Human and Nonhuman Infections Caused by *Yersinia pseudotuberculosis* in Canada from 1962 to 1985

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The incidence of human and nonhuman infections of *Yersinia pseudotuberculosis* in Canada is presented on the basis of a literature review and serotyping of 101 cultures referred to the Canadian National Reference Center for *Yersinia enterocolitica* and *Yersinia pseudotuberculosis*.

Medical and scientific information on *Yersinia enterocolitica* has been well documented, whereas data concerning the incidence of *Y. pseudotuberculosis* infections are limited. This report presents information on the incidence of human and nonhuman *Y. pseudotuberculosis* infections in Canada.

**Human infections.** In 1962 to 1963, Hnatko et al. (3, 4) reported results of serological examinations for *Y. pseudotuberculosis* of 87 patients who had undergone surgery for appendicitis. Seven patients had significant positive titers, and in one case a culture of *Y. pseudotuberculosis* was isolated from a mesenteric lymph node and serotyped by Wetzler and Hubbert as serotype IA (11). In 1976, Chalmers et al. (1) described *Y. pseudotuberculosis* postdiasreal arthropathy in two patients having titers of 1:200 to 1:400 for *Y. pseudotuberculosis* serotype II.

**Nonhuman infections.** In 1963 in British Columbia, P. L. Stovel (M.S. thesis, University of British Columbia, 1963) isolated *Y. pseudotuberculosis* serotype I from three epizootics in canaries. Again in British Columbia in 1966, Langford (5) isolated three cultures of *Y. pseudotuberculosis* from bovine tissues. In 1972, Langford (6) characterized cultures of *Y. pseudotuberculosis* isolated over a 14-year period from 20 incidents of infection in wild and domestic caged birds from British Columbia and Western Alberta. In Ontario in 1973, Hacking and Sileo (2) isolated six *Y. pseudotuberculosis* cultures from carcasses of birds and beavers; one culture was of serotype IA and five were of IB. The same authors, between 1962 and 1972, examined five other *Y. pseudotuberculosis* cultures isolated from four beavers and a horse; serotyping was not carried out on these cultures. In 1975 Toma and Deidrick (9) reported on 14 cultures of *Y. pseudotuberculosis* isolated from the cecal contents of swine slaughtered for human consumption at Toronto abattoirs. All isolates were serotype III. In 1976, these same researchers (10) characterized eight additional *Y. pseudotuberculosis* cultures; six of serotype III were isolated from the cecal contents of slaughtered swine, one of serotype IB was isolated from a bovine abortion, and one of serotype IIA was isolated from a wild bird. In 1979, Spearman et al. (8) described a case of pseudotuberculosis infection in a cat.

To update information on *Y. pseudotuberculosis*, data are presented herein on 101 *Y. pseudotuberculosis* cultures which were referred to our laboratory from 1977 to 1985. Absorbed and unabsorbed antisera were prepared in our laboratory for seven serological types and subtypes designated by their somatic antigens as types IA, IB, IIA, IIB, III, IV, and V (7).

**Human isolates.** *Y. pseudotuberculosis* cultures isolated from 16 patients were received from six Canadian provinces. Twelve strains were isolated from fecal specimens in cases of diarrhea, three from mesenteric lymph nodes of patients with appendicitis, and one from an eye swab. Ten cultures were of serotype IB (all of which were rhamnose positive) and six were of serotype III (five of these were rhamnose negative and one was rhamnose positive). The three cultures isolated from lymph nodes were all of serotype IB. Eleven patients were 4 months to 2 years old; three were children over 2 years old, and only two were adults.

**Nonhuman isolates.** Eighty-five cultures of nonhuman *Y. pseudotuberculosis* were received from five Canadian provinces. Serotyping results on these cultures and the species from which they were isolated are presented in Table 1. Ninety-five percent of the isolates belonged to serotypes III and IB. Isolates from domestic animals were predominantly of serotype III (84.5%), whereas those from wild animals and birds belonged most frequently to serotype IB (85.2%).

It is difficult to assess whether or not the true incidence of human pseudotuberculosis infections is accurately reflected by the number of respective cultures isolated. Isolation of *Y. pseudotuberculosis* from fecal specimens is not an easy task in itself because this organism does not grow well on enteric bile salts isolation media. The colonies, when grown, are minute and readily overgrown by commensal enteric bacterial flora. The identification of *Y. pseudotuberculosis* is also

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**TABLE 1.** Nonhuman isolates of *Y. pseudotuberculosis* in Canada

<table>
<thead>
<tr>
<th>Species</th>
<th>No. of cultures</th>
<th>No. of cultures of serogroup:</th>
<th>No. R&lt;sup&gt;a&lt;/sup&gt;</th>
<th>No. R&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>IA</td>
<td>IB</td>
<td>IIA</td>
</tr>
<tr>
<td>Swine</td>
<td>30</td>
<td>1</td>
<td>29</td>
<td>18</td>
</tr>
<tr>
<td>Bovine</td>
<td>18</td>
<td>3</td>
<td>15</td>
<td>7</td>
</tr>
<tr>
<td>Ovine</td>
<td>7</td>
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</tr>
<tr>
<td>Caprine</td>
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<td>Feline</td>
<td>2</td>
<td></td>
<td></td>
<td>1</td>
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<tr>
<td>Deer</td>
<td>10</td>
<td></td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>Hare</td>
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</tr>
<tr>
<td>Rodent</td>
<td>10</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Wild bird</td>
<td>6</td>
<td>1</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

<sup>a</sup> R<sup>+</sup>, Rhamnose positive

<sup>b</sup> R<sup>-</sup>, Rhamnose negative.
difficult; occasionally this bacterium can be mistaken for other nonpathogenic species of the family Enterobacteriaceae.

**LITERATURE CITED**