



# A 19-Year-Old Man with Adenoid Hypertrophy, Otomycosis and Diffused Otitis Externa Sinistra, Effusion Otitis Media Dextra Auricular: A Case Report

Aulia Siti Fatimah<sup>1</sup>(✉) and Nurmala Shofiyati<sup>2</sup>

<sup>1</sup> Faculty of Medicine, Universitas Muhammadiyah Surakarta, Surakarta, Indonesia  
j510215298@student.ums.ac.id

<sup>2</sup> Lecturer of Department ENT, Faculty of Medicine, Universitas Muhammadiyah Surakarta, Surakarta, Indonesia

**Abstract.** Introduction: Adenoids are masses of lymphoid tissue located on the posterior wall of the nasopharynx, one of the tissues forming the Waldeyer structure. Adenoid hypertrophy is the enlargement of the adenoid tissue. Recurrent infections of the upper respiratory tract/ARI mostly cause the etiology of adenoid hypertrophy. Adenoid hypertrophy will cause blockage of the choanae and obstruction of the eustachian tube. This study aims to describe the clinical condition of adenoid hypertrophy. The case report is a 19-year-old man who complained that his left ear felt itchy, had a small amount of discharge, was clear in color with a watery consistency and had no odor, had not been accompanied by bleeding since four months ago, decreased hearing, left ear ached, painful, and felt full but no ringing. There was decreased hearing in the right ear but not as severe as in the left ear. The patient also complained of alternating right-left nasal congestion since five years ago. Sometimes, the nose was blocked simultaneously, breathing through the mouth and an unpleasant feeling in the throat emerged. The patient had a history of cold allergies and bronchitis since he was nine. He was a high school student living in a boarding school for six years. ENT physical examination discovered hyphae, cerumen, hyperemia, secretions and edema in the left auricular canal. However, the cone of light was invisible on the left tympanic membrane. In the dextra external auricular canal, there was cerumen. On the dextra tympanic membrane, an effusion and hyperemia were disclosed, but no cone of light was seen. Endoscopic examination of the left auricular revealed an invisible cone of light, hyperemic and edematous external auricular canal, and white hypha debris and cerumen. Endoscopic examination of the dextra auricular discovered fluid effusion on the tympanic membrane, no light cone, and cerumen in the external auricular canal. Nasoendoscopy examination of nasi dextra et sinistra unveiled an oval pale red mass with a soft rubbery consistency and non-bleeding with an uneven surface. CT-Scan Nasopharynx/SPN axial and coronal sections uncovered thickening in the nasopharynx right and left on the inferior aspect. CT-Scan Nasopharynx/SPN axial and coronal sections with contrast obtained contrast filling the masses in the right and left inferior aspect of the nasopharynx. A biopsy of the nasopharynx revealed lymphoid follicular hyperplasia and inflammation. Based on anamnesis,

physical examination, and investigations, this patient was diagnosed with adenoid hypertrophy with otomycosis, diffused otitis externa sinistra auricular, and effusion otitis media dextra auricular.

**Keywords:** Adenoid Hypertrophy · Eustachian Tube Occlusion · Otomycosis · Diffuse External Otitis · Effusion Otitis Media

## 1 Introduction

Adenoids are masses of lymphoid tissue located on the posterior wall of the nasopharynx, a series of Waldeyer. Adenoids function as the body's immunity. Adenoids play a role in the body's first-line defense system in protecting it from microorganisms and foreign molecules as they produce IgA [1].

Adenoids have existed since birth and physiologically; their size will change according to age. Adenoids reach their maximum size at 3–7 years and persist until 8–9 years. Then, at 14, the adenoids will slowly involute and disappear completely [2].

The etiology of adenoid hypertrophy is largely due to recurrent infections of the upper respiratory tract. If a person often experiences ARI, adenoid hypertrophy can occur. Adenoid hypertrophy will obstruct the choanae and eustachian tube. Choana obstruction will cause breathing through the mouth and result in (a) adenoid facies—the appearance of a small nose, incisor teeth forward (prominent), and high pharyngeal arch, causing the patient's facial impression to look like a fool, (b) pharyngitis and bronchitis, (c) impaired ventilation and drainage of the paranasal sinuses, causing chronic sinusitis [1, 2].

Eustachian tube obstruction will cause recurrent acute otitis media and chronic otitis media, eventually leading to chronic suppurative otitis media. Adenoid hypertrophy will also cause sleep disturbances, snoring, mental retardation and reduced physical growth [3]. The diagnosis of adenoid hypertrophy is established by history, clinical signs and symptoms, physical examination, and investigations [4].

## 2 Case Report

A patient, Mr. D, came to the Ir. Soekarno Sukoharjo Hospital on September 16, 2022, with complaints of an itchy left ear, a small discharge, clear in color with a watery consistency and no smell, not accompanied by bleeding since four months ago. The patient felt decreased hearing in the left ear. The patient also complained of left earache, pain, and feeling full but no ringing. The patient also encountered hearing loss in the right ear but not as severe as in the left one. However, there was no itching, discharge and blood, ear pain, ringing, or feeling of fullness in the right ear.

The patient also complained of alternating right-left nasal congestion since five years ago, with no discharge from the nose to the throat, no blood coming out of the nose, no decreased smell, and no pain, and the nose did not itch and did not sneeze in the morning day. The patient had a cough but no cold.

The patient also complained of an unpleasant feeling in the throat, did not feel anything stuck, had no itchy throat, had no difficulty swallowing, had no pain in swallowing, and his voice was neither hoarse nor sore. Moreover, dizziness, nausea, vomiting, shortness of breath, and fever were denied.

The patient had a history of cold allergies and bronchitis since he was nine. The patient denied any history of heart disease, kidney disease, hypertension, asthma, or food or drug allergies. The patient's family had a history of ear surgery to his grandmother and denied any history of heart, kidney, or liver disease, hypertension, asthma, malignancy, and drug and food allergies in other family members.

The patient was a male high school student living in a boarding school for six years. He slept in a single-room hut with 20 other people but with separate beds.

The patient physical examination unveiled his moderate general condition, cooperative composit mentis awareness, blood pressure of 120/80 mmHg, respiration rate of 18x/minute, temperature of 36.4 °C, and respiratory rate of 20x/minute. There was no icteric sclera; the conjunctiva was not anemic. Moreover, there were no enlarged lymph nodes in the neck or other places and no increased jugular venous pressure.

Physical examination of the lungs revealed ronkhi in both lung fields. However, the cardiac, abdominal and extremity examination acquired normal limits.

ENT physical examination, ear examination, and auricula dextra et sinistra normotia discovered no fistula, lacerations, hematoma, hyperemia, edema and tragus tenderness. On dextra examination, the external auricular canal disclosed cerumen and blood but no edema, whereas the left auricular canal exhibited hyphae, cerumen, hyperemia, secretions and edema. An otoscope examination revealed that the right tympanic membrane had effusion and hyperemia but no light cone. In contrast, on the left tympanic membrane, the cone of light was visible, and hyperemia existed, but no effusion. In the mastoid dextra et sinistra, there was no mastoid tenderness or hyperemia.

An endoscopic examination of the left auricle discovered fungal debris and cerumen in the external auricular canal, as illustrated in Fig. 1.

After the cerumen was cleaned, a left auricle endoscopy was performed again. It unveiled a hyperemic tympanic membrane, no light cone, hyperemic and edematous in the external auricular canal, and white hyphal debris, as displayed in Fig. 2.



**Fig. 1.** Left auricular endoscopy

Endoscopic examination of the dextra auricular uncovered fluid effusion on the tympanic membrane, the light cone, and the cerumen in the external auricular canal, as portrayed in Fig. 3.

Examination of the tuning forks by Rinne, Weber, and Schwabach depicted a conduction deaf left auricular and normal dextra auricular. Table 1 exhibits the examination results.

Inspection and palpation of the nose demonstrated normal limits. However, anterior rhinoscopy examination discovered a small amount of secretions in both noses, clear in color, watery in consistency, odorless and not accompanied by blood. Moreover, the mucosa, koncha, septum, and paranasal sinuses were within normal limits.



**Fig. 2.** Left auricular endoscopy



**Fig. 3.** Endoscopy of the Dextra Auricular

**Table 1.** Inspection of the tuning forks

Test	Auricular Sinistra	Auricular Dextra
Rinne	-	-
Schwabach	Elongated	Same with the examiner
Weber	Lateralization to the left	

The patient had received repeated therapy four months ago for his left ear with otomycosis and diffuse otitis externa. Unfortunately, no improvement was obtained, necessitating other possible causes to be considered. Then, a nasendoscopy examination was carried out on nasi dextra et sinistra, discovering an oval pale red mass with a soft rubbery consistency, not bleeding with an uneven surface, as demonstrated in Figs. 4 and 5.

All examinations of the lips and oral cavity, the oropharynx, as well as the head and neck, unveiled normal limits.

A PA chest image examination exhibited increased coarse vascular markings, indicating bronchitis, as illustrated in Fig. 6.

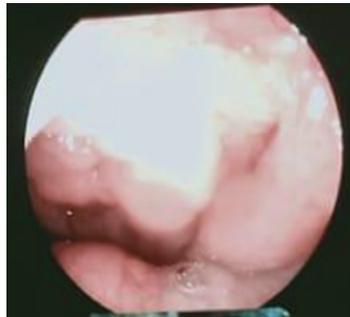
CT-scan examination of the Nasopharynx/SPN axial and coronal sections disclosed thickening in the nasopharynx dextra et sinistra, inferior aspect, as displayed in Fig. 7.

CT-scan examination of the nasopharynx/SPN, axial and coronal sections with contrast discovered that the contrast filled the nasopharynx dextra et sinistra and inferior aspect, as portrayed in Fig. 8.

On September 19, 2022, an open biopsy examination of the nasopharynx was carried out. Before the biopsy, an endoscopy of the left auricle was performed, discovering debris in white hyphae, thick covering the tympanic membrane and the cerumen, as displayed in Fig. 9.



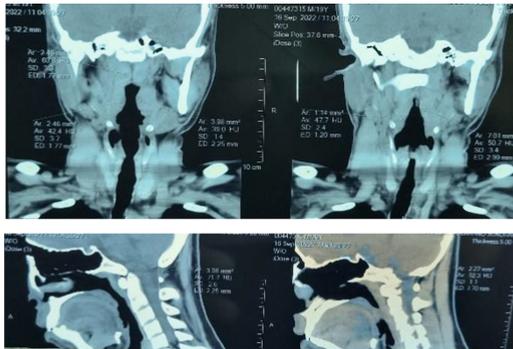
**Fig. 4.** Nasi Dextra Nasoendoscopy



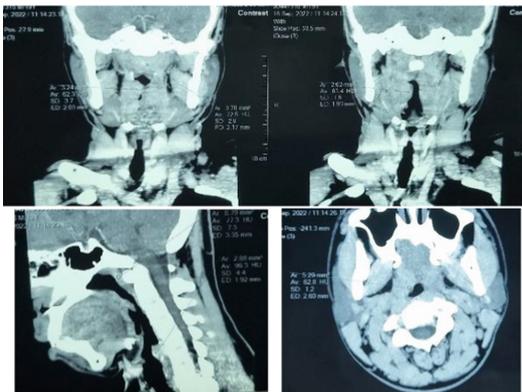
**Fig. 5.** Left Nasoendoscopy



**Fig. 6.** Rotgen of Thorax PA



**Fig. 7.** CT-Scan of the Nasopharynx/SPN without Contrast



**Fig. 8.** Nasopharynx/SPN CT-Scan with Contrast

Endoscopy of the dextra auricle disclosed an effusion on the tympanic membrane, as illustrated in Fig. 10.



**Fig. 9.** Left Auricular Endoscopy



**Fig. 10.** Endoscopy of the Dextra Auricular



**Fig. 11.** Macroscopically of the Nasopharynx

Opening the nasopharynx biopsy macroscopically obtained the fractured tissue,  $\frac{1}{2}$  cc, and supple, as displayed in Fig. 11.

The nasopharynx biopsy microscopically unveiled the nasopharyngeal tissue with a picture of lymphoid follicular hyperplasia and lymphoid architecture within normal limits, chronic inflammatory cell debris and foci of fibrosis. In short, lymphoid follicular hyperplasia and inflammation existed.

### 3 Discussion

Adenoids are lymphoid tissue on the posterior wall of the nasopharynx above the soft palate. The adenoid lobes are arranged orderly as separate segments of a cavity with gaps or pockets between them. They are arranged around a lower area in the middle called the bursa pharyngeus. Adenoids do not have crypts and function as the body's immune system but can cause a relatively high incidence of pathology. Adenoids will undergo hypertrophy during childhood and reach their largest size in pre-school and early school age. Moreover, involution due to adenoids can occur spontaneously at 18–20 years [5, 13, 14].

Following the physical and supporting examinations, this patient was diagnosed with adenoid hypertrophy. This diagnosis was based on anamnesis of the left auricle, itching for four months, small discharge, watery consistency, no odor, hearing loss, otalgia, autophony, tinnitus and no bleeding. The dextra auricular decreased hearing but was less severe than the left auricular. For otalgia, tinnitus, auto phones and secretions were denied. However, there was an obstruction in the nose. For anterior post nasal drip, posterior nasal drip, itching and sneezing in the morning, runny nose, epistaxis, and hyposmia were denied. Regarding the throat, there was a cough, itchy throat, dysphagia, odynophagia, and hoarseness, but no rhinolalia. The patient did not experience dizziness, nausea, vomiting, fever and shortness of breath.

Physical examination unveiled the normal limits of inspection and palpation. Anterior rhinoscopy discovered small amounts of secretions from both nostrils, clear, watery, odorless, and not accompanied by blood. Moreover, the mucosa, koncha, septum and paranasal sinuses were within normal limits, and no masses were detected.

Supporting examination of nasendoscopy dextra et sinistra revealed a mass in the nasopharynx that was pale red in color, oval in shape, soft, springy consistency, not bleeding and an uneven surface. CT-scan examination of the nasopharynx/SPN axial and coronal sections without contrast demonstrated thickening in the nasopharynx dextra et sinistra inferior aspect. Meanwhile, the CT scan of the nasopharynx/SPN, axial and coronal sections with contrast unveiled that contrast filled the mass in the nasopharynx dextra et sinistra and inferior aspect. Furthermore, a biopsy of the nasopharyngeal mass was performed to make a definite diagnosis, and nasopharyngeal tissue was obtained with a picture of lymphoid follicular hyperplasia and lymphoid architecture within normal limits, as well as chronic inflammatory cell debris and foci of fibrosis with a conclusion of lymphoid follicular hyperplasia and inflammation.

Adenoid hypertrophy is associated with obstruction of the Eustachian tubes and the incidence of serous otitis media in both recurrences and re-episodes of acute otitis media. Obstructed eustachian tube will interfere with nasal breathing [5]. The effect of adenoid hypertrophy is to limit the movement of the torus tuberosus toward the posterior, causing an inadequate opening of the eustachian tube [6]. Adenoid hypertrophy has caused changes in eustachian tube patency due to mechanical obstruction of the eustachian tube lumen and suppression of lymph vessels around the tubal lumen, resulting in edema of the eustachian tube mucosa [7]. Eustachian tube obstruction is a fundamental cause of effusion in the middle ear. The negative pressure occurred due to the absorption of O<sub>2</sub> from air trapped in the middle ear [8].

Eustachian tube obstruction could occur in various conditions, such as nasopharynx inflammation, adenoids, or nasopharyngeal tumors. Clinical symptoms of eustachian tube obstruction are fluid formation in the middle ear (serosa otitis media). Therefore, any adult patient with unilateral chronic serous otitis media should be considered for the possibility of adenoid hypertrophy or nasopharyngeal carcinoma. In addition, it could also occur due to posterior nasal tampons (Bellocq tampons) or scars due to surgical trauma (adenoidectomy) [1].

Based on the physical and supporting examinations, this patient was also diagnosed with effusion otitis media dextra auricular due to eustachian tube occlusion caused by adenoid hypertrophy. This diagnosis was based on the anamnesis of the dextra auricle. There was a decrease in hearing. Physical examination using an otoscope uncovered an effusion on the tympanic membrane and no light cone. Conversely, supporting examination with endoscopy discovered an effusion of fluid on the tympanic membrane and no cone of light.

Effusion otitis media is a condition in which effusion fluid remains in the middle ear cavity without signs and symptoms of acute inflammation, such as otalgia or fever. Eustachian tube dysfunction, bacterial or viral infections of the middle ear, nasal inflammation due to allergic rhinitis, or upper respiratory tract viral infections are all causes of otitis media. It can also occur due to the complex interaction of several factors, including eustachian tube dysfunction, bacterial infections, sinusitis, adenoid hypertrophy, and immunological factors [8].

Furthermore, physical and supporting examinations revealed that this patient was also diagnosed with otomycosis and diffuse otitis externa sinistra auricular. In the anamnesis, itching appeared for four months in the left auricle, accompanied by a slight discharge, clear, watery, odorless, decreased hearing, otalgia and autophony. Subsequently, physical examination using an otoscope disclosed hyphae, cerumen, secretions, hyperemia and edema in the external auricular canal but no cone of light. Moreover, supporting examination with endoscopy uncovered white, thick hypha debris in the external auricular canal covering the tympanic membrane, as well as edema and hyperemia in the external auricular canal and no cone of light.

Fungal infection in the ear canal is supported by high humidity; living in a tropical or warm environment will result in faster fungus development. The most common causes are *Pityrosporum* and *Aspergillus*. Sometimes, *Candida albicans* or other fungi are also detected. Symptoms of itching and fullness in the ear canal emerge, but often without complaints [1].

Diffuse external otitis is inflammation of the outer ear canal skin caused by bacteria, fungi and viruses. The most common risk factor is being in an area with a hot and humid climate. Usually, the skin of the ear canal is two-thirds deep. The skin of the ear canal looks hyperemic and edematous with no clear boundaries [5].

Furthermore, this patient was diagnosed with adenoid hypertrophy with otomycosis, diffused otitis externa sinistra auricular, and effusion otitis media dextra auricular.

Management of adenoid hypertrophy can be performed with intranasal medication corticosteroids, intranasal decongestants, and NSAID and intervention for one month. If there is no improvement in symptoms, it is necessary to consider non-medical actions

of adenoidectomy. If nasal obstruction causes mouth breathing, sleep apnea, speech disorders, swallowing disorders, deformities of the face, face and teeth (adenoid face), recurrent/chronic adenoiditis, recurrent/chronic otitis media with effusion, recurrent acute otitis media, it indicates adenoidectomy [9]]. Complications of adenoidectomy are bleeding if the drainage of the adenoids is not clean. If it is too deep, it will damage the back wall of the pharynx. If the curettage is too lateral, the torus tuberosus will be damaged and cause eustachian tube occlusion, leading to conductive deafness [10].

The management of otomycosis is ear toilet or cleaning the ear canal with a 2% acetic acid solution in alcohol or H<sub>2</sub>O<sub>2</sub> solution or 5% povidone-iodine solution, and ear drops with a mixture of antibiotics and steroids, topical anti-fungal drugs containing nystatin and clotrimazole [11].

The management of diffuse external otitis media is an ear toilet or cleaning of the ear canal with H<sub>2</sub>O<sub>2</sub> solution, 5% povidone solution, ear tampons smeared with antibiotics, topical broad-spectrum antibiotics, and NSAID [5].

The management of otitis media with effusion refers to a medication with broad-spectrum antibiotics, corticosteroids, decongestants, and antihistamines. After that, it is evaluated for three months. If there is no improvement, it is necessary to do a myringotomy and install grommets [12].

## 4 Conclusion

Adenoid hypertrophy is the enlargement of the adenoid tissue. The etiology of adenoid hypertrophy is largely due to recurrent infections of the upper respiratory tract. Adenoid hypertrophy is associated with eustachian tube obstruction and choanal obstruction. It would limit the movement of the torus tuberosus posteriorly, causing the inadequate opening of the eustachian tube. Negative pressure would occur due to the absorption of O<sub>2</sub> from air trapped in the middle ear.

Effusion otitis media refers to a condition in which effusion fluid remains in the middle ear cavity without signs and symptoms of acute inflammation. Factors causing effusion otitis media include eustachian tube dysfunction and bacterial or viral infection of the middle ear.

Fungal infection in the ear canal is supported by high humidity. Living in a tropical or warm environment would fasten the fungus development.

Diffuse external otitis can be defined as the inflammation of the outer ear canal skin caused by bacteria, fungi and viruses. The most common risk factor is being in an area with a hot and humid climate.

Based on anamnesis, physical examination, and investigations, this patient was diagnosed with adenoid hypertrophy with otomycosis, diffused otitis externa sinistra auricular, and effusion otitis media dextra auricular.

**Acknowledgements.** ASF and NS would like to thank Mr. D, RSUD Ir. Soekarno in Sukoharjo for his knowledge, facilities and infrastructure, as well as his guidance and all parties involved in completing this article.

**Authors' Contributions.** ASF contributed to article writing, data collection, data processing and preparation. NS contributed to data collection, provided careful guidance, and offered input and suggestions.

## References

1. Arsyad, E., Iskandar, N., Bashiruddin, J., & Restuti, R. D. (2007). Buku Ajar Penyakit THT UI. Edisi ke-6. Jakarta: Balai Penerbit FKUI, 217–225
2. Bailey BJ et al. Head and neck Surgery-Otolaryngology: Fourth Edition. 2006. Philadelphia: Lippincott Williams & Wilkins.
3. Cummings CW, Fredricksom JM, Harker LA. Otolaryngology Head and Neck Surgery: Fourth Edition. 2009. St Louis: Mosby
4. M. Arman Amar, Riskiana Djamin, Abdul Qadar Punagi. Rasio Adenoid Nasofaring dan Gangguan Telinga Tengah pada Penderita Hipertrofi Adenoid. J Indon Med Assoc. 2013; 63:21–6
5. Adams, G. L., BOIES, L. L., HIGLER, P. A., & WIJAYA, C. (1997). Boies: buku ajar penyakit THT. EGC.
6. Austin, D.F. (1989) : Adenoidectomy for secretory otitis media. Arch Otolaringol Head and Neck Surg ,115 : 936-939
7. Palva, T. Ramsay, H. (2007). Aeration of Prussak's space is independent of the supradiaphragmatic epitympanic compartments. Otol Neurotol,28(2):264-268.
8. Sedjawidada, R. (1985). Historia naturalis of otitis media. ORL Indonesiana. 16: 135-144
9. Ealljenr JJ. Diseases of the oropharynx In: Otorhirdarypdogy head and neck surgery. 15D Ed. Lea Fetiger Book. Bahjmore, Philadelphia. Hongkong. London. Munich, Sydney, Tokyo 1995: p.236–44
10. American Academy of Otolaryngology-Head and Neck Surgery Clinical indicators compendium, Alexandria, Virginia, 1 995.
11. Lee KJ Essential Otolaryngology. Head & Neck Surgery 8th ed McGraw-Hill, New York 2003 84144
12. Sando I, Takahashi and Matsune S. Update on Functional Anatomy and Pathology of Human Eustachius tube Related to Otitis Media Effusion The Otolaryngologic Clinics of North America, August 1991:795–811.
13. Jatmiko, Safari Wahyu. 2018. Immunologi Dasar Surakarta: Muhammadiyah University Press.
14. Jatmiko, S. W., and R. A. Aisyah. "Imunitas Alamiah." Edisi 1 2015: pp.20-2.

**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.

