NEW YORK
state department of
HEALTH

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When Mumps is Mumps

Reporting

Physicians, infection control practitioners, health care facilities, state institutions, and schools are required to report any suspected case of mumps to their local health department (LHD). LHDs should contact the New York State Department of Health (NYSDOH) Bureau of Immunization immediately for assistance with confirming the diagnosis, controlling spread, and coordinating sample collection and shipping.

Case Definition

A case of mumps is defined as a person who has two or more days of parotid and/or other salivary gland swelling, or orchitis, or oophoritis unexplained by another more likely diagnosis.

Parotitis is generalized swelling of the parotid gland anterior to the ear and inferior to the mastoid process with jaw angle obliteration. Mumps should be suspected in the first episode of acute, tender parotid swelling.

History

The following information obtained from a patient or provider interview will help establish a level of suspicion for the likelihood of the patient having mumps.

Historical Element	Suspicion Level for Mumps		
	HIGH	MOD	LOW
Initial episode of parotitis	+		
Recent* contact with person with parotid enlargement	+		
Recent international travel or travel to area with mumps outbreak	+		
Recent exposure to international traveler or recent exposure to traveler to area with mumps outbreak	+		
No mumps virus immunization**	+		
One mumps virus immunization**		+	
Two mumps virus immunizations**		+/-	+/-
Parotid or jaw pain when eating or drinking			+
Parotid enlargement when eating or drinking			+
Recurrent parotid swelling			+
Recent dental problems			+
Recent jaw trauma/injury			+

*Within 12-25 days of onset of parotitis in patient being evaluated.
**In an outbreak setting, history of mumps vaccination should not increase or decrease suspicion.

Differential Diagnosis

Other viral etiologies such as parainfluenza virus, Epstein-Barr virus (EBV), cytomegalovirus (CMV), enterovirus, lymphocytic choriomeningitis virus (LCMV), and HIV are possible causes of parotid swelling, but much less frequently than mumps. History and physical exam are crucial in directing suspicion toward or away from mumps. Viral causes of orchitis include mumps, Coxsackie virus, and echovirus. Epididymitis can be confused with orchitis and most commonly is caused by bacterial infection.

Complications
Complications include aseptic meningitis, orchitis, oophoritis, hearing loss, pancreatitis, myocarditis, encephalitis, arthralgia, arthritis and nephritis. Spontaneous abortions can occur in the first trimester of pregnancy. Death due to mumps is rare.

Exam Findings

Sign of Symptom	Consistent with Mumps		Alternative Diagnosis to Consider
	YES	NO	
Fever	+		Other infectious etiology
Tender parotid gland	+		Other infectious etiology
Stensen duct erythema	+		Bacterial infection
Clear fluid expressed from Stensen duct	+		
Purulent fluid expressed from Stensen duct		+	Bacterial infection
Fluctuant parotid gland		+	Obstruction, bacterial infection
Nontender parotid enlargement		+	Malignancy
Weight loss	+/-	+/-	Malignancy, eating disorder, diabetes, HIV
Cranial nerve involvement		+	Malignancy
Lymph node enlargement		+	Bacterial infection, Infectious Mononucleosis, Malignancy

Confirming the Diagnosis
Clinical suspicion must be confirmed with laboratory tests. The choice of test and expected result depend on when and how specimens are collected. Tests should be ordered regardless of vaccination or disease history.

Testing
Within five days of parotitis onset, every suspected case should have a viral swab collected by rubbing the interior cheek (buccal mucosa) at the Stensen duct (where the parotid gland empties into the mouth) after massage of the parotid gland for 30 seconds.

Additionally, blood may be drawn for mumps IgM and IgG at the time of clinical diagnosis. If acute IgM is negative, a convalescent sample for IgM and IgG should be drawn 14-21 days later.

Interpretation
Clinical history and exam must be considered with test results to confirm a diagnosis of mumps.

Swab: Positive RT-PCR or culture confirms mumps. Negative is inconclusive.

IgM: Results should be interpreted with caution as false positive and negatives are possible. A positive result in an asymptomatic patient is inconclusive.

IgG: A positive IgG result in an acute sample does not rule out mumps. Acute and convalescent samples must be run at the same time at the NYSDOH laboratory, Wadsworth Center. A conversion from negative to positive or a ≥4-fold rise of IgG between acute and convalescent sera may confirm the diagnosis.

Testing for parainfluenza, EBV, and/or CMV can be performed to rule out alternative diagnoses of parotitis. Please consult your local laboratory to determine the best test to order.

Isolation and Infection Control

Symptomatic mumps cases must be isolated for five days after onset of parotitis. Susceptible close contacts should be vaccinated for mumps (recommended as MMR). In a sensitive setting such as a school, day care, or health care facility, susceptible individuals should be excluded for 26 days after last potential exposure (e.g., onset of parotitis in final case). Susceptible individuals may return once they are vaccinated.

Resources

- Outbreak Control Guide for Vaccine-Preventable Diseases NYSDOH http://www.health.ny.gov/prevention/immunization/providers/outbreak_control_guidelines.htm
- Manual for the Surveillance of Vaccine-Preventable Diseases CDC http://www.cdc.gov/vaccines/pubs/surv-manual/index.html
- Berman's Pediatric Decision Making, Berman, Stephen, 5th edition (2011) Elsevier Inc.
- Red Book: Report of the Committee on Infectious Diseases, 29th ed. (2012) American Academy of Pediatrics
- Epidemiology and Prevention of Vaccine-Preventable Diseases, (Pink Book) 12th ed. (May 2012) CDC http://www.cdc.gov/vaccines/pubs/pinkbook/index.html