

Case Report**Acute sialadenitis with acute myocarditis****Mohammad Dwijo Murdiyo, Solita Siregar**Department of Otolaryngology Head and Neck Surgery,
Faculty of Medicine, Brawijaya University / Dr. Saiful Anwar General Hospital,
Malang, Indonesia**ABSTRACT**

Background: Acute sialadenitis is an inflammation in the salivary glands that can be caused by various factors. This condition can also lead to complications beyond the head neck region, such as meningitis, pancreatitis, myocarditis, anemia hemolytic anemia, polyarthritis, and neck abscess. **Purpose:** To understand the clinical symptom, cause, and complications, that could occur in acute sialadenitis. **Case report:** A 65 years old man came to the hospital with swelling of the neck, chest pain, and salivary glands inflammation, along with findings suggestive of acute myocarditis. **Clinical question:** What complications can occur in sialadenitis? **Method:** A literature search was carried out on the Google Scholar site, in February-March 2022, with keywords “Sialadenitis” AND “Sialadenitis Complications” AND “Acute Myocarditis”. The inclusion criteria were publications in the last 20 years that were relevant to the topic, and had a full manuscript available. **Result:** There were 19 literatures obtained, and all could be used as a reference. **Conclusion:** The complications of sialadenitis were determined based on symptoms and comprehensive diagnostic tools, and the management needed multidimensional department collaboration.

Keywords: salivary glands infection, acute myocarditis, sialadenitis

ABSTRAK

Latar belakang: Sialadenitis akut merupakan suatu inflamasi yang terjadi pada kelenjar liur yang dapat disebabkan oleh berbagai faktor. Kelainan ini juga dapat menyebabkan komplikasi hingga ke organ di luar dari kepala leher, berupa meningitis, pankreatitis, miokarditis, anemia hemolitik, poliartiritis, dan abses leher. **Tujuan:** Untuk mengetahui gejala klinis, penyebab, serta komplikasi yang dapat terjadi pada kasus sialadenitis akut. **Laporan kasus:** Seorang pria 65 tahun datang dengan keluhan bengkak pada leher serta nyeri dada, dan didapati adanya peradangan kelenjar liur, serta gejala miokarditis akut. **Pertanyaan klinis:** Apa komplikasi yang bisa terjadi pada sialadenitis? **Metode:** Pencarian literatur di lakukan di situs Google Scholar pada bulan Februari-Maret 2022, dengan kata kunci: “Sialadenitis” DAN “Komplikasi Sialadenitis” DAN “Miokarditis Akut”. Kriteria inklusi adalah dipublikasikan pada 20 tahun terakhir. **Hasil:** Didapatkan 19 literatur, yang seluruhnya bisa dijadikan referensi. **Kesimpulan:** Komplikasi sialadenitis dapat ditentukan berdasarkan gejala klinis dan hasil pemeriksaan multi-modalitas, dan penatalaksanaannya perlu dilakukan secara komprehensif oleh berbagai departemen yang terkait.

Kata kunci: infeksi kelenjar saliva, miokarditis akut, sialadenitis

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INTRODUCTION

Sialadenitis is an infection of the salivary glands, which could be caused by infection, obstruction, or an autoimmune process. The mortality rate of salivary gland infections reached 80% in the year of 1800s. Although the incidence has decreased tremendously in the era of perioperative antibiotics, parotitis still leads to 1 complication in about 1000 operative procedures.¹ The majority of non-neoplastic diseases of the major salivary glands involve acute or chronic infections of the parotid, submandibular, and, more rarely, sublingual glands.² Sialadenitis has a clinical symptom of swelling in the salivary gland area, often accompanied by other prodromal symptoms.³ The occurrence of sialadenitis is influenced by several other risk factors, such as decreased saliva production, dehydration, malnutrition, obstruction, side effects of treatment, trauma to the ductus salivary glands, advanced age, poor oral hygiene, patient with immunocompromised, patient with chronic disease, hypothyroidism, diabetes mellitus, psychiatry disorder, patient with Sjogren Syndrome, and bulimia, and the presence of sialolithiasis.^{2,4} A comprehensive examination is needed to diagnose sialadenitis, due to the various etiologies and risk factors.

This case report aimed to provide additional knowledge and insight into infectious diseases in the head and neck, which could cause systemic complications, and involve many other organs outside the head and neck.

CASE REPORT

A 65-year-old man complained of swelling in the neck, for the last 2 days before coming to the hospital. The swelling was initially small and then gradually increased bigger. The patient had experienced toothache for the past 3 months, and had no other complaints. He also reported a salty taste and pain when swallowing, chills, and fever.

Additionally, he complained of occasional mouth and lip dryness in the past 2 weeks. He had a history of infrequent tooth brushing because he felt that many of his teeth were already loose. He reported experiencing chest pain and breathing difficulty since the day before.

On physical examination, the patient was found to be generally weak, with hypotension, tachycardia, and febrile. Oxygen saturation at 98-99% with a Non-Rebreathing Mask (NRBM) at 10 liters per minute. Examination of the mouth, there was a slight difficulty in opening the mouth, and the presence of multiple dental caries on the right and left of 1st and 2nd premolars. Hyperemia was also observed in the sublingual region, and in the right and left submandibular regions, with minimal induration, and similarly in the right submental region.

In the anterior neck region, up to the thorax region as high as the jugular incisure, there was a minimal hyperemic area, palpable induration, and a slightly warm surface. A puncture was performed in the affected region, yielding blood without pus.

On laboratory examination, there was a slight increase in leucocytes by $11.3 \times 10^3/\mu\text{L}$, an increase in liver function (SGOT:122 and SGPT:33), an increase in kidney function with ureum 103 mg/dL and creatinine 1.3 mg/dL, an increase in procalcitonin levels >100 mg/dL, and an increase in CRP 55.10 mg/dL. Troponin was measured at 5.2 $\mu\text{g/L}$, and CKMB was elevated at 180 U/L.

A chest X-ray examination revealed a pleural effusion in the left hemithorax, and an AP/lateral cervical X-ray examination revealed thickening of the right and left submandibular soft tissue regions, which in accordance with bilateral glandular edema (seen on CT scan), and epiglottis thickening that narrowing the C3-C4 airway level.

CT scan of the head and neck area with and without contrast, revealed bilateral

parotid glands and bilateral submandibular glands enlargement.

A consultation was carried out with the Cardiology Department due to complaints of chest pain over the past 2 days. An ECG examination had been carried out, and the consultation results indicated acute myocarditis with suspected mediastinitis.

Consultation was also carried out to the Cardio-thorax Surgery Department resulting in a suspicion of mediastinitis with acute myocarditis, and the presence of a left fluidothorax. This was followed by a CT scan and ultrasound sonography (USG) of the thorax. The results of the CT scan revealed bilateral fluidothorax, while the chest USG revealed a pleural effusion with an estimated volume of 100 mL. Based on these findings, the patient was treated by the cardiologist and cardiothoracic surgeon.

The patient was diagnosed with parotid and submandibular sialadenitis caused by viral or bacterial infection, septic shock, acute myocarditis, fluidothorax, azotemia, and liver function disorder.

The management in this patient included the administration of norepinephrine and antibiotics as the initial treatment for the septic shock. As for the management of acute myocarditis, the patient was also placed on a water-sealed drainage (WSD) tube as therapy for the patient's fluidothorax. The patient was hospitalized for 4 days, showed significant improvement, and was able to be discharged in a good condition.

METHOD

The literature search was carried out in February-March 2022, on the Google Scholar site, using the keywords "Sialadenitis" AND "Acute myocarditis" AND "Sialadenitis complication".

RESULT

The search in Google Scholar based on the inclusion criteria, for publications in the last 20 years that were relevant to the topic and had a full manuscript, obtained 19 literatures that could be used as the reference.

DISCUSSION

Sialadenitis is an inflammation of the major salivary glands (parotid, submandibular and sublingual) caused by various factors, such as viruses, bacteria, or common microorganisms present in the oral cavity. It can also be caused by non-infectious inflammation, such as autoimmune disease.^{6,11} The occurrence of sialadenitis is also affected by several other risk factors such as decreased saliva production, dehydration, malnutrition, obstruction, side effects of medical treatment, trauma to the salivary glands ducts, advanced age, poor oral hygiene, immunocompromised patient, patient with chronic disease, hypothyroidism, diabetes mellitus, psychiatric disorder, patient with Sjogren syndrome, and bulimia, as well as presence of sialolithiasis.^{3,8}

Suppurative sialadenitis is a bacterial salivary gland infection, which commonly affects one of the major salivary glands, particularly the parotid gland.⁶ The infection frequently occurs in patients aged 50-60 years old, with same prevalence in males and females.⁷

Viral sialadenitis is inflammation of salivary glands caused by virus infections, and the most common were caused by paramyxovirus which often affect parotid glands, and termed as 'mumps', that occurs in 85% of children under the age of 15 years. Besides paramyxovirus, HIV virus, Coxsackie viruses A and B, Epstein-Barr virus, influenza virus, and parainfluenza viruses can also cause emergence of viral sialadenitis.^{5,9}

Supportive laboratory tests could be conducted to evaluate the number of leucocytes; increased leucocytes could happen, which dominated by neutrophils. Radiological examination may include plain photo, sialography, Ultrasonography (USG), Computerized Tomography (CT scan) and Magnetic Resonance Imaging (MRI), which could be performed 48 hours after assessment and aggressive therapy of the condition, and rule out the presence of an abscess by fine needle aspiration (FNA).¹¹

Management of sialadenitis is based on the etiology of the salivary glands inflammation. Suppurative sialadenitis caused by bacteria should be managed by administration of adequate antibiotics. In anaerobes situations, metronidazole or clindamycin can be considered.⁸ In sialadenitis caused by infection, the mouth cavity cleanliness is important, as well as enough fluid intake, orally or intravenously. Giving warm compress on the infected salivary glands is also recommended, along with gentle massage to reduce stasis of saliva, and clean the pus in the salivary glands. The use of sialagogues, such as chewing or consuming foods and drinks that stimulate saliva production, can further aid recovery. In cases where complications such as abscess formation occur, an incision and drainage procedure may be necessary.^{11,14}

Complications from acute bacterial sialadenitis could be either local affecting the infected area, or hematogenous, spreading through the blood stream. The most common local complication is the formation of abscess, that can break and infect cavities around salivary glands like external acoustic canal, and temporomandibular joints. Other possible complications include neck abscesses, which may lead to mediastinitis, and in rare case, facial nerve (VII) paresis.^{2,3,7}

Complications that occur due to viral sialadenitis is not only caused by infection in salivary glands, but also from systemic blood

flow, because viruses are hematogenously possible to colonize in other organs. Orchitis is a most frequent complications found in paramyxovirus infection, in about 20-30% of male gender. Meningitis, pancreatitis, myocarditis, hemolytic anemia, or polyarthritis, can occur in patients with viral sialadenitis.^{8,9}

Myocarditis is an infection of the myocardium of the heart that can caused by several things, namely: bacteria (*Staphylococcus* sp, *Streptococcus* sp), viruses (Mumps, Adenovirus, SarsCov-2 virus, Influenza, etc.), fungi, protozoa, allergies, autoimmune diseases, and drugs. Chest pain as myocarditis symptom can happen to all age (majority at the age of 20-50 years) experienced by about 85-95% of cases; fever according to literature was found in 65% of cases; and congested breath was found in 19-49%. These complaints are very similar with acute coronary syndrome and acute pericarditis.¹⁶ In 80% cases of acute myocarditis, the patients have prodromal symptom like influenza. About 26% cases could also be followed with hemodynamics disturbance such as myocardial septic shock.¹⁷

In our patient, the clinical symptom appeared as swelling in the neck within 2 days. This was in accordance with the feature of sialadenitis, which have a rapid onset and are characterized by swelling, pain, and warmth upon palpation on the affected salivary glands. Other complaints that could be found were trismus and dysphagia, also dry mouth, mucopurulent or thick saliva, due to the presence of obstruction.^{11,12}

A puncture in the affected swelling area which only obtained blood, was enough to degrade the abscess temporarily. In laboratory findings, there was only a little increase of leucocytes count, with neutrophils predominance. CT scan in the head and neck region revealed bilateral parotid gland enlargement and bilateral submandibular gland involvement, suspected to be due to an infectious process (mumps).

In our patient, there was a chest pain complaint, with ECG result showing ST elevation, and troponin heart enzyme and CKMB which were elevated at 5.2 ng/ml and 180 IU/L respectively, a condition of myocarditis or myopericarditis.¹⁷ He was given broad spectrum antibiotics of ampicillin sulbactam and metronidazole in accordance that 70% of salivary glands infection microorganisms are producer of beta-lactamase enzyme sensitive to penicillin group, as well as the use of inotropic due to hemodynamic instability.¹⁷ Treatment with NSAIDs and colchicine were also given from the Department of Cardiology to prevent the complications of heart failure.

In conclusion, a complaint of neck swelling can be caused by various conditions beyond a neck abscess, as it is one of the most common diseases in the ENT field. Salivary gland infections can present with similar complaints and symptoms to neck abscess. Therefore, a thorough medical history, physical examination, and comprehensive diagnostic evaluation are essential for diagnosing head and neck diseases, including salivary gland disorder, and identifying complications involving other organs.

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