CD Summary

May 2, 2006
Vol. 55, No. 9

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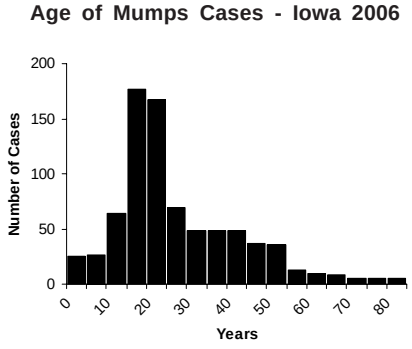
AN EPIDEMIOLOGY PUBLICATION OF THE OREGON DEPARTMENT OF HUMAN SERVICES

MUMPS IN THE MIDWEST*

AFTER THE MUMPS vaccine was licensed in 1967, the incidence of this once common disease of childhood plummeted. During 2001 through 2005, the US had an average of 265 cases of mumps each year (range, 231-293). Until now... The current epidemic centered in Iowa[1] has prompted us to review the clinical manifestations of the disease, its epidemiology, and recommendations for its control.

THE PROBLEM

As of April 26, 1,273 cases had been reported in Iowa, with an additional 786 cases in Colorado, Illinois, Kansas, Minnesota, Missouri, Nebraska, Pennsylvania, South Dakota and Wisconsin. Of the 814 Iowa cases with laboratory results available, 81% had been confirmed by mumps IgM antibody, and 14% had the mumps virus isolated. The median age of cases to date is 21 years (range 1-85 years); 25% of the cases have been in college students. The majority (77%) of



cases have received measles, mumps, rubella (MMR) vaccine. The mumps outbreak strain is genotype G. While genotype G is not unusual, it provides some indication of which cases might be linked to a particular outbreak.

The United Kingdom suffered an epidemic of mumps that peaked during 2005 with approximately 56,000 cases and similarly featured a high attack rate among young adults. However, unlike the current Midwest outbreak, 70% of the UK cases were unvaccinated persons.[2] The mumps strain in this epidemic was also genotype G. The UK outbreak, in turn, was linked to a 2005 outbreak in New York State, involving 541 campers and staff attending a summer camp; the source patient was a 20-year-old unvaccinated counselor from the UK.[3]

CLINICAL PRESENTATION

Mumps is a paramyxoviral infection, characterized by a nonspecific prodrome, including myalgia, anorexia, malaise, headache, and low-grade fever, followed by acute onset of unilateral or bilateral tender swelling of parotid or other salivary glands.[4] An estimated 60%—70% of mumps infections produce typical acute parotitis; of Iowa's cases this year, 56% have had parotitis. About 20% of infections are asymptomatic, and 50% are associated primarily with respiratory symptoms. Symptoms tend to decrease after 1 week and usually resolve by 10 days.

Complications include orchitis (in up to 50% of infected postpubertal males); symptomatic aseptic meningitis (15% of cases); encephalitis (2 per 100,000); and deafness (1 per 20,000). Other complications include oophoritis, myocarditis, pancreatitis, arthritis, nephritis, and spontaneous abortion.[4]

Transmission occurs by direct contact with respiratory droplets or saliva. The incubation period is generally 16 to 18 (range, 14-25) days. Cases are infectious from 3 days before until 9 days after symptom onset, with maximal infectivity from 2 days before to 4 days after onset.

DIAGNOSIS

A clinical case of mumps is defined as an illness with acute onset of unilateral or bilateral tender, self-limited swelling of the parotid or other salivary gland, lasting >2 days, and without other apparent cause.[5]

Laboratory criteria for diagnosis include: 1) positive serologic test for mumps IgM; 2) significant rise between acute- and convalescent-phase serum mumps IgG antibody titers; or 3) isolation of mumps virus, usually from a parotid duct swab or urine, or detection of virus by reverse transcription polymerase chain reaction (RT-PCR).

PREVENTION

Vaccination. Mumps vaccine is the most effective control measure. The vaccine's efficacy is approximately 80% after one dose and 90% after two doses.[7] We are told that immunity "lasts at least 25 years and is probably lifelong". Neither vaccine nor immune globulin can prevent mumps after exposure.

Isolation and Quarantine. Persons with mumps should be isolated for 9 days after onset of

*CD Summary adapted extensively (read copied) from CDC and Iowa Department of Health advisories. *http://www.cdc.gov/nip/diseases/mumps/mumps-outbreak.htm* and *http://www.idph.state.ia.us/adper/mumps.asp.*

The **CD Summary** (ISSN 0744-7035) is published biweekly, free of charge, by the Oregon Dept. of Human Services, Office of Disease Prevention and Epidemiology, 800 NE Oregon St., Portland, OR 97232
Periodicals postage paid at Portland, Oregon.
Postmaster—send address changes to:
CD Summary, 800 NE Oregon St., Suite 730, Portland, OR 97232

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PERIODICALS POSTAGE **PAID** Portland, Oregon

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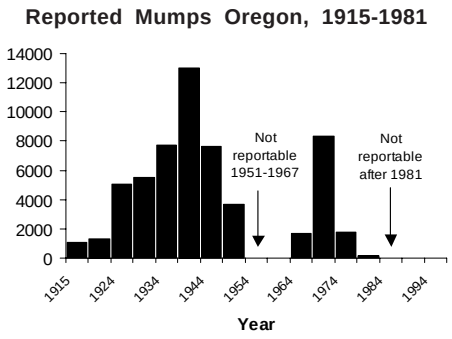
symptoms.[6] In the current outbreak, recommendations for cases occurring in school settings include excluding susceptibles (without history of mumps immunization) from the 12th day after onset of the first case to the 25th day after onset of the last case.

WHY THE MIDWEST OUTBREAK NOW?

Health departments in the affected states and CDC are in hot pursuit of the causes of this outbreak. The mumps vaccine, while good, is not 100% effective. If a highly vaccinated population is exposed to disease, most exposed persons would be protected; but of the cases that do occur, most would be among vaccinated people. Also, the case counts in this outbreak peak in college-age persons, who would seem to have more intense interpersonal contact (e.g. sharing dorm rooms, participating in saliva-sharing activities) than older adults. In sum, the outbreak is thought to be due to introduction of mumps virus into a socially intimate population with a high (but <100%) rate of immunization with a highly (but <100%) effective vaccine. While issues of waning immunity and problems with vaccine efficacy have been raised, no data yet support either of these theories. (That said, the vaccine efficacy in this outbreak hasn't been calculated yet...)

SO WHAT ABOUT OREGON?

Mumps hasn't been reportable in Oregon since 1981. Our recorded peak case count was 4,016 cases in 1935. Since our institutional memory has faded, we are not sure why mumps was taken off the reportable disease list, and we are heatedly debating the topic. That said, given the heightened concern nationally due to the outbreak in the Midwest, and the fact that some of the cases are known to have gotten on planes and flown to various parts of the country, we are interested in hearing about mumps cases.[7]



Mumps testing will be offered through the Oregon State Public Health Laboratory (OSPHL) at no cost for patients with: 1) otherwise unexplained parotitis; or 2) otherwise unexplained fever and contact with a person meeting Iowa's "confirmed" case definition, viz., tender, self-limited swelling of a salivary gland lasting >2 days and without other apparent cause, AND a positive mumps IgM or viral culture or epidemiologic link to a confirmed case.

If you have a patient who meets either of these criteria, please contact your local health department for approval before sending in specimens. Patients who don't fit these criteria can have viral culture performed at OSPHL for $35.

Collect serum, urine, and oral (parotid duct) swabs and send to OSPHL for antibody testing and viral culture. Do not use cotton-tipped swabs with calcium alginate or wood shafts as these can inhibit culture growth. The best choice is to use dacron-tipped swabs with plastic or metal shafts; place swabs in viral transport media.

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