2013; 19: 685–692
Figure 1. Approximate geographical locations of diseases associated with arthritogenic alphaviruses. For CHIKV disease, locations of documented large outbreaks are shown;\textsuperscript{3,4,7,9,26,112} epidemics prior to 1902 are shown in dashed lines and were initially classified as outbreaks of dengue, but were likely to have been due to CHIKV.\textsuperscript{a} *Geographical locations of RRV and BFV diseases overlap, with BFV restricted to the Australian mainland.\textsuperscript{17,74} †Main location of diseases caused by the Sindbis virus family.\textsuperscript{22} §O’nyong-nyong virus disease outbreaks in 1959–1961 (East Africa), 1996–1997 (Uganda) and 2003 (West Africa).\textsuperscript{33,104} Mayaro virus disease outbreak regions.\textsuperscript{17,20,74} Abbreviations: BFV, Barmah Forest virus; CHIKV, chikungunya virus; RRV, Ross River virus.

Suhrbier A et al. Nat Rev Rheumatol 2012; 8: 420-9
Where is the new epidemic occurring? (choose one)

1. Brazil
2. Guadeloupe
3. Rwanda
4. South Carolina
5. Syria
Where is the new epidemic occurring? (choose one)

1. Brazil
2. Guadeloupe
3. Rwanda
4. South Carolina
5. Syria
Points

• Differential diagnosis of fever and rash from tropics is wide
• Case of probable nosocomial chikungunya infection
• As part of current large epidemic
• More severe and prolonged sequelae than dengue, especially joint disease
• *Aedes* vectors spreading and climate change may exacerbate this

Suhrbier A et al. *Nat Rev Rheumatol* 2012; 8: 420-9
ESCMID Study Group for Infections in Travellers and Migrants - ESGITM

News & Activities

ESGITM @ ECCMID 2014 in Barcelona, ES

- Saturday, 10 May 2014
  11.00 - 13.00 (Hall D)

- Sunday, 11 May 2014
  7.45 - 8.45 (Hall H)
  18.15 - 19.15 (Room 125)
  ESGITM Business Meeting: All interested persons are cordially invited to join the meeting and plan future Study Group activities.
42 year old British teacher with a sore leg after travel to South Africa

Two week holiday with husband in South Africa
Fully immunised
Took Malarone
Visited towns & game parks

4 days after return sees family doctor with painful groin
Progress

Complaint:
“dullness in left thigh” - exquisitely tender lump left groin

GP diagnosis:
?? Incarcerated hernia

Referred to local hospital

Surgeons agree:
explore left groin
enlarged lymph nodes

Histology:
marked non-specific hyperplasia with suppurative granulomas
What is your diagnosis?
(choose one)

1. Glandular fever (EBV)
2. Toxoplasmosis
3. Plague
4. Cat scratch fever
5. Lymphadenopathy draining infected insect bite
6. Something else
What is your diagnosis? (choose one)

1. Glandular fever (EBV)
2. Toxoplasmosis
3. Plague
4. Cat scratch fever
5. Lymphadenopathy draining infected insect bite
6. Something else
Progress

Sent home

Feels increasingly unwell
Headache
Fever
Lethargy and anorexia
Sore throat (? post anaesthesia)
Swollen painful left neck

2 days later (day 7 of illness) develops rash

Referred to Liverpool
Examination

Ambulant
Looks unwell

T 38.0°C, BP 105/70 HR 80

Left neck node +
Chest & throat clear

Generalised rash
What is your diagnosis now? (choose one)

1. Tularaemia
2. Dengue
3. Crimean Congo haemorrhagic fever
4. Malarone allergy
5. Measles
6. Something else
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1. Tularaemia

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6. Something else
Further history

- Anaesthetist found lesion in hair
- Husband saw lesion under breast
- Patient found other lesions x 4
Results

Hb 14.5, Plt 185
WBC 3.4, Neut 1.6, Lymph 1.5
ESR 35
CRP 21
ALT 100 U/L (<40)
Other biochem normal
Diagnosis?
Outcome

- Clinical diagnosis: African tick typhus
- Treated with doxycycline
- Better within 2 days
- Fully recovered
- Fame in women’s magazine
Had something laid eggs inside me and infected my organs?

said they'd noticed a strange spot there, and also the meen my back, during the op, and did I know what they were? He also said he'd been among, it wasn't a hernia at all -- they'd removed a very swollen lymph gland, but they had no idea why it was so swollen.

I was discharged a couple of days later, and the district nurse so I... I just didn't get round to it.

The next morning I woke up feeling my whole body covered in an awful rash. On my chest, back and legs I looked like the start of chickenpox. But over the next few hours and days, as the spots matured, they turned black. In a panic I went to my GP.

The look on her face spoke volumes -- she'd never seen anything like it... I felt so scared when I realised I had symptoms of the GP had no idea how to treat. She referred me to the Tropical and Infectious Disease Unit at the Royal Liverpool University Hospital.

After a thorough examination, they found I'd been bitten in four places -- my back, neck, knuckles line and just below my bust. But they didn't know what had bitten me. I was taken to see consultant Dr Nick Beeching, who admitted immediately said, "I know exactly what's wrong with you. It's tick typhus." He told me it would take a while for the tests to prove his diagnosis, but the meantime I was admitted and given drugs. Within 24 hours I was feeling much better and was just grateful to be over the worst.

After a few days I was out of hospital and recovering at home. My family were relieved -- they'd been terrified, too. The worst nightmare I had was that something had laid its eggs inside me and was infecting all my internal organs. That really spooked me.

Looking back now, I think I was just unlucky. I followed all the advice to cover up, but still the ticks got inside my clothes.

I'd found a tick in Africa's a handful of countries, and I didn't believe I'd be so unlucky again, but I'd come back from a holiday with more strange symptoms. I'll go straight to the Tropical Disease Unit!
Rickettsia africae in sport

8th “Raid Gauloise” multi-sport event in rural Lesotho & Natal 1997

13/331 French participants hospitalised

12 more symptomatic

Features

Tick bite noticed by 8/13 (61.5%)

Eschar 100%
Adenopathy 100%
Rash 15%
Hers

Eschar under bra strap
Rash on legs
# Tick bite fever

<table>
<thead>
<tr>
<th></th>
<th>Mediterranean</th>
<th>Africa</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rickettsia</strong></td>
<td><em>R. conorii</em></td>
<td><em>R. africae</em></td>
</tr>
<tr>
<td>Affects tourists</td>
<td>Rare</td>
<td>Common</td>
</tr>
<tr>
<td>Fever</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Rash</td>
<td>Common</td>
<td>Less</td>
</tr>
<tr>
<td>Eschar</td>
<td>Single</td>
<td>Multiple</td>
</tr>
<tr>
<td>Regional nodes</td>
<td>Yes</td>
<td>Common</td>
</tr>
<tr>
<td>Mortality</td>
<td>~2%</td>
<td>Rare</td>
</tr>
</tbody>
</table>
Diagnosis & management

• History of tick exposure - ??
• Clinical - non specific symptoms
• Serology - only positive after 7-10 days
• Biochem/haem - non specific:
  ▲ acute phase, ◄ Hb, ◄ plt, WBC normal
  ▲ LFT, ▲ LDH, ▲ CK
• Culture - feasible, but not readily available
• Immunohistology/PCR of skin biopsy (rash, eschar)
• Treat on suspicion
Summary

• Consider African tick typhus in tourists with fever from Africa
• Symptoms non specific
• Headache often prominent
• Rash often absent
• Careful search for eschars eg hairline
• Lymph nodes
• Tick bites often not noticed
• Presumptive treatment with doxycycline

Conclusions

• Travel history is essential
  – Details of risk activity
  – And preventive measures

• Examination

• Knowledge of epidemiology

• Simple tests

• Usually leads to diagnosis

• Epidemiology of pathogen resistance
  – Guides empirical therapy
ESCMID Study Group for Infections in Travellers and Migrants - ESGITM

News & Activities

ESGITM @ ECCMID 2014 in Barcelona, ES

- Saturday, 10 May 2014
  11.00 - 13.00 (Hall D)

- Sunday, 11 May 2014
  7.45 - 8.45 (Hall H)
  18.15 - 19.15 (Room 125)
  ESGITM Business Meeting: All interested persons are cordially invited to join the meeting and plan future Study Group activities.
Sunday, 11 May 2014
7.45 - 8.45 (Hall H)
ESGITEM Meet-the-Expert Session: Controversies in treatment of malaria and crimean-congo haemorrhagic fever.
18.15 - 19.15 (Room 125)
ESGITEM Business Meeting: All interested persons are cordially invited to join the meeting and plan future Study Group activities.
Travel Safe