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Case report

The treatment of Covid tongue in an isolation unit

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ABSTRACT

Background: *In 2019, a viral disease spread from Wuhan, Hubei Province in China. The disease was caused by severe acute respiratory syndrome related to coronavirus 2 (SARS-CoV-2 virus), which was named by the Coronavirus Study Group of the International Committee on Taxonomy of Viruses.* ***Purpose:*** *This article reports the multi-discipline treatment of Covid tongue and exfoliative cheilitis with a main diagnosis of bilateral pneumonia caused by SARS-CoV-2 infection.* ***Case:*** *A female patient, 70 years old was referred with a diagnosis of bilateral pneumonia by a pulmonologist. She complained of painful wounds all over her mouth. An intraoral clinical examination revealed white-thick lesion and multiple ulcerations, whilst an extraoral exam for exfoliative dermatitis has not been described. The working diagnosis was Covid tongue mixed with exfoliative cheilitis.* ***Case management:*** *The procedure was performed by teledentistry and direct visits to implement oral health care by asepsis, debridement and the application of Oxygene gel.* ***Conclusion:*** *The lesion was treated successfully due to the multidisciplinary approaches by an internist and pulmonologist by implementing integrated knowledge and was supported hugely by patient cooperation.*

Keywords: *Covid-19; oral health care; Covid tongue*

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INTRODUCTION

It is more than a year since the coronavirus disease 2019 (Covid-19) spread from Wuhan, Hubei Province in China. The disease is caused by severe acute respiratory syndrome related to coronavirus 2 (SARS-CoV-2 virus), which was named by the Coronavirus Study Group of the International Committee on Taxonomy of Viruses.[1] Coronaviruses were responsible of the two previous respiratory diseases: the severe acute respiratory syndrome (SARS) in 2002 and 2003, and the Middle East respiratory syndrome (MERS) in 2012.[2]

Although the respiratory organ is considered as the main target for SARS-CoV-2 infection, co-infection of another organ such as the oral cavity has been reported elsewhere.[3] Dysgeusia, xerostomia, geographic tongue and Covid tongue are some of the reported oral symptoms for this infection.[4] One reason for oral manifestation is the distributed Angiotensin-converting enzyme 2 (ACE2) receptors on the oral epithelial cells from glandular epithelial to some lining area in the mouth.[3]

Unfortunately, during the first Covid-19 pandemic, most dentists were unable to manage oral diseases, especially those related to Covid-19 infection. These led to oral-related Covid-19 lesions being overlooked and poorly understood. The management poses a big challenging to clinicians; therefore, it sometimes needs an inter-disciplinary approach.[5] This article reports the multi-discipline management of Covid tongue with exfoliative cheilitis in an isolated patient with lung pneumonic bilateral caused by SARS-CoV-2 infection at the High Care Unit (HCU) of Dr. Ramelan Naval Hospital, Surabaya.

CASE

On 25th January, a 70-year-old woman was referred to the oral medicine outpatient clinic of the Department of Oral

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Medicine at Dr. Ramelan Naval Hospital in Surabaya, Indonesia. The patient was referred by a pulmonologist from an isolation HCU dedicated to Covid-19 patients after being hospitalized for 12 days. Her chief complaint was unbearable pain all over the mouth with a sharp pain mainly on the tongue. The patient also complained of dry lips and seromucous fluid from her mouth, which was sometimes mixed with blood.

Further investigation of medical history revealed chronic diabetes mellitus, along with a treatment of antrain injection and ranitidine. As a first step for management, more information was acquired from the Information System of Hospital Management (ISHM). It was confirmed that the patient had been hospitalised almost 24 days previously, initially at Siti Khotijah hospital, where she had stayed for nine days. Due to unresolved fever, the patient was subsequently instructed for polymerase chain reaction (PCR) on 5th January. The result was positive for Covid-19 with a cycle threshold (CT) of 29.75. The patient was hospitalised and released after nine days. However, she then developed breathing difficulties and was brought to the Dr. Ramelan Naval Hospital on 14th January. The pulmonologist subsequently referred her for a routine blood examination and thorax radiography. Based on the examination results, it was concluded as bilateral pneumonia.

As a first measurement, we asked a responsible nurse to help us take an intraoral photograph (Figure 1a). She reported that the patient was attached to oxygen and cardiogram devices. All daily activities were performed on the bed. Extra oral images by photograph revealed two crusts on the midline superior labial, yellowish black in colour, with an irregular margin of 0.4 and 0.5 mm with a marked border. The lesion was still bleeding and painful and the lips look dry and cracked. Intraoral examination demonstrated pseudomembranous plaque lesion with a range between 0.3 mm and 3 cm in width. Additionally, there were multiple exophytic ulcerations. Based on her medical history and the clinical examination, we then concluded Covid tongue with exfoliative cheilitis as our working diagnosis. On the ISHM, we prescribed chlorhexidine gluconate 0.2% to help reduce the inflammation of the tongue.

CASE MANAGEMENT

The procedure was performed by teledentistry and direct visits to implement oral health care by asepsis, debridement and the application of Oxygene gel. On the first day, which was a televisit on 25th January, on the ISHM, we prescribed chlorhexidine gluconate 0.2% to help reduce inflammation of the tongue.

On the second day, by direct visit, the patient was given a comprehensive assessment of other oral areas such as gingiva, tongue, palate and all oral soft tissue. A dental assistant prepared a cotton bud, sodium chloride, chlorhexidine gluconate 0.2% and Oxygene gel, which contained Oxygene, zinc, folic acid, xylitol, aloe vera extract and chamomile. After washing the patient's mouth with water, lesion debridement and sanitation in the oral environment was carried out using a PZ solution-immersed cotton swab. This step was then followed up by the application of chlorhexidine gluconate 0.2% liquid to the lips and tongue as a double protective sanitation, and wrapped up with Oxygene dental gel. To reduce dryness on the lips, borax glycerin liquid was then applied. For the subsequent oral health care, the patient's granddaughter, who was a nurse at the isolation HCU, then instructed her to improve her oral health by performing oral hygiene

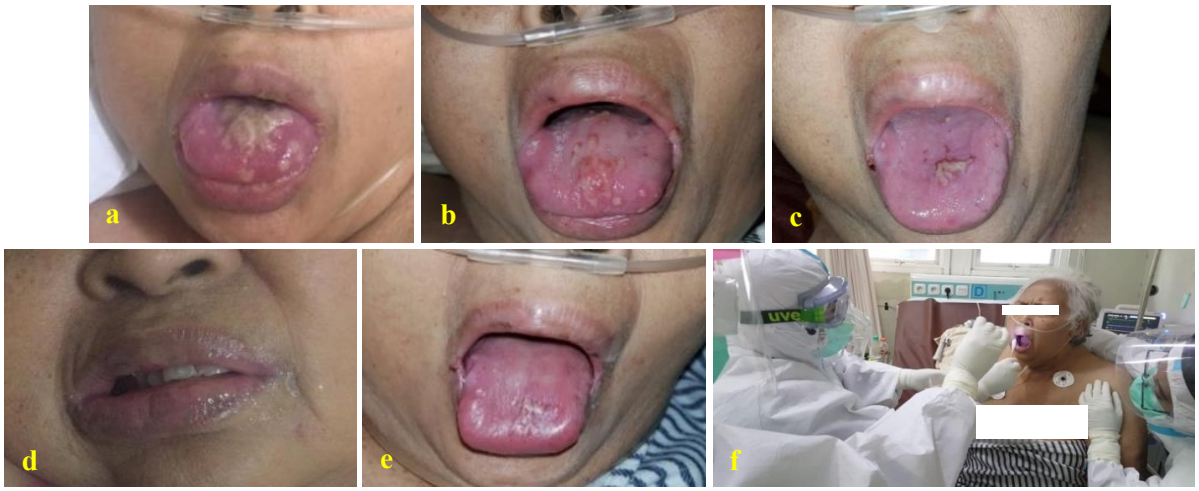

Figure 1. Oral involvement with Covid-19 infection. a) Day 1. The conditions of the patient's oral cavity from HCU isolation nurse's photo, with pseudomembranous plaque; b) Day 4. Thin pseudomembranous with ulcer lesions and surrounded by an erythematous on the dorsal of the tongue and upper lips, with crusts that did not bleed easily; c) Day 7. Dorsal tongue: the size of pseudomembranous had reduced and they were surrounded by an erythematous area; d) Day 10. No more lesions on the upper or lower lips and the patient did not wear the oxygen canule; e) Day 11. All previous complaints were eliminated; f) Day 12. Oral Health Care was done by oral medicine personnel.

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four times a day. We also instructed a nutritionist to prepare a soft diet with high calories and high protein and with small but regular portions.

On the third day, a virtual visit was performed. Anamnesis revealed that pain intensity was reduced. The lesions on the tongue looked the same, but some ulcerations had diminished. Because the patient felt fresh and comfortable after every oral health care was performed, she was asked to do her oral hygiene by herself. We then decided that aloe vera extract gel would be used to speed up the wound healing process on the tongue area.

During a direct visit on the fourth day, the patient felt uncomfortable and reported a pain scale of around seven. An intraoral examination demonstrated that the white pseudomembranous plaque lesion had become thinner, with some ulcers surrounded by an erythematous area (Figure 1b). Chlorhexidine gluconate 0.2% liquid was applied to the lips and tongue as a double protective sanitation, and wrapped up with aloe vera extract gel. Painless crust was still found on the labial superior.

On the virtual visit on the fifth day, the patient felt healthier in general. However, the pulmonologist and the internist did not allow her out of hospital because of a high glucose level of 300 ml/dl and oxygen saturation of 95%. She could eat comfortably and agreed to do her oral hygiene diligently. Mouthwash was changed to povidone iodine 0.1% with nystatin oral suspension as per package instructions.

On the virtual visit on the sixth day, the patient's general condition was clearly better with no oral complaint. It was planned to refer her for tongue swab microbiology to validate suspected oral candidiasis microorganism.

On the tenth visit, oral health care was still being undertaken and the patient was instructed to maintain her achieved level of oral health. The patient could finish her food, which indicated that her metabolism, appetite and condition were better. The patient could spontaneously breathe and intermittently loosen her oxygen equipment. All previous prescriptions were continued. The progress of the oral lesion was normal.

When the patient's PCR examination was negative with 98% saturation, she was allowed to leave the hospital. When she was released from the hospital, we prescribed her with povidone iodine gargle and borax glycerin liquid to maintain her oral health. Figure 1 shows the intraoral series management photograph of the patient.

DISCUSSION

The Covid-19 pandemic was declared by the World Health Organization (WHO) in February 2020, and the first infection case in Indonesia was in March 2020. From that date, the number of Covid-19 infections in Indonesia continuously escalated with a fast dissemination throughout the country. Having been labelled as a life-threatening disease mainly from infection affecting the lungs, this disease also demonstrated a range of non-specific symptoms including the one found manifested in the oral cavity. Xerostomia, dysgeusia and anosmia were commonly reported signs. Recently, there was a 'new clinical entity' called Covid tongue.[4] The main characteristics of the new entity were glossitis with lateral clefts, anterior 'temporary' lingual papillitis due to swelling of the tongue and friction with the teeth, and glossitis with patchy depapillation. Others reported geographic tongue coined as the Covid tongue.[5] The latter was identified through the Covid-19 symptoms study, where participants submit symptom reports on a daily basis. Either way, the definition of Covid tongue is still far from clear.[4]

It is still debatable whether the oral manifestations of Covid-19 are due to the primary infection of this virus, or whether they are merely direct systemic effects or secondary to the infection, such as drug-associated effects. One thing for certain is that the SARS Cov-2, as the etiologic microorganism of Covid-19 infection, has the capability to attach to and and infect epithelial cells layering the salivary gland, which can potentially modify the quality and quantity of the secreted saliva.[6]

Changes in saliva quality and quantity will lead to dysbiosis in the oral environment with the end outcome triggering other opportunistic infections such as candidiasis. In the oral cavity, fungal infections have long been known as immunosuppressed indicators and have been reported in both symptomatic and asymptomatic Covid-19 patients.[7] Hence, the role of dentists, especially oral medicine specialists, has become significant not only to confirm the oral candidiasis as a Covid-19 manifestation but also to be involved in managing the disease since oral candidiasis may transform into a life-threatening condition for Covid-19 patients. Therefore, the oral health care management should address oral opportunistic infection to prevent it from growing into a more serious complication.

Covid-19 is very infectious; the virus was initially thought to be spread by droplets, but recently, it was discovered that it can be spread by airborne and aerosol transmission, so it is easily spread.[8] If Covid-19 infects someone, it can be fatal, and quite a few health workers have become victims of Covid-19.[9]

To avoid this, the Indonesian Ministry of Health (Ministry of Health of the Republic of Indonesia) issued SE MENKES HK.02.01/MENKES/303/2020 regarding the use of information technology in the context of preventing Covid-19 by providing services to patients in the form of telemedicine, which has a legal basis. After telemedicine, several other terms such as teledentistry, televisit and teleconsultation were introduced.[9,10] Televisit services and the availability of the hospital management information system called Sistem Informasi Manajemen Rumah Sakit (SIMRS) at Dr. Ramelan Naval Hospital, Surabaya, make integrated multidisciplinary care easier. This service makes it possible to find out patients' conditions and to give them drugs without direct contact, so the transmission of the virus through direct contact can be avoided.

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During the first televisit of the case in this study, chlorhexidine gluconate mouthwash 0.2% was given, which is a topical drug used to prevent secondary infection in immunocompromised patients.[7] However, when looking at the results of the photos, it is clear that this therapy was not enough, and that however, secondary infection was prevented by sanitising the lesion, carrying out debridement and administering the drug directly.

During the second visit, oral health care was immediately carried out by giving PZ solution and chlorhexidine gluconate solution, so that the lesions in the oral cavity were free from impurities including all microorganisms. Finally, Oxygene dental gel was applied. This drug functions as a wound healer and contains zinc, folic acid and herbal aloe vera.[11] At that time, the lesion was not swabbed because the patient experienced severe pain with bleeding. The HCU isolation nurse was asked to carry out this procedure four times a day.

On the third televisit, maintenance therapy was replaced by providing aloe vera extract mouthwash for the oral cavity and aloe vera extract gel for the lips. The use of mouthwash was intended so that enough lesions on the tongue could be rinsed with one rinse, but could not cover the lip area. The aloe vera extract contains extract aloe vera polyvinylpyrrolidone (PVP), sodium hyaluronate and dipotassium glycyrrhizate. The drug works by forming a protective film that covers the innervation of a lesion in order to avoid irritation and to reduce pain. The ultimate goal was to be able to accelerate healing and overcome pain.[11]

On the fifth televisits, the drug was replaced with povidone iodine mouthwash and nystatin oral suspension. At the beginning, the patient received a nystatin oral suspension therapy but it did not produce a positive response. This suggests that the use of nystatin oral suspension as a single application did not give a positive response. However, when it was used together with povidone iodine mouthwash, it improved the lesion.[12]

In the management of the Covid tongue case, an oral medicine specialist played a role in overcoming pain and discomfort that could affect the patient's quality of life. Providing only topical drugs to patient was one of the methods used, as the use of topical drugs had several advantages over systemic drugs. Among these, topical drugs can come into direct contact with oral lesions, allowing them to increase their therapeutic effect and have fewer side effects.[9]

Generally, patients with systemic illnesses (geriatric condition and diabetes mellites) generate more risk of infection due to the immune system dysregulation.[13] In addition, the patient had received various systemic drugs to treat her main disease, including immunosuppressant and corticosteroid, which contributed to an increased risk of infection in the oral cavity.[13]

Oral health care management is very important to keep SARS Cov-2 from replicating in the oral cavity and to prevent secondary infection.[13] With this prolonged therapy, the patient felt less pain and could get their nutritional intake by eating. Getting enough nutrition strengthened the immune system.[14]

The patient was very cooperative in carrying out instructions from the operator. The patient also had a cheerful personality and did not give up easily, demonstrating a strong desire for recovery. She also received support from her family, as her grandchildren took good care of her while she was sick.

Another important factor was that the management at Dr. Ramelan Naval Hospital, Surabaya, fully supported the drugs that were not covered by the national health insurance from Health Social Security Agency (BPJS Kesehatan Indonesia) used by the patient, including aloe vera extract mouthwash and aloe vera extract gel.

This current report described a hospitalised Covid-19 patient with Covid tongue and exfoliative cheilitis who was treated in Dr. Ramelan Naval Hospital. Whether the oral manifestation was caused by direct infection of the SARS-CoV-2 virus, a drug associated with the disease, or was secondary to the severity of the general infection, the oral health care improvement was the first step to reducing the patient's complaint. Moreover, patient education is also important to speed up the reduction of an oral complaint.[15] In conclusion, the lesions were treated successfully and with optimal results due to the multidisciplinary approach by an internist and pulmonologist, by implementing integrated knowledge and supported hugely by patient cooperation.

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