



ODONTOGENIC RHINOSINUSITIS PATIENT'S CHARACTERISTICS IN HASAN SADIKIN GENERAL HOSPITAL ORL-HNS CLINIC BANDUNG

Ratunanda SS, Resmina R**

* Rhinology-Allergy Clinic of the ORL - HNS Department, Faculty of Medicine of Padjajaran University/Dr. Hasan Sadikin Hospital Bandung

Abstract

Rhinosinusitis refers to the inflammation of the nose and para-nasal sinuses, presenting with a combination of two or more symptoms, one of which should be either nasal congestion or nasal discharge (either anterior or posterior nasal drip), along with facial pain or diminished sense of smell, as well as observable endoscopic signs and detectable changes on a CT scan. Chronic rhinosinusitis is divided into primary and secondary based on its etiology. One of them is odontogenic rhinosinusitis is inflammation based on teeth that causes acute maxillary rhinosinusitis. This research is descriptive with retrospective methods to overview odontogenic rhinosinusitis patients from January to December 2021 in Rhinology- Allergy Clinic of the ORL - HNS Department, Faculty of Medicine of Padjajaran University/Dr. Hasan Sadikin Hospital Bandung. The numbers are then divided into various criteria that are already determined. We found 23% of patients with odontogenic rhinosinusitis from all patients. Most of them are men and middle aged. They already have previous gum or mouth disease. They came to the clinic because of unbearable pain and supported by CT Scan result. They don't all get orbital cellulitis. They can all be operated on using FESS. To get a better understanding of odontogenic rhinosinusitis, we advise collecting more data.

Keyword: odontogenic, rhinosinusitis, acute maxillary rhinosinusitis

Background

Rhinosinusitis is a medical condition characterized by the inflammation of the nasal cavity and para-nasal sinuses. It is identified by the presence of multiple symptoms, at least one of which must include nasal congestion or nasal discharge (either anterior or posterior nasal drip). In addition, individuals with rhinosinusitis may experience facial pain or a reduced ability to detect smells. The condition can be further confirmed by observing specific endoscopic signs and detecting changes on a computed tomography (CT) scan.

When an individual develops rhinosinusitis, the inflammation affects both the nasal cavity and the para-nasal sinuses. The nasal cavity is the passageway through which air enters the body, while the para-nasal sinuses are air-filled spaces located around the nose. The inflammation can result from various causes, such as viral infections, bacterial infections, allergies, or structural abnormalities in the nasal passages.

One of the key diagnostic criteria for rhinosinusitis is the presence of multiple symptoms. Among these symptoms, nasal congestion or nasal discharge is necessary for a diagnosis. Nasal congestion refers to the feeling of blockage or stuffiness in the nose, while nasal discharge can manifest as either anterior (frontal) or posterior (back-of-

throat) nasal drip. The combination of these symptoms helps to distinguish rhinosinusitis from other conditions affecting the nasal and sinus areas. In chronic rhinosinusitis, the symptoms are being around more than 12 weeks.

The inflammation caused by various factors, has a detrimental impact on a patients' quality of life. There are several causes that might cause odontogenic rhinosinusitis, including polyps, allergies, side effects from nasal spray or drops that have a vasoconstrictor impact, and dental infections.

A major contributor to this infection in the mouth area, particularly from the teeth, is poor oral hygiene. Al-koofee, et al. discovered that 40% of 155 individuals with odontogenic rhinosinusitis had a rudimentary history of tooth infection. According to research by the Bomeli, et al. institute, there are oro-antral fistules and periodontal infections that can enter the maxillary sinus above through damaged tooth roots. Annual prevalence of acute rhinosinusitis ranges from 6 to 15%. Infections, mechanical obstructions, allergies, and spreading tooth infections all contribute to the development of an obstruction in the ostiomeatal complex.

Twenty million of the more than thirty million American citizens who suffer from rhinosinusitis seek treatment at clinics or hospitals. Based on these statistics, 10% of cases are the result of dental infections, such as those brought on by dental operations that result in rhinosinusitis. In Japan, *Matsumoto et al* discovered that 14 of 75 chronic rhinosinusitis patients are developed to odontogenic rhinosinusitis. Most of them appear because of molar infection or tooth extraction.

Complication of odontogenic rhinosinusitis is infection can diffuse into orbital, intracranial, and intraosseous space. *Craig JR, et al* discovered that 3- 20% of inpatients at hospital are developed into these complications. Most of them complicate into orbital space.

In Indonesia, research by *Arivalgan* and *Rambe* in Haji Adam Malik Government Hospital in 2012 collected 435

rhinosinusitis patients. 30% of them are odontogenic and included in FESS (Functional Endoscopic Sinus Surgery) procedure.

One of the many cases at the ORL-HNS clinic that worried us was odontogenic rhinosinusitis. We later discovered, however, that these incidents are not thoroughly documented. Because of these problems, researchers seek to study the characteristics of patients with odontogenic rhinosinusitis.

Methods

This descriptive study uses retrospective methods to examine patients with odontogenic rhinosinusitis seen at the Rhinology-Allergy Clinic of the ORL – HNS Department, Faculty of Medicine of Padjajaran University/Dr. Hasan Sadikin Hospital Bandung between January, and December 2021. The data is then separated according to a variety of predetermined criteria. The information was gathered from medical records.

These are the variables that we determined to deliver a better overview of odontogenic rhinosinusitis patients:

1. Total of odontogenic rhinosinusitis patients of rhinosinusitis patient.
2. Age: from 18 to >60 years old divided to 5 ranges
3. Sex: Male or Female
4. Education: No education to bachelor's degree
5. Current infection in mouth area: Yes or No
6. Clinical symptoms/main complaint: nasal blockage, hiposmia/anosmia, nasal secret, facial pain.
7. Nasoendoscopic result
8. CT Scan results: supported rhinosinusitis or not.
9. Complication to orbital space: yes or no
10. Management by FESS (Functional Endoscopic Sinus Surgery): yes or no

We include all odontogenic rhinosinusitis patients that ≥ 18 years old and come to Hospital between January, and December 2021. After that, we excluded some of the incomplete data in medical records.

Results

We compiled all the data from medical record throughouly, and these are the results:

Table 1: Odontogenic Rhinosinusitis patient's characteristics in Rhinology-Allergy Clinic of the ORL - HNS Department, Faculty of Medicine of Padjajaran University/Dr. Hasan Sadikin Hospital Bandung in 2021

No.	Variable	Definition	Results
1	Odontogenic rhinosinusitis patients	All odontogenic rhinosinusitis patient compared to all patients that come to ORL-HNS clinic	9 of 38 patients = 23%
2	Sex	Male or Female	Male: 7; Female: 2
3	Age	Patient's age and divided custom range	18-20: 1 20-29: 1 30-39: 3 40-59: 3 >60: 1
4	Education	From uneducated to bachelor's degree	Elementary: 2; High School: 3; Bachelor: 1; Uneducated: 3
5	Underlying mouth/teeth disease	Another working diagnosis for the patient that came from dentist/dental surgeon	Yes: 7; No: 2

6	Main complaint	Patient's main complaint that brought them to the ORL-HNS clinic	Facial pain: 6; Nasal secretage: 2 (mucopurulent); Nasal blockage: 1
7	Nasoendoscopic results	Mucopurulent or non-mucopurulent	Mucopurulent: 9; non-mucopurulent: 0
8	CT scan result	Hypodense lesion at maxillary sinus	Yes: 9; No: 0
9	Complication	Complication to orbital space	Yes: 2; No: 7
10	Management of FESS	Functional Endoscopy Sinus Surgery is performed	Yes: 9; No: 0

Discussion

From the table above, we can see that 23% of all patients who visited the Rhinology-Allergy Clinic of the ORL - HNS Department, Faculty of Medicine of Padjajaran University/Dr. Hasan Sadikin Hospital Bandung had odontogenic rhinosinusitis. Most of them are middle-aged. They already had a history of oral or gum disease. They arrived at the clinic due to excruciating discomfort of facial pain, which was confirmed by the CT scan results. They don't all get orbital cellulitis. For further management, FESS can operate all of them.

As researchers, one of the most captivating discoveries that caught our attention is the fact that out of the nine patients diagnosed with odontogenic rhinosinusitis, seven of them had a documented history of oral diseases that had been identified and diagnosed by dental professionals such as dentists or dental surgeons. This significant finding provides substantial support for the hypotheses put forth by previous researchers, who postulated that oral or dental infections play a pivotal role as the primary underlying causes of odontogenic rhinosinusitis.

The emergence of this correlation between oral diseases and the development of odontogenic rhinosinusitis reinforces the notion that infections originating from the oral cavity can directly impact the health and

functioning of the sinus cavities. By identifying and documenting a history of oral diseases in a majority of the patients, we have shed light on the potential pathway through which oral infections can lead to the onset of rhinosinusitis. This finding not only validates the previous conjectures but also underscores the importance of interdisciplinary collaboration between dental and otolaryngological professionals in diagnosing and managing cases of odontogenic rhinosinusitis.

By uncovering this association, we have made a valuable contribution to the existing body of knowledge regarding the etiology of odontogenic rhinosinusitis. This insight has far-reaching implications for both clinical practice and future research endeavors. Dental practitioners can now be more vigilant in recognizing and promptly treating oral infections to

prevent their potential progression into rhinosinusitis. Likewise, otolaryngologists can benefit from this knowledge by considering the possibility of odontogenic origins in patients presenting with rhinosinusitis symptoms, thus facilitating accurate diagnosis and targeted treatment strategies.

In conclusion, the revelation that a significant majority of patients diagnosed with odontogenic rhinosinusitis had a history of oral diseases confirms the hypotheses proposed by earlier researchers. This discovery not only highlights the integral role of oral infections in the development of rhinosinusitis but also underscores the importance of interdisciplinary

collaboration and the potential for preventive measures and targeted treatment strategies. By shedding light on this crucial link, we have contributed to the growing body of knowledge and paved the way for further investigations into the intricate interplay between oral diseases and odontogenic rhinosinusitis. We are aware that this descriptive study's findings are far from flawless. In order to enhance the scope of future research, we suggest that researchers consider obtaining supplementary data from a range of ORL- HNS clinics situated in Indonesia. By doing so, they can acquire a more comprehensive understanding of odontogenic rhinosinusitis and its impact on patients' quality of life. To evaluate the effects of this condition, it is recommended to employ the SNOT-22 (Sino-Nasal Outcome Test) questionnaire.

Our Gratitude

We would like to extend our sincere gratitude to the personnel at the Rhinology- Allergy Clinic of the ORL - HNS Department, Faculty of Medicine of Padjajaran University/Dr. Hasan Sadikin Hospital Bandung as well as to our patients for assisting us in accurately filling out the necessary medical records. We also want to thank the workers at the medical records office who assisted us in gathering the data and helped

other researchers who were working on similar projects.

References

1. Fokkens WJ. Executive summary of EPOS 2020 including integrated care pathways. *Rhinology*. 2020 Apr 1;58(2):82-111.
2. Blackwell DL. Summary health statistics for U.S. adults: National Health Interview Survey, 2012. *Vital Health Stat 10*. 2014, february. 1-161.
3. MK Al-Koofee, et al. Relationship between Oral Hygiene and The Odontogenic Infections of Oral and Maxillofacial Region. *Annals of R.S.C.B.*, ISSN:1583-6258, Vol. 25, Issue 2, 2021, Pages. 2229-2230
4. Matsumoto. (2021). The Prevalence of Odontogenic Pathology in Patients with Bilateral Rhinosinusitis. *Allergy & Rhinology*, 12, 1177_2152656721.
5. Arivalagan P. Gambaran Rhinosinusitis Kronis Di RSUP Haji Adam Malik pada Tahun 2011. *Ejurnal Fak Kedokt USU*. 2013.
6. Little RE. Odontogenic sinusitis: A review of the current literature. *Laryngoscope Investig Otolaryngol*. 2018 Mar 25;3(2):110-114.
7. Cappello ZJ. *Anatomy, Head and Neck, Nose Paranasal Sinuses*. Treasure Island (FL): StatPearls Publishing; 2022.
8. Martu C. Odontogenic Sinusitis: From Diagnosis to Treatment Possibilities- A Narrative Review of Recent Data. *Diagnostics*. 2022 Jun 30;12(7):1600.
9. Maloney PL. Maxillary sinusitis of odontogenic origin. *J Can Dent Assoc* 1968; 34:591-603.
10. Craig JR. Diagnosing odontogenic sinusitis: An international multidisciplinary consensus statement. *Int Forum Allergy Rhinol*. Aug;11(8):1235-1248.
11. Xu X. Highlights in the advances of chronic rhinosinusitis. *Allergy*. 2021 Nov;76(11):3349-3358.
12. Jiam NT. Surgical treatment of chronic rhinosinusitis after sinus lift. *Am J Rhinol Allergy*. 2017 Jul 1;31(4):271-275.
13. Knipe. Ostiomeatal complex. Reference article, [Radiopaedia.org](https://radiopaedia.org).
14. Juanda. (2017). *Adaptasi Budaya, Alih Bahasa Indonesia, dan Validasi Sino-Nasal Outcome Test (SNOT)*-
15. *Majalah Kedokteran Bandung*. 49. 267-273. 10.15395/mkb.v49n4.1145.
16. MK Al-Koofee. Relationship between Oral Hygiene and the Odontogenic Infections of Oral and Maxillofacial Region. *Annals of R.S.C.B.*, ISSN:1583-6258, Vol. 25, Issue 2, 2021, Pages. 2229 – 223.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

