Refugee crisis and re-emergence of forgotten infections in Europe

Makeshift shelters are becoming increasingly evident in European cities as a consequence of the momentous influx of refugees seeking asylum in European countries. These individuals have endured long gruelling journeys to reach their target countries, often having to have survived appalling living conditions (figure 1a). One of the routes chosen by migrants is that from East Africa, through Sudan and Libya before reaching North Africa and eventually Europe (see figure 1b). Not unsurprisingly, this has led to the introduction of infectious diseases rarely encountered in developed nations, most notably louse-borne relapsing fever (LBRF).

Amongst these borrelial infections, the louse-borne variant of relapsing fever is perhaps the deadliest. Clinically, a relapsing high fever often accompanied by bleeding and sometimes major organ involvement will be evident (further detail found in [1, 2]). Upon treatment clinical signs may worsen through a Jarisch-Herxheimer reaction (JHR) necessitating supportive measures [1]. Vigilance is not only needed to identify infected individuals, but control measures are essential to prevent spread from the index case to others in close proximity. The clothing louse vector will rapidly flee from a febrile host seeking refuge on non-febrile individuals, hence facilitating the epidemic spread of louse-borne pathogens. Refugees crowded together in conditions of poor hygiene provide an ideal environment for spread of lice and the pathogens that they might carry such as *Borrelia recurrentis*, *Rickettsia prowazekii*, or *Bartonella quintana*, causes of LBRF, epidemic typhus and trench fever respectively. The reality of this threat has been realised with appearance of cases of LBRF in the Netherlands [3], Switzerland [4], Germany [5] (ProMed), Sicily [6] and Finland (Seppo Meri personal communication (see table). A rapid risk assessment
has been produced by ECDC providing basic information of clinical presentation and
treatment [7].

Clinically, patients present with pronounced fever that might be accompanied by
other signs often presumed to be malaria or tuberculosis. Diagnosis can be achieved
by observing the blood-borne spirochaetes in Giemsa-stained blood films collected
during febrile periods [2]. Sensitivity can be improved by centrifugation of the sample
prior to staining. Unlike other relapsing fever borreliae, the causative spirochaetes of
LBRF are refractory to growth in laboratory animal models, though they can
sometimes be cultivated in specialised BSKII, BSK-H or MKP liquid media [8].
Molecular methods (PCR and sequencing) can be used to confirm the diagnosis [2,
8]. Treatment is effective with penicillin, doxycycline or ceftriaxone, but the patient
should be observed for potential JHR. Clothing should be washed or preferably
replaced and those individuals in close proximity with a case deloused, or
additionally given single does prophylactic doxycycline. Other forgotten pathogens
(louse-borne or not) may also be seen amongst these individuals that have endured
long and challenging journeys with poor sanitary conditions, ranging from cutaneous
diphtheria to scabies, reminding the diagnostician of the need for vigilance.

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camp images.
References


A: Refugee camp conditions showing squalor and unhygienic conditions image i typical camp conditions whilst ii shows open sewage.

B: Common migratory routes from East Africa to Europe.
<table>
<thead>
<tr>
<th>Country</th>
<th>Cases</th>
<th>Presenting signs/Therapeutic support</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>1</td>
<td>Fever; cough; haemoptysis</td>
<td>[9]</td>
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<tr>
<td>Germany</td>
<td>1</td>
<td>ICU treatment; intubation; vasopressor support</td>
<td>[10]</td>
</tr>
<tr>
<td>Germany</td>
<td>21</td>
<td>Fever; various accompanying signs.</td>
<td>[5]; Volker Fingerle Personal communication; ProMed reports 20150903.3620174 &amp; 20150911.3638819</td>
</tr>
<tr>
<td>Finland</td>
<td>2</td>
<td>Fever; thrombopenia; (1 anaemia; 1 leukopenia)</td>
<td>Seppo Meri Personal communication</td>
</tr>
<tr>
<td>Netherlands</td>
<td>2</td>
<td>Fever; headache; dizziness; myalgia; JHR ICU fluid resuscitation &amp; cardiac support.</td>
<td>[3]</td>
</tr>
<tr>
<td>Sicily</td>
<td>3</td>
<td>Fever; headache; thrombocytopenia; artromyalgia (2); JHR (1).</td>
<td>[6]</td>
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<tr>
<td>Switzerland</td>
<td>1</td>
<td>Fever; nausea; headache; dysuria; bilateral flank</td>
<td>[4]</td>
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<tr>
<td></td>
<td></td>
<td>pain.</td>
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<td>Total</td>
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<td></td>
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Figure: A i Migrant camp conditions: A ii open sewage; B Migratory routes to Europe.