Is the Severity of Mumps Related to the Number of Doses of Mumps-Containing Vaccine?

To the Editor—Mumps is most commonly characterized by fever and by swelling and tenderness of ≥1 salivary gland (usually the parotid and sometimes the sublingual or submaxillary glands). Mumps may also cause orchitis, pancreatitis, meningitis, and encephalitis. Since the introduction of the measles, mumps, and rubella vaccine in 1967 and recommendation of its routine use in 1977, there has been a notable decrease in cases of mumps [1]. Postlicensure studies in the United States determined that 1 dose of mumps vaccine was 78%–91% effective in preventing clinical mumps with parotitis [2], and 1 study from the United Kingdom demonstrated 88% effectiveness with 2 doses of vaccine [3]. Little is known about the severity of mumps in persons who have a history of mumps vaccination.

A mean of 13 cases (range, 8–21 cases) of mumps were reported annually to the Illinois Department of Public Health from 2001 through 2005. However, as part of a national outbreak of mumps in 2006, which was largely concentrated in the Midwest, 796 cases were reported in Illinois (the greatest number of cases since 1967) [4]. We describe a survey administered from April through June 2006 (by telephone) to 174 persons at least 9 days after the onset of parotitis to explore whether severity of mumps, as reported through public health surveillance, may be related to the number of doses of mumps-containing vaccine received by a patient before disease onset.

One hundred thirteen (65%) of 174 patients were female. The median age of patients was 22 years (range, 1–77 years). Eight (16%) of 51 male patients developed orchitis, which was severe in 2 of these patients (table 1). Six (6%) of 102 female patients developed orchitis. One patient developed pancreatitis. Eleven (6%) of 173 patients were hospitalized because of mumps. One hundred thirty-six (78%) of 174 patients had a history of previous vaccination with a mumps-containing vaccine, 25 (14%) of 174 patients had not been vaccinated, and vaccination status was unknown for 19 (14%) of 174 patients. Eighty-two (60%) of 136 vaccinated patients had received at least 2 doses of vaccine, 35 (26%) of 136 patients had received 1 dose, and the number of doses was unknown for 19 (14%) of 136 patients. High fever was associated with complications of mumps. Patients with orchitis, oophoritis, or pancreatitis or who had been hospitalized were more likely to have a temperature >38.6°C, compared with patients who did not have any of these complications (relative risk, 2.76; 95% CI, 1.0–7.7). No statistically significant association was found between doses of vaccine received (1 dose vs. ≥2 doses) and severity of any symptom.

We report the possible prognostic value of high fever among persons with mumps. All patients with mumps should be examined and informed of possible complications; however, clinicians should consider being more vigilant when asking about these complications in patients with high fever. Prospective studies are needed to validate this finding, especially because previous literature have demonstrated that <75% of persons who reported a history of vaccination tested positive for anti-mumps antibodies [5].

Acknowledgments

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Table 1. Clinical symptoms and complications reported for 174 patients with mumps in Illinois, 2006.

<table>
<thead>
<tr>
<th>Symptom or complication</th>
<th>No. (%) of patients with mumps*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headache</td>
<td></td>
</tr>
<tr>
<td>Any</td>
<td>120/173 (69)</td>
</tr>
<tr>
<td>Mild</td>
<td>69/116 (59)</td>
</tr>
<tr>
<td>Severe</td>
<td>47/116 (41)</td>
</tr>
<tr>
<td>Fever</td>
<td></td>
</tr>
<tr>
<td>Any</td>
<td>98/174 (56)</td>
</tr>
<tr>
<td>&lt;38.6°C</td>
<td>50/79 (63)</td>
</tr>
<tr>
<td>&gt;38.6°C</td>
<td>29/79 (37)</td>
</tr>
<tr>
<td>Loss of appetite</td>
<td>101/172 (59)</td>
</tr>
<tr>
<td>Earache</td>
<td></td>
</tr>
<tr>
<td>Any</td>
<td>96/172 (50)</td>
</tr>
<tr>
<td>Mild</td>
<td>46/85 (54)</td>
</tr>
<tr>
<td>Severe</td>
<td>39/85 (46)</td>
</tr>
<tr>
<td>Vomiting</td>
<td>22/173 (13)</td>
</tr>
<tr>
<td>Orchitis</td>
<td></td>
</tr>
<tr>
<td>Any</td>
<td>8/51 (16)</td>
</tr>
<tr>
<td>Mild</td>
<td>6/8 (75)</td>
</tr>
<tr>
<td>Severe</td>
<td>2/8 (25)</td>
</tr>
<tr>
<td>Oophoritis</td>
<td>6/102 (6)</td>
</tr>
<tr>
<td>Hospitalization</td>
<td>11/173 (6)</td>
</tr>
<tr>
<td>Pancreatitis</td>
<td>2/168 (1)</td>
</tr>
</tbody>
</table>

* Responses of “unknown” were excluded from the percentage calculations.

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Please, Do Not Forget Pasteurella multocida

To the Editor—In their article in Clinical Infectious Diseases, Weese et al. [1] provide an accurate analysis of the risks of infection that are related to visiting petting zoos. We would like to add Pasteurella multocida to the list of the infective agents that are potentially transmitted after an animal contact.

P. multocida is estimated to infect 20%–50% of the 1–2 million Americans (primarily children) who are bitten or scratched (and whose open wounds are licked) by dogs and cats each year. Furthermore, cases of Pasteurella infection also have been reported after bites from a variety of other animals, including pigs, rats, lions, opossums, and rabbits [2, 3].

P. multocida is a gram-negative, nonmotile, and facultatively anaerobic bacterium. It is a member of the normal flora of the upper respiratory tract in a number of animal species. P. multocida has a global distribution, with the range of particular subgroups and subspecies being dependant upon the distribution of the host species and other environmental factors. It has been estimated that as many as 66% of dogs and 90% of cats are colonized with this organism, typically in the respiratory and gastrointestinal tracts [4]. P. multocida is a frequent cause of opportunistic infections in domestic livestock and is responsible for annual losses of several hundred million dollars to animal production [5].

Persons at risk for infection related to animal exposure include veterinarians, farmers, livestock handlers, pet owners, and food handlers. Although the mode of infection in most reported cases is not clear, most cases are thought to result from inadvertent, direct inoculation of organisms or from upper respiratory tract colonization with subsequent dissemination via the lymphatics or, hematogenously, to the target organs, causing skin and soft-tissue infections, bone and joint infections, pneumonia, meningitis, endocarditis, and septicemia [2, 3, 6].

Some cases of P. multocida peritoneal dialysis–associated peritonitis [7] and spontaneous bacterial peritonitis in patients with cirrhosis [8] have been reported in the literature. Septicemia is an uncommon complication of Pasteurella infection; it has a mortality rate of ~30% [9] and is more severe in patients with cirrhosis [10]. Liver dysfunction has been reported to be a major factor associated with P. multocida bacteremia because of the impaired reticuloendothelial function in patients with cirrhosis [11, 12].

Although, to our knowledge, there are no reported cases of P. multocida outbreaks among visitors to petting zoos reported in the literature, we believe that this microorganism should not be forgotten. Immunocompromised patients and patients with cirrhosis should be alerted about the potential risk related to pet animal contact, even when animals are in apparent good health.

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References


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