RAPID RISK ASSESSMENT

Louse-borne relapsing fever in the Netherlands

24 July 2015

Main conclusions and options for response

The occurrence of louse-borne relapsing fever in asylum seekers from Eritrea is not unexpected and further importation of cases might occur in the EU among migrants, in particular those sharing routes with migrants from endemic areas.

Therefore, options to consider for the prevention and control of louse-borne relapsing fever include:

- Preventing or minimising overcrowding in reception centres for migrants, as well as promoting and enabling adequate hygiene for migrants;
- Awareness raising among migrants, particularly at the point of entry into the EU, about lice infestation and possible louse-borne diseases;
- Checking for signs of lice infestation during medical screening of migrants and carrying-out delousing as required [19]. As the detection of infestation might not be very sensitive, preventive delousing can be considered;
- Raising awareness among clinicians of the possibility of louse-borne relapsing fever among recently arrived migrants that might have been exposed to the disease during their journey, and vulnerable population groups who share the same living environment;
- Source tracing and investigation of contacts of patients diagnosed with louse-borne relapsing fever in the EU, to identify other exposed persons and apply control measures and treatment in a timely manner;
- Warning clinicians about the risk of the potentially fatal Jarisch–Herxheimer reaction when treating patients with louse-borne relapsing fever with antibiotics, which requires supportive care for monitoring fluid balance.

Source and date of request

Requested by the Directorate-General for Health and Food Safety on 21 July 2015.

Public health issue

To assess the public health significance for the EU of two cases of louse-borne relapsing fever reported by the Netherlands.

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Consulted experts

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The external reviewer submitted a declaration of interest that revealed no conflicts of interest.

Disease background information

Louse-borne relapsing fever (LBRF) is a vector-borne disease caused by the spirochaete *Borrelia recurrentis,* a human-restricted pathogen transmitted by the body louse *Pediculus humanus humanus* [1,2]. Transmission occurs when the louse is crushed and the infected haemocoel is released onto the human skin [3]. Subsequently, *Borrelia recurrentis* is able to penetrate intact mucosa and skin [2].

The incubation period is usually between four and eight days (range: 2–15). The onset of symptoms is generally sudden, associated with circulation of bacteria in the blood, and include high-grade fever, malaise, chills and sweats, headache, meningism, myalgia/arthralgia and non-specific gastrointestinal symptoms (nausea and vomiting) [1,4]. The symptoms increase in intensity over five days on average (range: 2–7), then subside as the pathogenic agent disappears from the blood. After a first remission, spirochaetes reappear in the blood and symptoms recur. The relapse occurs over several days to weeks, but fewer than 10 relapses are usually observed among untreated patients [1]. Relapses can occur after delousing. The disease can be severe and death occurs in 10–40% of symptomatic cases in the absence of appropriate treatment, and in 2–5% of treated patients [2]. The antibiotic of choice is doxycycline (tetracycline group), although other antibiotic treatments are also effective (penicillin G, erythromycin, chloramphenicol) [5]. A potentially severe or fatal Jarisch–Herxheimer reaction can be induced by antibiotic treatment [1,6,7].

The diagnostic test of choice is the direct identification of spirochaetes in the blood by stained blood films (Giemsa), especially during the symptomatic febrile phase [8]. Nucleic acid detection is carried out for species identification and to support the clinical diagnosis [9]. Malaria, typhoid fever, viral haemorrhagic fever, leptospirosis, typhus, tick-borne relapsing fever, non-typhoidal salmonellosis, meningococcal septicaemia and meningitis need to be considered in the differential diagnosis.

Historically, major outbreaks of louse-borne relapsing fever have occurred in Eurasia and Africa [4]. The geographical distribution of louse-borne relapsing fever has declined due to improvements in living standards. Currently, the disease is primarily found in limited endemic foci in Ethiopia but also in Somalia and Sudan [4,10-12]. Antibodies to *Borrelia recurrentis* were detected in homeless populations in Marseille between 2000 and 2003, suggesting that a small, unnoticed outbreak occurred in this particular homeless population [13].

Primary prevention of louse-borne relapsing fever relies on measures for avoiding infestation with body lice [2,14]. Such infestations are linked with low socioeconomic status, over-crowding and poor personal hygiene [2].

Detection of a clinical case should lead to source tracing and it is necessary to investigate and treat infected contact(s). Treatment of clothing for LBRF is necessary as infected lice can remains in the clothes [2].

More information can be found on the ECDC factsheet louse-borne relapsing fever.

Event background information

On 7 and 9 July 2015 the Netherlands reported two cases of louse-borne relapsing fever in asylum seekers coming from Eritrea.

ECDC threat assessment for the EU

The two cases of louse-borne relapsing fever found in asylum seekers coming from Eritrea and reported by the Netherlands are not unexpected as the disease is present in north-eastern Africa. An increase of migrants from potentially LBRF-endemic areas has been observed in the EU since 2014, indicating that similar importation of cases could occur [15,16]. The central Mediterranean migration route has been a major route for entering the EU for almost a decade, and over recent years migration flows along this route have increased substantially. This route has been used by various African nationalities, notably Eritreans, although the numbers of Syrians using this route has significantly grown recently. Migrants using the central Mediterranean migration route usually depart from the northern coast of Libya and more recently Egypt, towards the south of Italy and Malta [17,18].

Body lice infestations are linked to low socioeconomic status, over-crowding and poor personal hygiene. Migrants are vulnerable to body lice infestation due to challenging living conditions during migration and also after entry into the EU due to crowded conditions in temporary centres. Those following a migration route linked with the LBRF-

endemic areas in Africa or being in close contact with migrants from an LBRF-endemic area are at risk of being exposed to the disease. Once in the EU, there is a risk of spread from infected individuals infested by body lice to homeless or other vulnerable population groups sharing the same living environment, in particular with temporary housing in crowded environments. There is a limited risk of infection for relief workers involved in migrant care. Delousing is an effective way to control transmission of louse-borne pathogens, but until this measure is taken, transmission of louse-borne relapsing fever can occur.

Conclusions and options for response

The occurrence of louse-borne relapsing fever in asylum seekers from Eritrea is not unexpected and further importation of cases might occur in the EU among migrants, in particular those sharing routes with migrants from endemic areas.

Therefore, options to consider for the prevention and control of louse-borne relapsing fever include:

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