Detection of Acinetobacter sp. in human lice from Ethiopia

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Objective:
The human body louse (*Pediculus humanus humanus*) and the head louse (*P. h. capitis*) are closely related obligate parasites that feed exclusively on human blood. *Acinetobacter baumannii* readily infect, multiply and proliferate in body lice, producing a generalized infection. The objective of this study was to assess the rate of infection to *Acinetobacter* sp. of body and head lice collected in Ethiopia.

Methods:
We collected head and body lice from seven locations with different altitudes (from 1450 to 2400 meters) in Ethiopia. Total genomic DNA of each louse was extracted and used as a template in a real-time PCR assay targeting the rpoB gene of *Acinetobacter* sp. In order to identify the genotype of body and head lice, the mitochondrial gene, cytB (cytochrome b) was amplified and sequenced. For data comparison, EpiInfo version 6.0 software was used (Centers for Disease Control and Prevention, Atlanta, GA, USA). A p value <0.05 was considered significant.

Results:
A total of 115 head and 113 body lice were collected from 134 patients (109 females and 25 males) and tested. All body lice were grouped in phylotype A and all the head lice, which were all black, belonged to phylotype C. *Acinetobacter* sp. was found in 62 head (53%) and 69 body (69%) lice. No difference was found in the presence of *Acinetobacter* sp. between head and body lice (p=0.58) or between males and females patients (p=0.34).

Conclusion:
Our study is the first showing presence of *Acinetobacter* sp. in head and body lice in Ethiopia. The percentage of lice infection in Ethiopia was much higher than in other countries such as in France or the Netherlands where respectively 18% and 32% of body lice presented *A. baumannii*, or than in Rwanda where 58% of body lice were infected with *A. baumannii*. Head and body lice can be differentiated into 3 deeply divergent mitochondrial clades, each having unique geographic distribution. The first contains both head and body lice and is worldwide in distribution; the second occurs only in head lice and has been found in the New World, Europe, and Australia; and the third has been found only in black head lice from Nepal and Ethiopia. In our study, we have shown that all head lice presented the phylotype C and all body lice presented the phylotype A.

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