AN OVERVIEW OF MUMPS AND ITS COMPLICATIONS

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Abstract
Mumps is contagious viral infection that can cause complications such as meningitis, deafness and infertility. In particular, mumps has been associated with orchitis, or inflammatory of the testicles, which can lead to infertility. It primarily affects children and young adults. This article summarizes the current knowledge on mumps and its effects. Evidence from literature confirmed that the presence of mumps is still imminent and attention given to mumps cannot even be remotely considered enough. The review includes studies on the epidemiology, symptoms, diagnosis and treatment of mumps and the effectiveness of the measles, mumps, rubella (MMR) vaccine. The paper concluded that mumps is springing up and hence, should be a public health concern since it's a communicable disease. It is therefore recommended among others, that mass media can be used to raise awareness on the unquestionable existence of mumps and its complications.

Key Words: *Mumps, Complication*

Introduction

Mumps is a serious disease that can lead tosevere and long-lasting consequences if left in treated or not addressed promptly, yet it remains a neglected public health concern. Mumps is a viral infection that primarily affects the parotid glands one of three pairs of saliva-producing (salivary) glands, situated below and in front of the ears. Which when contracted can cause swelling in one or both parotid glands (Conly & Johnson, 2007; Tesini, 2023). Mumps is one disease which many Nigerians do not see as a serious illness as affected children appear otherwise healthy except for the swollen jaws and mild discomfort (Balogun, 2019). It was common in the United States until mumps vaccination became routine (Marlow et al, 2019). Since then, the number of cases has dropped dramatically. Complications of mumps, such as hearing loss, are potentially serious, but rare (Marlow et al, 2019). There is no specific treatment for mumps. Mumps outbreaks still occur in the United States, and mumps is still common in many parts of the world, so getting a vaccination to prevent mumps remains important.

In the absence of vaccination against mumps there are between 100 and 1,000 cases per 100,000 people each year, i.e. 0.1% to 1.0% of the population are infected each year (Su Chang & Chen, 2020). In line with this, it was reported that the number of cases increases every 2–5 years, with incidence highest in children 5–9 years old (Wikipedia, 2023). According to seroconversion surveys done prior to the start of mumps vaccination, a sharp increase in mumps antibody levels at age 2–3 was observed (Shu et al, 2015).

Furthermore, Su et al, (2020) observed that 50% of 4-6 year olds, 90% of 14-15 year olds, and 95% of adults had tested positive to prior exposure to mumps, indicating that nearly all people are eventually infected in unvaccinated populations. Although mumps was initially successfully controlled by vaccination in developed countries (LeBaron et al,2009), Fields ct al,(2019) reported that sporadic mumps outbreaks began to occur globally. During recent years, outbreaks of Mumps virus (MuV) infections have occurred in adolescent populations, many of whom had been vaccinated with mumps vaccines previously, in the USA, Canada, Australia, Unite kingdom and France (Fields et al.2019; Peltola e1 al,2007; Westpal et al, 2019), Aaslieim et al, 2014; Coffinieres et al, 2012). Several reasons were raised to explain the unexpected occurrence: waning immunity Schwarz el al, (2007) and Vandermeulen et al, (2009) explained the efficacy of mumps vaccine, which has varied according to the doses of vaccinations and different virus strain used for production of the mumps vaccine; and how much the level of antibody persisted in body with time after vaccination or natural confection among population.

Prior to the start of vaccination, mumps accounted for ten percent of meningitis cases and about a third of encephalitis cases (CDC.2020). Worldwide, mumps is the most common cause of inflammation of the salivary glands (Kessler & Bhatt, 2018). In children, mumps is the most common cause of deafness in one ear in cases when the inner ear is damaged (Rubin et al, 2105). Wikipedia (2023) explained that asymptomatic infections are more common in adults, and the rate of asymptomatic infections is very high, up to two-thirds, in vaccinated populations. Mumps vaccination has the effect of increasing the average age of the infected in vaccinated populations that have not previously experienced a mumps outbreak. Latner and Hickman (2015) recognized that while infection rates appear to be the same in males and females, males appear to experience symptoms and complications, including neurological involvement, at a higher rate than females. According to Senanayake (2008) symptoms are more severe in adolescents and adults than in children.

Symptoms of Mumps

Some people infected with the mumps virus have either no signs or symptoms or very mild ones. When signs and symptoms do develop, they usually appear about two to three weeks after exposure to the virus and may include: swollen, painful salivary glands on one or both sides of your face (parotitis), fever, headache, weakness and fatigue, loss of appetite, pain while chewing or swallowing, seizures, and stomach pain

The primary and best known sign of mumps is swollen salivary glands that cause the cheeks to puff out. In fact, the term "mumps" is an old expression for lumps or bumps within the cheeks. Other viruses can infect the parotid glands, causing a mumps-like illness.

Causes of Mumps

The cause of mumps is the mumps virus, which spreads easily from person to person through infected saliva, if you're not immune, you can contract mumps by breathing in saliva droplets of an infected person who has just sneezed or coughed and you can also contract mumps from sharing utensils or cups with someone who has mumps.

Complications of mumps

Fertility is an issue for individuals of both sexes. Among couples who cannot conceive, the cause can be attributed to factors on both male and female side. It is worthy of note that antithesis of fertility is infertility (Schultz, 1976). The possible complications of mumps include:

i. *Orchitis:* This is a complication that affects males and involves inflammation of the testicles. It can cause pain, swelling, and tenderness in the testicles and can sometimes lead to infertility. Mumps Orchitis basically resolves within two weeks. Atrophy, or reduction of size, of the involved testicle occurs in30-50°/ of orchitis cases, which may lead to abnormalities in sperm creation and fertility such as low sperm count, absence of sperm in semen, reduced sperm motility, reduced fertility (hypofertility) in 13% of cases, and rarely sterility (Berhrman et al,2004). Hypo-fertility can, however, occur in cases without atrophy. Abnormalities in sperm creation can persist for months to years after recovery from the initial infection, the length of which increases as the severity of orchitis increases. Examination of these cases shows decreased testicular volume, tenderness of the testicles, and a feeling of inconsistency when handling the testicles. Infertility is linked to severe cases of orchitis affecting both testes followed by testicular atrophy, which may develop up to one year after the initial infection. There is a weak association between orchitis and later development of epididymitis and testicular tumors (Rubin et al, 2015).

ii. *Oophoritis*: This is a complication that affects females and involves inflammation of the ovaries. It can cause pain, swelling, and tenderness in the lower abdomen and can sometimes lead to infertility.

iii. *Meningitis:* This is a serious complication that involves inflammation of the membranes surrounding the brain and spinal cord. It can cause symptoms such as headache, fever, neck stiffness, and sensitivity to light.

iv. *Encephalitis:* This is a rare but serious complication that involves inflammation of the brain. It can cause symptoms such as headache, fever, confusion, seizures, and loss of consciousness.

v. *Deafness:* Mumps can cause permanent hearing loss in rare cases.

vi. *Pancreatitis:* Mumps can cause inflammation of the pancreas, which can cause abdominal pain, nausea, and vomiting.

vii. *Miscarriage:* Mumps infection during pregnancy can increase the risk of miscarriage.

Myocarditis and pericarditis that occur as a result of mumps may lead to endocardial fibroelastosis, i.e. thickening of the endocardium (Shu et al, 2015). With extreme rarity, infertility and premature menopause have occurred as a result of mumps oophoritis (Rubin. ct al, 2015).

It is important to note that not all cases of mumps will lead to complications, and most people who get mumps recover fully without any long-term problems. However, it is still important to seek medical attention if one suspects he/she has mumps or has been in

close contact with someone who has mumps, especially if one has a weakened immune system.

Tests and diagnosis

When a doctor suspects that mumps has been contracted a virus culture or a blood test may be carried out. The immune system normally makes antibodies to help fight infection. So if an individual has mumps, the blood test can detect the antibodies in the body system that fights mumps virus.

Treatments and drugs

Because mumps is caused by a virus, antibiotics are not effective. Like most viral illnesses, a mumps infection must simply run its course. Fortunately, most children and adults recover from an uncomplicated case of mumps within about two weeks. As a general rule, after recovering within two-weeks affected individuals are no longer considered contagious and may safely return to work or school one week after a diagnosis of mumps.

Lifestyle and home remedies

In general, an individual is considered immune to mumps if he/she has previously had the infection or has been immunized against mumps. The mumps vaccine is usually given as a combined Measles-mumps-Rubella (MMR) inoculation, which contains the safest and most effective form of each vaccine. Two doses of the MMR vaccine are recommended before a child enters school:

i. The first between ages 12 and 15 months
ii. The second between ages 4 and 6 years, or between 11 and 12 if not previously given.

In response to a mumps outbreak in the Midwest, college students and health care workers in particular are encouraged to make sure they've had two doses of the MMR vaccine. A single dose doesn't appear to offer sufficient protection during an outbreak. Since the recommendation for a second dose didn't begin until the late 1980s or early 1990s, many young adults may not have received their second dose and should have one now.
Those who don't need the MMR vaccine

The vaccine is needed if an individual has:

i. Had two doses of the MMR vaccine after 12 months of age or one dose of the MMR vaccine plus a second dose of Measles vaccine
ii. Had one dose of MMR and you're not at high risk of Measles or mumps exposure
iii. Blood tests results to show immunity to Measles, mumps and Rubella
iv. Is a man who was born before 1957
v. Is a woman who was born before 1957 and you don't plan to have any more children, you already had the Rubella vaccine or you have a positive Rubella test

Also, the vaccine is not recommended for:

i. Pregnant women or women who plan to get pregnant within the next four weeks
ii. People who have had a life-threatening allergic reaction to gelatin or the antibiotic neomycin
iii. People with severely compromised immune systems, or people who take oral steroids, unless the benefits of the vaccine exceed the risks

Those who should get the MMR vaccine
The following can be considered as criteria for administering the MMR vaccine:

i. Are a non-pregnant woman of childbearing age
ii. Attend college, trade school or postsecondary school
iii. Work in a hospital, medical facility, child care center or school
iv. Plan to travel overseas or take a cruise

It is important to check with ones doctor before getting vaccinated for mumps if:

i. The individual has Cancer
ii. The individual has blood disorder
iii. The individual has a disease that affects the immune system, such as HIV/AIDS
iv. The individual is being treated with drugs, such as steroids, that affect the immune system

It should be noted that mumps cannot be gotten from the MMR vaccine, and most people experience no side effects from the vaccine. A few may experience a mild Fever or rash, and some people (mostly adults) have achy joints afterward for a short time. Less than one out of 1 million doses causes serious allergic reaction. Although concerns have been raised about a connection between the MMR vaccine and autism, extensive reports from the American Academy of Pediatrics, the Institute of Medicine and the Centers for Disease Control and Prevention conclude that there's no scientifically proven link between the MMR vaccine and autism.

The following steps can help manage symptoms:

i. Drink plenty of fluids.
ii. Gargle warm salt water.
iii. Eat soft, easy-to-chew foods.
iv. Avoid acidic foods that make your mouth water.
v. Suck on an ice pop to soothe a sore throat.
vi. Place ice or heat packs on swollen glands.
vii. Take non-aspirin medications such as acetaminophen and ibuprofen to reduce fever and help with pain.

Aspirin and any other drug should not be administered without prescription from a doctor or a medical practitioner. Children with viruses such as mumps who take aspirin can develop

Reye's syndrome, a dangerous disease that causes liver failure, swelling of their brain and even death.

Conclusion

In conclusion, mumps is a re-emerging pathogen that has become a significant public health concern. While vaccination is the most effective way to prevent mumps, we must continue to research and understand this virus in order to develop more effective interventions. It is crucial that we take action to reduce the spread of mumps and its associated health risks. With understanding of this virus, we can create a safer and healthier world for all.Based on the conclusion, the following recommendations were proffered:

1. Health education on strategies for preventing mumps should be intensified and ongoing in the General out-patient Department of all health facilities and other strategic places as a means of the disease control.
2. Federal Ministry of Health should use mass media to raise awareness on the possibilities of mumps causing fertility issues.

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