MUMPS

Epidemic Parotitis

Mumps was a common childhood viral disease caused by the mumps virus. Mumps frequently causes orchitis and impairs male fertility.

Related Diagnoses:
- Orchitis
- Hydrocele testis

About Mumps

Mumps virus infection frequently causes orchitis and impairs male fertility. Painful testicular inflammation develops in 15–40% of men who have completed puberty and contact the mumps virus. Before the development of vaccination and the introduction of a vaccine in 1949, it was common worldwide, but now, outbreaks are largely confined to developed countries.

The common symptoms of mumps include inflammation of the salivary glands, pancreas, and testicles; fever, and headache. Swelling of the salivary glands, specifically the parotid gland, is known as parotitis, and it occurs in 60–70% of infections and 95% of patients with symptoms. Parotitis causes swelling and local pain, particularly when chewing. It can occur on one side but is more common on both sides in about 90% of cases. Other symptoms of mumps can include dry mouth, sore face and/or ears and occasionally, in more serious cases, loss of voice. In addition, up to 20% of persons infected with the mumps virus do not show symptoms, so it is possible to be infected and spread the virus without knowing it. Fever and headache are prodromal symptoms of mumps, together with malaise and loss of appetite.

Mumps is highly contagious and spreads rapidly among people living in close quarters. The virus (an enveloped single-stranded, linear negative-sense RNA virus of the Rubulavirus genus and Paramyxovirus family) is transmitted by respiratory droplets or direct contact with an infected person. Only humans get and spread the disease. A person infected with mumps is contagious from approximately 7 days before the onset of symptoms until about 8 days after symptoms start. The incubation period (time until symptoms begin) can be from 12–25 days, but is typically 16–18 days. 20-40% of persons infected with the mumps virus do not show symptoms, so it is possible to be infected and spread the virus without knowing it. After an infection a person is typically immune for life. Reinfection is possible but tends to be mild. Diagnosis is usually suspected due to parotid swelling and can be confirmed by isolating the virus on a swab of the parotid duct.
Testing for IgM antibodies in the blood is simple and may be useful; however, can be falsely negative in those who have been immunized. Like many other viral illnesses, there is no specific treatment for mumps. Symptoms may be relieved by the application of intermittent ice or heat to the affected neck/testicular area and by the acetaminophen or ibuprofen for pain relief. Warm salt water gurgles, soft foods, and extra fluids may also help relieve symptoms. Patients are advised to avoid acidic foods and beverages, since these stimulate the salivary glands, which can be painful. Paracetamol will reduce the fever and pain.

**Associated disease**

- orchitis
- oophoritis

**Complications**

- Infertility or sub-fertility are rare, but present.
- Meningitis- in up to 10% of cases (40% of cases occur without parotid swelling).
- Ovarian inflammation (oophoritis)- in about 5-7% of adolescent and adult females.
- Spontaneous abortion in about 27% of cases during the first trimester of pregnancy.
- Acute pancreatic inflammation- in about 4% of cases, manifesting as abdominal pain and vomiting.
- Brain inflammation- very rare, and fatal in about 1% of the cases when it occurs.
- Hearing loss- rare sensorineural, uni- or bilateral, acute unilateral deafness occurs in about 0.005% of cases.

**Risk factors**

- No complete immunization with two separate doses.
- Age: children between 2-12 years old are at the highest risk of contracting mumps.
- Season: epidemics of mumps most likely happen during the winter/spring seasons.
- Risky destinations: areas with very low rate of vaccination such as Africa, general Indian subcontinent region, and Southeast Asia are very high-risk to travel.

**Impact on fertility**

Mumps virus infection frequently causes orchitis and impairs male fertility. Painful testicular inflammation develops in 15–40% of men who have completed puberty and contract the mumps virus. This testicular inflammation is generally one-sided (both testicles are swollen in 15–30% of mumps orchitis cases) and typically occurs about 10 days after the parotid gland. Testicular swelling has been documented as late as six weeks after parotid gland swelling. Decreased fertility is an uncommon consequence of testicular inflammation from mumps and infertility is rare. Pregnant women with mumps face concerns beyond those of the general population. Ornoy reported that mumps infection in pregnancy increased the risk of embryonic and fetal death as well as spontaneous abortion, but did not seem to have any relation to fetal congenital anomalies. However, the patient population that was reviewed was extremely small.
Prevention

The most common preventative measure against mumps is a vaccination with a mumps vaccine. The vaccine may be given separately or as part of the MMR immunization vaccine that also protects against measles and rubella. The WHO (World Health Organization) recommends the use of mumps vaccines in all countries with well-functioning childhood vaccination programs. In the United Kingdom it is routinely given to children at age 13 months with a booster at 3–5 years (preschool). The American Academy of Pediatrics recommends the routine administration of MMR vaccine at ages 12–15 months and at 4–6 years. In some locations, the vaccine is given again between 4 to 6 years of age, or between 11 and 12 years of age if not previously given. The efficacy of the vaccine depends on the strain of the vaccine, but is usually around 80%. The Jeryl Lynn strain is most commonly used in developed countries but has been shown to have reduced efficacy in epidemic situations.

Some anti-vaccine activists protest against the administration of a vaccine against mumps, claiming that the attenuated vaccine strain is harmful, and/or that the wild disease is beneficial. There is no evidence whatsoever to support the claim that the wild disease is beneficial, or that the MMR vaccine is harmful. Claims have been made that the MMR vaccine is linked to autism and inflammatory bowel disease, including one study by Andrew Wakefield (the paper was discredited and retracted in 2010 and Wakefield was later stripped of his license after his work was found to be an "elaborate fraud") that indicated a link between gastrointestinal disease, autism, and the MMR vaccine. Also, subsequent studies indicate no link between vaccination with the MMR and autism. Since the dangers of the disease are well known, and the dangers of the vaccine are quite minimal, most doctors recommend vaccination.

Symptoms

Initial signs and symptoms often include fever, muscle pain, headache, and feeling tired. This is then usually followed by painful swelling of one or both parotid glands. Symptoms typically occur 16 to 18 days after exposure and resolve after 7 to 10 days. Symptoms in adults are often more severe than in children. About a third of people have mild or no symptoms.

Therapies

Self therapy

Very important is to intake oral fluid to be adequate hydrated. Because of swelling of parotid and salivary gland, sometimes it is difficult to swallow. In that cases is good to avoid acid food and liquids, which can make it worse. Symptoms may be relieved by the application of intermittent ice or heat to the affected neck/testicular area.

Conventional medicine
Pharmacotherapy

An acetaminophen or ibuprofen can be used for pain relief.

Surgical therapy

No surgical therapy is needed for this condition.

Assisted reproduction

Viral infection can decrease sperm production if it is prolonged. Complete infertility is extremely rare, but this pressure on testicular tissue could lead to some complications in fathering a child. If conservative medical treatments fail to achieve a full term pregnancy, the physician may suggest the patient undergo in vitro fertilization (IVF-ICSI). Intracytoplasmic sperm injection (ICSI) is beneficial in the case of male factor infertility where sperm counts are very low or failed fertilization occurred with previous IVF attempt(s). The ICSI procedure involves a single sperm carefully injected into the center of an egg using a microneedle. Men who ejaculate no sperm require some form of surgical sperm retrieval to enable ICSI to take place. Epididymal sperm obtained by microsurgical aspiration (MESA) or percutaneous sperm aspiration (PESA) and testicular sperm obtained by surgical excision (TESE, micro TESE) are used in ICSI treatment. Alternatively, the retrieved sperm can be cryopreserved for use in future sperm injection attempts. If all efforts to extract vital sperm cells fails, then donated ones may be recommended. Infertile couples may also resort to egg donation or embryo donation when the female partner cannot have genetic children because her own eggs cannot generate a viable pregnancy. Surrogacy via a gestational carrier is also an option when a patient’s medical condition prevents a safe pregnancy, when a patient has ovaries but no uterus due to congenital absence or previous surgical removal, and where a patient has no ovaries and is also unable to carry a pregnancy to full term.

Find more about related issues

Diagnoses

Orchitis
An inflammation of the testes, involving swelling and heavy pains.
Learn more at: www.fertilitypedia.org/therapy/diag/orchitis

Hydrocele testis
An accumulation of clear fluid in the tunica vaginalis, the most internal of membranes containing a testicle.
Learn more at: www.fertilitypedia.org/therapy/diag/hydrocele-testis

Symptoms
Abdominal pain
A pain that occurs between the chest and pelvic regions.
Learn more at: www.fertilitypedia.org/edu/symptoms/abdominal-pain

Fatigue
A subjective feeling of tiredness which is distinct from weakness, which has a gradual onset.
Learn more at: www.fertilitypedia.org/edu/symptoms/fatigue

Fever
A temperature above the normal range due to an increase in the body’s temperature set-point.
Learn more at: www.fertilitypedia.org/edu/symptoms/fever

Headache
The symptom of pain anywhere in the region of the head.
Learn more at: www.fertilitypedia.org/edu/symptoms/headache

Hearing loss
A partial or total inability to hear.
Learn more at: www.fertilitypedia.org/edu/symptoms/hearing-loss

Infertility
The failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse.
Learn more at: www.fertilitypedia.org/edu/symptoms/infertility

Nausea and vomiting
A sensation of unease and discomfort in the stomach with an involuntary urge to the forceful expulsion of the contents of stomach through the mouth.
Learn more at: www.fertilitypedia.org/edu/symptoms/nausea-and-vomiting

Recurrent miscarriage
A disease distinct from infertility, defined by two or more failed pregnancies.
Learn more at: www.fertilitypedia.org/edu/symptoms/recurrent-miscarriage

Testicular pain
A discomfort felt in the testicles (testes) or scrotum.
Learn more at: www.fertilitypedia.org/edu/symptoms/testicular-pain

Testicular swelling
Excessive accumulation of any fluid in the area of testicles.
Learn more at: www.fertilitypedia.org/edu/symptoms/testicular-swelling

Therapies
Egg donation
Process by which a woman donates eggs for purposes of assisted reproduction or biomedical research.
Learn more at: www.fertilitypedia.org/edu/therapies/egg-donation

ICSI
A micromanipulative fertilization technique in which a single sperm is injected directly into an egg.
Learn more at: www.fertilitypedia.org/edu/therapies/icsi

Sperm donation
The procedure in which a man (sperm donor) provides his sperm for fertility treatment.
Learn more at: www.fertilitypedia.org/edu/therapies/sperm-donation

Standard IVF
A process in which an egg is fertilised by sperm outside the body: in vitro. Own or donated gametes may be used.
Learn more at: www.fertilitypedia.org/edu/therapies/standard-ivf

Sources
“Mumps was a common childhood viral disease, but widespread vaccination has now made it rare in developed countries. —sourced from Boundless licensed under CC BY-SA 4.0

“Mumps —sourced from Wikipedia licensed under CC BY-SA 3.0

“Mumps —sourced from Queensland Government licensed under CC BY 3.0 AU

“Presumed Cases of Mumps in Pregnancy: Clinical and Infection Control Implications —by Lozo et al. licensed under CC BY 3.0

“Mumps virus electron micrograph —by Beards licensed under CC BY-SA 4.0