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References


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LETTERS

Cockroaches (Ectobius vittiventris) in an Intensive Care Unit, Switzerland

To the Editor: Ectobius vittiventris (Costa) is a field-dwelling cockroach and 1 of 4,000 cockroach species worldwide (1). We describe a cockroach infestation of an intensive care unit (ICU). Successful management required knowledge of the ecology of cockroaches and highlighted the need for species-level identification to tailor control strategies.

The University of Geneva Hospitals are a 2,200-bed tertiary healthcare center. The 18-bed medical ICU is located on the ground floor next to an outdoor recreational area and admits ∼1,400 patients/year. Smoking inside hospital buildings by patients and healthcare workers (HCWs) is strictly prohibited. On August 25, 2006, ≥30 cockroaches were observed in the ICU hiding inside oxygen masks, moving around on the light panels below the ceilings, or dropping onto intubated patients during the night.

An outbreak investigation was initiated. All work areas, including sinks and material stock areas, were thoroughly searched for cockroaches. External pest control experts identified only 1 species, E. vittiventris, which had presumably entered the ICU through windows facing the outdoor recreational area. The investigation showed that despite verbal recommendations and being repeatedly forbidden to do so, HCWs had opened the windows secretly with screwdrivers so that they could smoke during night shifts. The infestation was halted within 3 days after information regarding the infestation was provided to HCWs and all windows were bolted shut. In contrast to measures required to deal with a reported infestation in a neonatal ICU (2), no other measures such as use of insecticides, review of the air circulation system, or changes in architectural structures were necessary to stop the infestation reported here.

Cockroaches can cause 2 potentially serious health problems. First, they may provoke allergic reactions (3). Second, they have been suggested as possible vectors of multidrug-resistant pathogens. In particular, cockroaches that live and breed in hospitals have higher bacterial loads than cockroaches in the community (4–6). Up to 98% of these “nosocomial” cockroaches may carry medically important microorganisms on their external surfaces or in their alimentary tracts (4–9) and may disseminate these microorganisms by fecal–oral transmission.

Cockroaches are capable of harboring Escherichia coli (6,7), Enterobacter spp. (6,8,9), Klebsiella spp. (6,7,9), Pseudomonas aeruginosa (6,9), Acinetobacter baumannii (2), other nonfermentative bacteria (7,9), Serratia marcescens (7,9), Shigella spp. (6), Staphylococcus aureus (6,7), group A streptococci (6,7,9), Enterococcus spp. (6,7), Bacillus spp. (7), various fungi (6–8), and parasites and their cysts (6). An outbreak of extended-spectrum β-lactamase–producing Klebsiella pneumoniae in a neonatal unit was attributed to cockroaches (2). Pulsed-field gel electrophoresis did not distinguish organisms from the insects from those colonizing infants or causing clinical disease (2). Unlike other investigators, we did not cultivate the cockroaches (6,9).

E. vittiventris cockroaches are easily confused with Blattella germanica (Linnaeus) (the German or roton cockroach), which is probably the most important cockroach pest worldwide (1,9). In contrast to B. germanica (6,9) and other species (online Technical Appendix, available from www.cdc.gov/EID/content/15/3/496-1)

1Parts of this research have been presented as a poster at the Annual Meeting of the Swiss Society for Infectious Diseases, Zurich, Switzerland, June 14, 2007.
E. vittiventris cockroaches are considered to be harmless and have not been associated with human disease or transmission of pathogens. We did not observe any allergic reactions or an increase in colonization or infection rates of multidrug-resistant organisms. B. germanica cockroaches are nocturnal, cannot fly, are always encountered within human habitations, and have not been associated with human disease or transmission of pathogens. We did not observe any allergic reactions or an increase in colonization or infection rates of multidrug-resistant organisms. B. germanica cockroaches are nocturnal, cannot fly, are always encountered within human habitations, and have not been associated with human disease or transmission of pathogens. We did not observe any allergic reactions or an increase in colonization or infection rates of multidrug-resistant organisms. B. germanica cockroaches are nocturnal, cannot fly, are always encountered within human habitations, and have not been associated with human disease or transmission of pathogens. We did not observe any allergic reactions or an increase in colonization or infection rates of multidrug-resistant organisms. B. germanica cockroaches are nocturnal, cannot fly, are always encountered within human habitations, and have not been associated with human disease or transmission of pathogens. We did not observe any allergic reactions or an increase in colonization or infection rates of multidrug-resistant organisms. B. germanica cockroaches are nocturnal, cannot fly, are always encountered within human habitations, and have not been associated with human disease or transmission of pathogens. We did not observe any allergic reactions or an increase in colonization or infection rates of multidrug-resistant organisms. B. germanica cockroaches are nocturnal, cannot fly, are always encountered within human habitations, and have not been associated with human disease or transmission of pathogens. We did not observe any allergic reactions or an increase in colonization or infection rates of multidrug-resistant organisms. B. germanica cockroaches are nocturnal, cannot fly, are always encountered within human habitations, and have not been associated with human disease or transmission of pathogens. We did not observe any allergic reactions or an increase in colonization or infection rates of multidrug-resistant organisms. B. germanica cockroaches are nocturnal, cannot fly, are always encountered within human habitations, and have not been associated with human disease or transmission of pathogens.
### Technical Appendix

#### Technical Appendix Table. Characteristics of the most common cockroach species*

<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Blatta orientalis</th>
<th>Blattella germanica</th>
<th>Periplaneta americana</th>
<th>Ectobius vittiventris</th>
</tr>
</thead>
<tbody>
<tr>
<td>English name</td>
<td>Oriental cockroach</td>
<td>German cockroach</td>
<td>American cockroach</td>
<td>Field-dwelling cockroach</td>
</tr>
<tr>
<td>Image</td>
<td><img src="image1.png" alt="Image of Blatta orientalis" /></td>
<td><img src="image2.png" alt="Image of Blattella germanica" /></td>
<td><img src="image3.png" alt="Image of Periplaneta americana" /></td>
<td><img src="image4.png" alt="Image of Ectobius vittiventris" /></td>
</tr>
<tr>
<td>Size, mm</td>
<td>20–30</td>
<td>10–15</td>
<td>35–40</td>
<td>10</td>
</tr>
<tr>
<td>Ability to fly</td>
<td>Short distance</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Lifetime, mo</td>
<td>18</td>
<td>18</td>
<td>8–15</td>
<td>≥24</td>
</tr>
<tr>
<td>Nuisance</td>
<td>Rarely transmits pathogens</td>
<td>Can transmit pathogens</td>
<td>Can cause allergic disease and transmit pathogens</td>
<td>No</td>
</tr>
<tr>
<td>Eradication</td>
<td>Insecticide, e.g., lambda-cyhalothrin</td>
<td>Insecticide, e.g., permethrin, hydromethylnon</td>
<td>Insecticide, e.g., permethrin, hydromethylnon</td>
<td>Keep outside</td>
</tr>
</tbody>
</table>

*Source: Swiss Society of Pest Control (www.fsd-vss.ch) and various references. Photographs were obtained from Hannes Baur, Natural History Museum, Bern, Switzerland.