

# Non-HIV Viral Infections of the Salivary Glands

Andrea Schreiber, DMD<sup>a,\*</sup>, Gabriel Hershman, DDS<sup>b</sup>

## KEYWORDS

- Mumps • Paramyxovirus • Parotitis • Complications
- Vaccines • Epidemic

The viral organism that first comes to mind when considering non-HIV viral infections of the salivary glands, is the mumps virus. The derivation of the term “mumps” is often attributed to the Danish word *mompen*, meaning garbled speech, a common manifestation of the salivary gland swelling associated with the infection. Alternatively, it is described as deriving from the Old English word meaning “lumps” or “bumps.” Although the incidence of mumps has been reduced significantly by the introduction of the mumps vaccine in 1967, sporadic outbreaks continue to be reported. Other non-HIV viruses detected in saliva or known to affect the salivary glands include Epstein-Barr virus (EBV), cytomegalovirus (CMV), human herpes simplex virus (HHSV-8), hepatitis C virus (HCV), human papilloma virus (HPV), cocksackie, influenza, and echovirus. Knowledge regarding the pathophysiology and sequelae of these viruses on the salivary glands remains somewhat limited to date.

The primary focus of this chapter is covered in two main subsections: Paramyxovirus-induced parotitis (MUMPS) and Other viral salivary gland infections.

## PARAMYXOVIRUS-INDUCED PAROTITIS (MUMPS) *History*

Although acute bacterial and viral infections are the most common ailments to affect salivary glands, infections of the salivary glands may, on occasion, also be caused by parasites and fungi. However, mumps remains the most common viral disease of the salivary glands. Mumps is an acute,

self-limiting, contagious infectious disease that is most commonly characterized by bilateral non-suppurative parotid swelling, although all salivary glands may be involved.<sup>1</sup>

Before the introduction of a vaccine in 1967, more than 90% of school-age children were reported to have been exposed to mumps, and mumps epidemics were reported to have occurred in cycles every few years. In an epidemic in the early 1940s, an incidence of 250 of 100,000 was reported. This incidence declined sharply to 76 of 100,000 one year after the release of the live mumps vaccine and to about 1 case per 100,000 people some 20 years later. The decline in mumps incidence has been attributed to the increased usage of the mumps vaccine. In 1996, the Centers for Disease Control and Prevention (CDC) reported only 751 cases of mumps nationwide or about 1 case for every 5,000,000 people.

## *Signs and Symptoms*

The mumps virus is contracted most frequently in childhood and adolescence, with more than 85% of cases occurring in persons under the age of 15 years.<sup>2</sup> The clinical presentation is frequently mild; not infrequently patients may be asymptomatic.<sup>1</sup> Adults are rarely infected because of immunity from vaccination or childhood exposure.<sup>3</sup>

The mumps virus is a paramyxovirus from the influenza and Newcastle groups. Like measles, it is a single-stranded RNA virus. Humans are its only natural host. Infection follows exposure through the upper respiratory tract by droplets, aerosol, direct contact, or fomites. After an

<sup>a</sup> Department of Oral and Maxillofacial Surgery, New York University College of Dentistry, New York, NY, USA

<sup>b</sup> Department of Oral and Maxillofacial Surgery, New York University-Bellevue Hospital Center, New York, NY, USA

\* Corresponding author.

E-mail address: [andrea.schreiber@nyu.edu](mailto:andrea.schreiber@nyu.edu) (A. Schreiber).

incubation period of several weeks an active viremia develops. Typically, patients present with prodromal symptoms of fever, malaise, and headache. Approximately 24 hours later, glandular swelling, tenderness, and associated earache can occur. Individuals are considered to be contagious immediately before, or at the onset of, glandular swelling. Resolution of symptoms generally occurs within 10 days.<sup>4</sup> Clinical findings include an enlarged, firm gland (see **Fig. 1**). Erythema and warmth to touch are not common. The overwhelming majority of cases involve both glands. Imaging studies are not routine but when performed show diffuse glandular inflammation.<sup>3</sup>

A logistic regression of the 2006 Iowa mumps outbreak indicated that the probability of mumps shedding after the onset of symptoms decreases rapidly. As a result of this analysis, the mumps isolation recommendation of the American Academy of Pediatrics has been changed from 9 days to 5 days. The virus can be isolated from the saliva for up to a week before symptoms develop, and it is considered most contagious within 2 days of development of parotitis.<sup>5</sup>

The peak incidence of mumps is in preschool, early elementary school age populations. It is characterized by an incubation of up to 3 weeks (mean, 18 days), with a prodrome of malaise, fever, anorexia, headache and myalgia followed by salivary gland pain and swelling, earache, trismus, and dysphagia.

Diagnosis, during an epidemic, is made on the basis of clinical findings, but viral serology is necessary to confirm the diagnosis of viral sialadenitis. Laboratory confirmation is made by testing for antibodies to mumps S and V antigens and to the hemagglutination antigen.<sup>6</sup> Complement fixing antibodies are detected after viral exposure. Soluble antibodies appear within the final week

of infection and last for several months after infection. Soluble antibodies, directed at the nucleoprotein core of the virus, are therefore associated with recent vaccination or active infection. Viral antibodies, directed at the surface hemagglutinin, persist for years after exposure. Antibody titers to nonparamyxoviruses are also detectable.<sup>2</sup>

### Treatment

The treatment of mumps is palliative and supportive and includes rest, hydration, and antipyretics. Arguably, the most significant advancement in the management of mumps has been the development of the live attenuated virus, which is frequently administered with the measles and rubella vaccines (MMR). The Jeryl Lynn vaccine, which is exclusively used in the United States, is considered to be both safe and efficacious.<sup>3</sup>

### Complications

Complications of mumps, including, orchitis, oophoritis, mastitis, meningioencephalitis, pancreatitis, and deafness, are only infrequently reported. Before the widespread use of the mumps vaccine, the virus was a common cause of meningitis and encephalitis worldwide and in up to 36% of reported cases in the United States.<sup>7</sup> An association between mumps and the rapid onset of childhood diseases has also been reported.<sup>6</sup>

Complications relate to the systemic nature of the disease and the affinity of the virus for exocrine glands via hematogenous spread. Orchitis is the most frequent complication—occurring in up to 30% of affected boys, whereas oophoritis is reported in 5% of affected girls. Mumps orchitis usually resolves with palliative treatment in less than 10 days. Interferon  $\alpha 2a$  is recommended for patients with postpubertal mumps to prevent testicular atrophy and infertility.<sup>1</sup> Aseptic meningitis is reported in up to 10% of patients, whereas pancreatitis is found in fewer than 5% of patients. Sensorineural hearing loss is rare, but when it occurs, it is profound and often permanent.<sup>3</sup>

Numerous viruses exhibit tropism for the central nervous system (CNS), which can be manifested by a variety of clinical signs and symptoms. Spread to the CNS is accomplished by either hematogenous or neuronal routes. According to the CDC, more than 100,000 cases of aseptic meningitis are reported annually. Since the introduction of widespread vaccination programs, mumps account for a very small number of these cases. Meningitis is characterized by inflammation of the membranes surrounding the spinal cord and the brain, whereas encephalitis is characterized by infection of the brain tissue. Both meningitis and encephalitis



**Fig. 1.** Patient presenting with enlarged parotid gland associated with paramyxovirus-induced parotitis. (Courtesy of Michael D. Turner DDS, MD, FACS, New York, NY.)

Download English Version:

<https://daneshyari.com/en/article/3163667>

Download Persian Version:

<https://daneshyari.com/article/3163667>

[Daneshyari.com](https://daneshyari.com)