



Bilateral Mumps with Orchitis : A Case Report

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ABSTRACT

Background: Mumps or *epidemic parotitis* is an acute disease that often occurs in the salivary glands caused by infection from *paramyxovirus*. This virus spreads easily through *airborne droplets* and saliva. In the world, the incidence of mumps is 500,000 cases each year. Incomplete basic vaccination is one of the risk factors for mumps. **Case Description:** An 11-year-old male patient came with complaints of swelling in the right and left parotid glands. Initially the swelling was on the left. The patient had never been like this before. The patient's basic immunization history was incomplete. From physical examination, enlargement of both salivary glands was found. 2 weeks earlier at the patient's school, there were several students who experienced the same thing. The patient was referred to dr. Ramelan Central Naval Hospital after 5 days of hospitalization at the previous hospital and experienced swelling in the left scrotum. **Discussion:** Mumps often occurs in children aged 2-12 years. The occurrence of mumps can be caused by infection with the *paramyxovirus virus* which spreads from *airborne droplets* and salivary glands. One of the complications of mumps that often occurs in children is *orchitis*. Providing basic vaccines to children is one effort to prevent mumps. Bed rest, adequate fluid intake, and intravenous administration of NSAIDs and antibiotics can be options for mumps therapy. **Conclusion:** In this case, Mumps with *Orchitis complications* were diagnosed based on anamnesis, physical examination, and laboratory examination. Management of mumps is symptomatic. Incomplete basic vaccination is one of the biggest factors in the occurrence of mumps.

Keywords: Mumps; Orchitis; Vaccine.

INTRODUCTION

Mumps or *epidemic parotitis* is an acute disease that often occurs in the salivary glands, caused by a viral infection. The infecting virus is a type of *Ribonucleic Acid* (RNA) virus included in the *Paramyxoviridae* family. This virus is transmitted through direct contact with *airborne droplets* and saliva. This disease is *self-limiting* which causes swelling and pain in the parotid glands, submandibular glands, and sometimes other salivary glands. Parotid can cause unilateral or bilateral swelling.¹⁻⁴ Mumps can cause complications such as *orchitis*, *epididymitis*, *pancreatitis*, *arthritis*, and *meningitis*.^{1,6,7} *Orchitis* is a rare case. *Orchitis* itself is usually accompanied by *epididymitis*.⁵ In the world, the incidence of mumps is 500,000 cases each year. Mumps can occur at any age. The most common age in children is 5-15 years old, about 85% of cases occur in children under 15 years old.^{6,7,8}

Humans are the natural *hosts* suitable for this virus to reproduce. The incubation period occurs for 12-25 days.⁹ Infected people can transmit others from 2 days before the onset of symptoms to 5 days after the onset of symptoms.¹⁰ Primary replication of the virus occurs in the mucosal epithelium of the upper respiratory tract. Infection of lymph node mononuclear cells exposed to the virus will result in swelling of the salivary glands, testes, ovaries, pancreas, and central nervous system.¹¹

Clinical manifestations of mumps are often seen in the parotid glands and rarely in the sublingual and submandibular glands. The parotid glands can be swollen and painful, this can occur on one side or both sides.⁴ At the beginning of mumps, the swelling is *unilateral*.^{4,11} *Unilateral* swelling usually occurs within 3-5 days, during which time it can become *bilateral swelling*. Swelling that occurs in the salivary glands located between the auricle and the angle of the mandible.¹¹ *Orchitis* is the most common complication of mumps, can occur *unilaterally* or *bilaterally*. Characterized by swelling and pain in the scrotum.¹¹

CASE REPORT

A male patient, An. A aged 11 years old came with both of his parents to the Dr. Ramelan Central Naval Hospital Surabaya with swelling in the left testicle. In addition, the patient had a fever. There was no nausea and vomiting, urination and defecation within normal limits. Initially, on Tuesday, June 2, 2024, the patient came home from school with a fever since noon. He had been given Paracetamol orally but it did not improve. The patient also complained of pain in the lower left side of his face. According to his parents, there was no swelling. On June 3, 2024, the patient was taken by his parents to the ER with complaints of swelling in both corners of the lower face. The patient was hospitalized at the previous hospital for 5 days, until June 7, 2024. When he returned home, the swelling in the right and left corners of his face had disappeared. Then the patient had a fever at night. On June 8, 2024, the patient experienced swelling in the left testicle and was immediately taken to dr. Ramelan Central Naval Hospital. There was no history of allergies or trauma. The patient is the second of three siblings and the patient still lives with both of the patient's parents. The patient was born normally, with a birth weight of 3100 grams, assisted by a doctor. The patient did not receive complete basic vaccinations. No similar diseases were found in the patient's family. According to the parents, the patient likes to buy snacks outside the home. The patient's parents also said that, at the patient's school there was a history of the same disease in the patient 2 weeks before the patient had a fever.





Figure 1. Swelling of the salivary glands

Results of physical examination at dr. Ramelan Central Naval Hospital: the patient appeared moderately ill, the patient's consciousness was compos mentis, pulse 90x/minute regular, volume and pressure sufficient, respiratory rate 20x/minute, and temperature 37.5°C, body weight 33kg (good impression BB/A, good nutritional BMI), height 137cm (normal impression TB/A), and normal body shape. The results of head and neck examination were within normal limits, abdomen, thorax, and extremities within normal limits. From the results of physical examination, swelling was found in the left scrotum and pain when touched (figure 2).



Figure 2. Left scrotal enlargement

In the supporting examination of the patient in the form of laboratory examination. Complete blood test results showed neutrophils 78.6%, lymphocytes 14.4%, MCV 78 fL, and platelets 152,000/ μ L.

DISCUSSION

Mumps is an acute disease caused by infection from *paramyxovirus* that attacks the parotid, submandibular, and sublingual glands. Paromyxovirus is an RNA virus that transmits the virus through direct contact with saliva or *airborne droplets*. The incubation period of this disease is 12-25 days before swelling occurs until a week after swelling. The healing process for swelling is an average of 5-10 days.^{9,11,12}

The patient came to dr. Ramelan Central Naval Hospital diagnosed as mumps with complications of *orchitis*. The patient is a 12-year-old boy, where the incidence of mumps is 85% in children under 15 years of age.¹³ The swelling on the left cheek occurred for the first time indicating that the patient had never suffered from mumps. If someone has ever suffered from mumps, then when they become adults 95% have antibodies to fight infection of this disease.

The results of the patient's anamnesis showed a history of swelling in both corners of the lower face since 6 days ago and accompanied by fever. On the seventh day, swelling was found in the left scrotum area, accompanied by pain. The results of the anamnesis and physical examination strengthened the diagnosis that the patient was suffering from mumps with complications of *orchitis*.^{10,11,13}

The patient suffered from mumps right after 2 weeks ago a friend at school was infected. Mumps transmission has an incubation period of 2-3 weeks through direct contact with saliva or *airborne droplets*, so if someone has direct contact with a sufferer and has never had mumps before, they will easily be infected. Someone who is infected with this *paramoxyvirus* will become viremic, which can cause swelling and pain.⁹⁻¹²

Continuous mumps will cause complications such as *orchitis*, *epididymitis*, *pancreatitis*, *arthritis*, and *meningitis*.^{1,6,7} In these patients, mumps who are not

fully vaccinated have a risk of complications. The complication that occurs in these patients is *orchitis*. Mumps is an infection that can attack glands and other tissues. Sialic acid plays an important role in mumps virus. Sialic acid will bind to Sertoli cells (SS) and Leydig cells (SL) found in the testes. The mumps virus will induce an innate immune response in SS and SL through activation of toll receptor 2 (TRL2) and retinoic acid-induced gene-1 (RIG-1). TRL2 will induce pro-inflammatory cytokines (TNF- α and IL-6), while RIG-1 will induce type 1 interferon (IFN- α and IFN- β). The SC response to mumps virus infection produces higher pro-inflammatory cells of cytokines and chemokines, but IFN- α and IFN- β levels are lower compared to LC. As a result of the increase in pro-inflammatory receptors, orchitis occurs.¹⁴⁻¹⁷

The occurrence of *orchitis* can cause infertility not because of the presence of a viral infection that attacks, but because of mumps infection which causes the formation of autoantibodies from the body that can fight the formation of reproductive organs themselves if mumps gets worse and is not treated properly.¹⁸ Unilateral *epidemic parotitis orchitis* rarely causes infertility, but can cause subfertility, namely *oligospermia*, *azoospermia*, and *asthenospermia*. However, it is generally temporary.^{8,18}

There is no specific antiviral therapy in the treatment of *epidemic parotitis orchitis*. The use of systemic interferon works by inhibiting the transcriptase enzyme in viral replication and is also reported to be less specific in preventing atrophy and infertility. Appropriate management is supportive, including bed rest, local therapy on the scrotum (cold compresses), and administration of antipyretics. Administration of broad-spectrum antibiotics is still permitted because *epidemic parotitis orchitis* is differentially diagnosed with testicular infection due to bacteria.

Management in this case is bed rest, fluid administration, and intravenous medication. The fluid given is D5 1/2NS, while for intravenous medication obtained NSAIDs in the form of Antrain 1x350mg, antihistamines in the form of Ranitidine 1x30mg, and antibiotics in the form of Ceftriaxone 2x1g. Nonsteroidal anti-inflammatory drugs (NSAIDs) or steroid preparations function to relieve pain and

swelling in the testicles, but do not change clinical manifestations or prevent further complications. It should be considered that mumps is a *self-limiting viral disease* in management, therapeutic effects, and side effects of steroid administration. Corticosteroids can reduce pain and edema that occurs, but cause a decrease in testosterone levels and increase *luteinizing hormone* (LH) and *luteinizing hormone releasing hormone* (LHRH). The use of corticosteroids has also been reported to provide better semen analysis parameters although not very significant.⁸

Mumps vaccination uses a live, weakened mumps virus. Mumps vaccine can be combined with measles and rubella vaccines in the *mumps*, *measles*, and *rubella* (MMR) vaccine. It can also be given only^{19,20} The first MMR vaccine is given at 9 months of age, the first booster at 5-7 months of age, and the second booster at 5-7 years of age. Research shows that children who receive the MR/MMR vaccine form 93.3% antibodies to measles and mumps, and 99.7% form antibodies to rubella. Antibodies formed after immunization appear slowly. Giving the mumps vaccine when exposure has occurred cannot prevent infection.^{8,20,21}

CONCLUSION

Epidemic parotitis or *Mumps* is a disease that often occurs in children. *Mumps* has the main symptom of salivary gland enlargement. Diagnosis of *mumps* can be obtained from the results of anamnesis and physical examination, blood tests usually do not provide significant results. Complications that often occur in children, especially in boys, are testicular enlargement or called *orchitis*. Mumps is a *self-limiting disease* so it does not require special treatment, but if accompanied by complications such as *orchitis*, antibiotics can be considered.

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