



Gauze Techniques In Handling Fungus Ball In The Maxillary Sinus

¹Fuad Fauzi, ²Budi Sutikno*

¹ Department of Otorhinolaryngology-Head and Neck Surgery, Faculty of Medicine, Universitas Airlangga - Dr. Soetomo Academic Medical Center, Surabaya, Indonesia

Abstract: Fungus ball in the paranasal sinuses is a non-invasive infection of the paranasal sinuses caused by fungal infections of *Aspergillus* sp and *Candida* sp. Fungus ball in the paranasal sinuses is characterized by complaints of headache, especially the top of the head and the back of the head, pain in the face, nasal obstruction, post nasal drip, and cough that is recurrent and unresponsive to antibiotic therapy. The incidence of fungus ball in the paranasal sinuses has increased in recent years. Fungus ball in the paranasal sinuses often occurs in adulthood, and predominance in the female sex. We report one cases of fungus ball in the maxillary sinus in elderly women. The patient was diagnosed as a fungus ball in the right maxillary sinus and planned for excision of the fungus ball mass in the right maxillary sinus using the gauze technique

Keywords: fungus ball, maxillary sinusitis, gauze technique

Index Terms - Component, formatting, style, styling, insert.

I. INTRODUCTION

Fungus ball in the paranasal sinuses is a non-invasive infection of the paranasal sinuses caused by fungal infections of *Aspergillus* sp and *Candida* sp.^{1,2} Fungus ball in the paranasal sinuses is characterized by complaints of headache, especially the top of the head and the back of the head, pain in the face, nasal obstruction, post nasal drip, and cough that is recurrent and unresponsive to antibiotic therapy.^{1,3}

The incidence of fungus ball in the paranasal sinuses has increased in recent years. This is due to the increasing use of antibiotics, corticosteroids, immunosuppressants, and radiotherapy. These infections occur mainly in immunocompromised patients such as patients with diabetes mellitus, neutropenia, AIDS, malnutrition, asthma, Wegener's granulomatosis, and lymphoproliferative disease.^{1,3} Fungus balls in the paranasal sinuses often occur in adulthood, and predominance in the female sex.⁴

The clinical picture of fungus ball infection in the maxillary sinus resembles that of chronic sinusitis, which is characterized by complaints of headache, facial pain, nasal obstruction, post nasal drip, and cough. fungus ball.⁵ Investigations that can be performed in patients with fungus ball in the maxillary sinus are blood, radiological, and histopathological examinations.^{5,6} On CT scan, a soft tissue mass can be seen in the lumen of the maxillary sinus with a radiopaque appearance called iron. -like bodies.^{7,8}

Fungus ball in the maxillary sinus can cause complications to the orbit, central nervous system, lungs, heart, liver and spleen. Complications that occur in the orbit can be characterized by the presence of proptosis, telecanthus, malar flattening, and asymmetrical eye position. While complications that occur in the central nervous system are meningitis and encephalitis. In addition, bronchopneumonia, pericarditis, endocarditis, and fungal hepatitis may occur.^{5,6}

In this paper, we will report two cases of fungus ball in the maxillary sinus which have been excised using the gauze technique.

CASE REPORT

In the first case, a 46-year-old female patient came to the Outpatient Unit (URJ) ENT-KL RSUD Dr. Soetomo Surabaya on January 10, 2018 with the referral of RSUD dr. Haryoto, Lumajang Regency with a suspected diagnosis of maxillary sinus cancer. The patient complained of intermittent headaches for the past 6 months. Headaches are felt on the forehead and top of the head. The patient also complains of yellow mucus flowing from the nose to the throat and coughing. The patient denied any nosebleeds, pain in both cheeks, runny nose, nasal congestion, and impaired smell.

The patient denied any history of asthma, allergies, diabetes mellitus, hypertension, stroke, coronary heart disease, and previous blood clotting disorders. The patient admitted that he did not have a smoking habit. Sinonasal disease risk analysis using the SNOT-22 scoring system worth 22. While the risk analysis of laryngopharyngeal reflux due to gastroduodenal reflux using the Reflux Symptom Index scoring system is 11. On physical examination, the general status showed good general condition, compos mentis consciousness, and stable vital signs. On examination of the anterior nares the results were within normal limits without nasal deviation. On anterior rhinoscopy examination, it was found that the nasal cavity was airy without any secretions or masses. Examination of the throat showed tonsils of T1-T1 size without hyperemia. In addition, examination of the ears and neck showed results within normal limits.

Subsequently, a nasal endoscopy was performed which showed the nasal cavity and middle meatus, accompanied by mild-moderate degree of mucosal edema and mucopurulent discharge in the right nasal cavity without a polyp mass found. The results of the CT-scan showed heterogeneous covering in the right antrum with calcifications resembling a fungal mass, bone thickening, and partial opacification of the maxillary sinus. The Lund-Mackay score against the CT-scan results is 2.

The patient was diagnosed as a fungus ball in the right maxillary sinus. The patient was planned for excision of the fungus ball mass in the right maxillary sinus using the gauze technique. This procedure was performed endoscopically, starting with right uncinectomy, followed by right Large Middle Meatal Anthrostomy (MMA). Subsequently, the fungus ball mass was removed using the gauze technique and then sinus irrigation was performed. If necessary, the patient will perform a right prelacrima recess incision. This procedure is carried out for 1 hour.

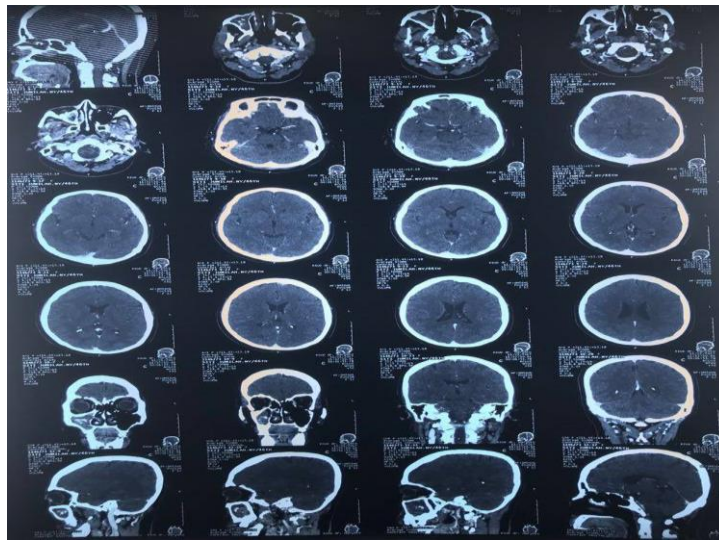


Figure 1. CT-scan results showing a fungal mass in the maxillary sinus

DISCUSSION

Fungus ball is defined as the non-invasive accumulation of a condensed collection of fungal hyphae in the paranasal sinuses. Fungus ball is characterized by the presence of a mass which is a fungus with gradual growth, without any involvement of the mucosa at the base of the mass. Fungus ball often occurs unilaterally, but can also affect other sinuses. This infection often affects the maxillary sinus, and the next most common frequency in cases of fungus ball is the sphenoid sinus.⁹

The incidence of fungus ball in the paranasal sinuses has increased in recent years. This is due to the increasing use of antibiotics, corticosteroids, immunosuppressants, and radiotherapy. These infections occur mainly in immunocompromised patients such as patients with diabetes mellitus, neutropenia, AIDS, malnutrition, bronchial asthma, Wegener's granulomatosis, and lymphoproliferative disease. However, fungus ball in the paranasal sinuses can also occur in healthy individuals although the prevalence is very small.^{1,3} Fungus ball in the paranasal sinuses is common in older adults with a mean age of 55 years, and predominance in the female sex.⁴

In the case, patient was 46 years old and female. However, the patient denied any history of bronchial asthma, allergies, and diabetes mellitus. On physical examination, anthropometric status was within normal limits. There were no signs of an immunocompromised state in this patient. In the second case, the patient was 53 years old and female. This patient also denied any history of bronchial asthma, allergies, and diabetes mellitus. On physical examination, anthropometric status was within normal limits. There were no signs of an immunocompromised state in this patient.

The fungus ball transmission process in the paranasal sinuses occurs primarily through inhalation. In addition, transmission can also occur iatrogenic through secondary oro-sinus communication that occurs as a result of dental procedures. In the first and second cases, the patient denied any previous maxillary toothache so that the cause of sinusitis due to iatrogenic transmission could be ruled out. Therefore, it can be concluded that the cause of sinusitis in both patients in the first and second cases occurred primarily through inhalation.

Paranasal sinus conditions that are hypoxic and have a low pH will stimulate fungal pathogenicity. Intranasal fungal growth can cause changes in mucociliary structure and interfere with sinus ventilation

resulting in closure of the paranasal sinus ostium.^{3,4} Mycetoma sinusitis usually occurs unilaterally.³ In the first case, the patient had unilateral fungal sinusitis, namely in the right maxillary sinus. This happened the same as in the second case, the patient had unilateral fungal sinusitis, namely the left maxillary sinus. Thus, the patient in both cases had unilateral fungal sinusitis in the maxillary sinus.

The maxillary sinus is the largest of the paranasal sinuses and is triangular in shape. The anterior wall of the sinus is the facial surface of the maxillary bone called the canine fossa, the posterior wall of the maxillary sinus is the infra-temporal surface of the maxilla, and the medial wall of the sinus is the lateral wall of the nasal cavity. In addition, the superior wall of the sinus is the orbital floor so that abnormalities in the maxillary sinus can cause orbital complications. While the inferior wall of the sinus is the alveolar process and the palate, so that infections in the mouth and teeth easily rise up causing sinusitis. This is consistent with what happened in these two cases, both patients had sinusitis in the maxillary sinus, where the maxillary sinus was the frequent predilection for fungal sinusitis.⁵

The clinical picture of fungus ball infection in the maxillary sinus resembles that of chronic sinusitis, which is characterized by complaints of headache, facial pain, nasal obstruction, post nasal drip, and cough.^{5,6} In the first case, the patient complained of headache on the forehead and top of the head. which is intermittent since 6 months ago, post nasal drip with yellowish mucus, and cough.

Dacriolithiasis and dacryocystitis may occur as a complication of fungal sinusitis of the maxillary sinus. This can occur because the superior wall of the maxillary sinus is the orbital floor so that abnormalities in the maxillary sinus can complicate the orbit. One example is dacriolithiasis and dacryocystitis. Fungus ball masses in the maxillary sinus can block the flow of tear drainage through the nasolacrimal duct, resulting in dacryolithiasis. Blockage due to dacriolithiasis will stimulate infection resulting in dacryocystitis. The same thing happened in the second case, the patient was diagnosed as left maxillary sinusitis et causa fungus ball with left dacriolithiasis and left chronic dacryocystitis.

ACKNOWLEDGMENT

The authors thanks to Department of Otorhinolaryngology-Head and Neck Surgery, Faculty of Medicine, Universitas Airlangga - Dr. Soetomo Academic Medical Center, Surabaya

REFERENCES

- [1] Grosjean P, Weber R. 2017. Fungus balls of the paranasal sinuses: a review. *Europe Arch Otorhinolaryngology*. 264(5): 461–470.
- [2] Ramadan H. Non - invasive fungal mycetoma sinusitis. Available source at: <http://www.emedicine.com/sinusitis,fungal.html>. [cited 7 Maret 2018].
- [3] Carothers D. Fungal sinusitis. Available at : <http://www.american-rhinologic.org/fungalsinusitis.html>. [cited 7 Maret 2018].
- [4] Ferguson B. 2015. Fungus balls of the paranasal sinuses. *Otolaryngology Clinical North*. 33: 389–398.
- [5] Bailey J. *Head and Neck Surgery : Otolaryngology Review Edisi 5*. Lippincott Williams & Wilkins. Philadelphia. 2014.

- [6] Barry B, Topeza M, Géhanno P. 2012. Aspergillosis of the paranasal sinus and environmental factors. Annual Otolaryngology Cervicofac. 119(3): 170-173.
- [7] Stammberger H, Jakse R, Beaufort F. Aspergillosis of the paranasal sinuses. 2014. X-ray diagnosis, histopathology, and clinical aspects. Annual Otorhinolaryngology. 93:251–256.
- [8] Lange, B., Thilsing, T., Abir, J. 2016. The Sino-Nasal Outcome Test 22 validated for danish patient. Danish Medical Bulletin. 58(2): 2-8.
- [9] Fanucci, E., Nezzo, M., Neroni, L., Jr., L. M., Ottria, L., & Gargari, M. 2013. Diagnosis and treatment of paranasal sinus fungus ball of odontogenicorigin: case report. “Oral and Implantology”. 63-66.

