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Case Report Olgu Sunumu

A CASE OF OZENA IN A REFUGEE CAMP MIGRANT

Mülteci Kampında Yaşayan Bir Göçmende Ozaena Olgusu

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ABSTRACT

Ozena is a type of primary atrophic rhinitis caused by the bacterium *Klebsiella pneumoniae* ssp. *ozaenae*. A 45-year-old female patient who had migrated from Syria to Türkiye presented with complaints of foul-smelling rhinorrhea and persistent nasal crusting for several years. On examination, abundant yellow-green crusts, enlarged nasal cavities, and atrophic turbinates and mucosa were observed in both nasal passages. *Klebsiella pneumoniae* ssp. *ozaenae* was isolated in the nasal tissue culture. The patient was hospitalized and treated with ceftriaxone and metronidazole for two weeks, as these antibiotics were found to be effective based on culture results. Nasal irrigation with physiological saline and glycerin-based moisturizer was recommended. Additionally, daily nasal crust removal was performed using an endoscope. After discharge, the patient was prescribed ceftriaxone 1 g IM twice daily for two weeks. Regular follow-ups were recommended for the recovering patient.We present this case because the condition is relatively unknown and often diagnosed late.

Keywords: *Ozaene, atrophic rhinitis, Klebsiella pneumoniae ssp. ozaenae*

ÖZ

Ozaena, *Klebsiella pneumoniae*'nın *ozaenae* alt türü bakterisinin neden olduğu bir tür primer atrofik rinittir. Suriye'den Türkiye'ye göç eden 45 yaşında bir kadın hasta, birkaç yıldır kötü kokulu burun akıntısı ve kalıcı burun kabuğu şikayetiyle başvurdu. Muayenede, her iki burun pasajında bol miktarda sarı-yeşil kabuklar, genişlemiş burun boşlukları, atrofik konkalar ve mukoza görüldü. Burun doku kültüründe *Klebsiella pneumoniae*'nın *ozaenae* alt türü izole edildi. Hasta hastaneye yatırıldı ve kültür sonuçlarına göre bu antibiyotiklerin etkili olduğu görüldüğünden iki hafta boyunca seftriakson ve metronidazol ile tedavi edildi. Fizyolojik tuzlu su ve gliserin bazlı nemlendirici ile burun irrigasyonu önerildi. Ayrıca, bir endoskop kullanılarak günlük burun kabuğu temizliği yapıldı. Taburcu olduktan sonra hastaya iki hafta boyunca günde iki kez 1 g IM seftriakson reçete edildi. İyileşen hastaya düzenli takipler önerildi. Bu vakayı sunuyoruz çünkü durum nispeten bilinmiyor ve genellikle geç teşhis ediliyor.

Anahtar Kelimeler: *Ozaena, atrofik rinit, Klebsiella pneumoniae'nın ozaenae alt türü*

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INTRODUCTION

Two types of atrophic rhinitis can be identified: primary (ozena), which is currently rare, and secondary, which is more common and may result from surgery, trauma, radiotherapy, or other factors.[1] The pathogenesis of the disease remains poorly understood.

Diagnosis is based on clinical suspicion and confirmed through culture isolation. The classic findings of ozena include nasal crusting, internal nasal atrophy leading to an enlarged cavity, and foul-smelling discharge.[2] *Klebsiella pneumoniae* ssp. *ozaenae* is isolated in most cases through bacteriological examination.[3]

Antibiotics form the basis of treatment and are prescribed based on culture results and sensitivity testing, similar to other bacterial infections. The primary goal of treatment is to restore nasal moisture and minimize crusting.[4] Daily saline nasal irrigation and moisturizing drops are recommended to maintain cleanliness and prevent crust formation.

CASE REPORT

A 45-year-old female patient presented with complaints of nasal congestion, foul-smelling nasal discharge, postnasal drip, and nasal crusting. She reported that despite multiple visits to healthcare facilities and repeated antibiotic treatments, her condition had not improved.

Upon reviewing her medical history, it was discovered that she had migrated to Türkiye as a refugee due to internal unrest in Syria approximately 14 years ago. Her symptoms began around that time while she was staying in refugee camps. She had no known systemic diseases.

Examination and Diagnostic Findings

During the ear, nose, and throat (ENT) examination, atrophy was observed in the middle and lower turbinates, particularly in both nasal passages. Abundant yellow-green crusting, enlarged nasal cavities, and atrophic turbinates and mucosa were noted bilaterally (Figure 1a, b).

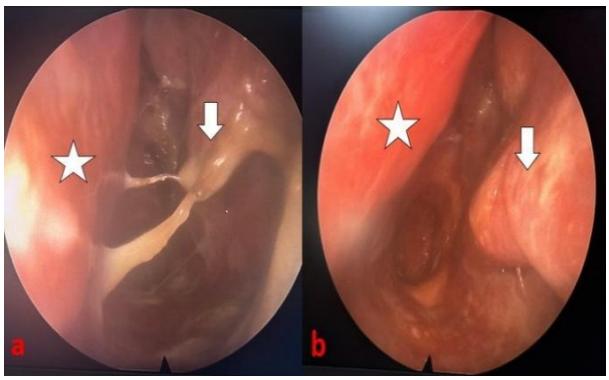

Figure 1: (a) Endoscopic view of the left nasal cavity before treatment. (**b)** Endoscopic view of the left nasal cavity after treatment. Inferior turbinate: arrow, nasal septum: star.

A preliminary diagnosis of ozena was made, and a nasal swab sample was taken from the middle meatus for culture. The patient also underwent paranasal sinus tomography, which revealed bilateral nasal passage dilation consistent with atrophic rhinitis and shrinkage of the middle and lower turbinates (Figure 2).

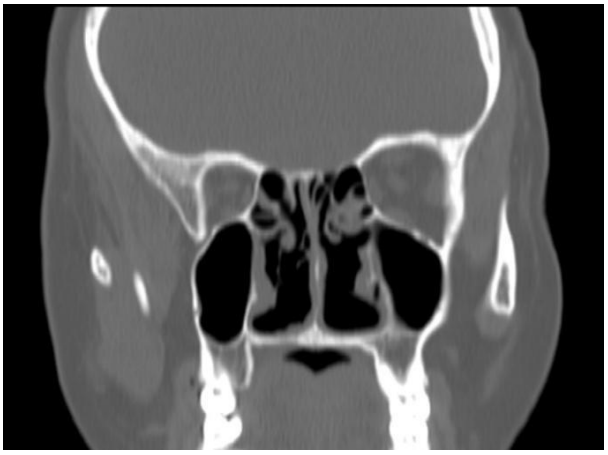

Figure 2: Coronal paranasal computed tomography scan shows decreased middle and inferior turbinate volume and atrophic mucosa

Hematological and biochemical examinations, including ferritin levels, were within normal limits. *Klebsiella pneumoniae* ssp. *ozaenae* and *Escherichia coli* were identified in the nasal swab culture. The antibiogram showed resistance to amoxicillin/clavulanic acid but sensitivity to ceftriaxone, cefuroxime, and meropenem.

Treatment and Follow-up

Based on these laboratory and radiological findings, the patient was diagnosed with chronic atrophic rhinitis and was hospitalized. She was treated with ceftriaxone (1 g IV, twice daily) and metronidazole (0.5 g IV, three times daily) for two weeks. Additionally, nasal irrigation with physiological saline was performed three times daily, and a glycerin-based moisturizer was applied. Daily nasal crust removal was conducted.

At the two-week follow-up, nasal discharge had decreased, and the crusting had improved, leading to the patient's discharge. After discharge, ceftriaxone (1 g IM, twice daily) was prescribed for two more weeks, along with continued nasal irrigation and moisturizing drops.

At the four-week follow-up, the patient's symptoms had significantly improved. Endoscopic examination showed that nasal discharge had ceased, and the crusts had healed (Figure 1b). Antibiotic treatment was discontinued, and the patient, along with her relatives, was advised to continue regular nasal irrigation, moisturizing, and hygiene maintenance. Regular follow-ups were scheduled as the recovery process progressed well.

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DISCUSSION

The etiology of chronic atrophic rhinitis is not yet fully understood. However, bacterial infections (*Klebsiella pneumoniae* ssp. *ozaenae*, *Proteus* spp., *Escherichia coli*, *Corynebacterium diphtheriae*), estrogen deficiency, a wide nasal cavity, trauma (such as surgical interventions), hypovitaminosis A or D, iron deficiency, nutritional deficiencies, and genetic predisposition are thought to contribute to its development.[3]

Klebsiella pneumoniae ssp. *ozaenae* is associated with chronic inflammation of the upper respiratory tract, known as ozena.[5] It is a rare, progressive form of chronic rhinitis characterized by thick, dry crusts and resorption of the underlying bone, leading to atrophic changes in the nasal mucosa and a strong malodor.

The prevalence of atrophic rhinitis in endemic regions ranges from 0.3% to 1%.[6] Many authors have reported that it is more common in women.[7] The diagnosis of ozena is based on clinical history and examination and is supported by biopsies and imaging techniques. A paranasal CT scan aids in diagnosis by revealing mucosal atrophy of the middle and inferior turbinates, osteolysis, nasal cavity widening, and sometimes maxillary sinus hypoplasia.[7]

In addition to antibiotic therapy, nasal irrigation with saline solution or sodium bicarbonate is recommended, primarily to prevent crust formation.[8] Nasal dryness can be alleviated with anti-evaporative agents such as glycerin, mineral oil, or menthol.[6,9]

Antibiotic therapy in this case was initiated according to culture results and clinical presentation. Although *E. coli* is an aerobic bacterium and generally resistant to metronidazole, this agent was added empirically to provide coverage for possible anaerobic co-infection, which may occur in chronic nasal infections or in cases with mucosal necrosis. The inclusion of metronidazole was therefore intended to broaden the antimicrobial spectrum until the culture and susceptibility results became available. Although the minimum inhibitory concentration (MIC) values were not specified in the antibiogram report, both *E. coli* and *Klebsiella pneumoniae* ssp. *ozaenae* isolates were reported as sensitive to ceftriaxone, ciprofloxacin, ampicillin-sulbactam, amikacin, piperacillin-tazobactam, and trimethoprim-sulfamethoxazole, while extended-spectrum beta-lactamase (ESBL) production was negative. Alternative treatment options, including ciprofloxacin and rifampicin, were also considered. Ciprofloxacin has good activity against *E. coli* and excellent tissue penetration, while rifampicin may be used in combination therapy because of its synergistic effect. However, based on the sensitivity profile and the patient's favorable clinical response, the chosen regimen was deemed appropriate.

From an epidemiological perspective, this case also highlights the diagnostic and management challenges in refugee populations. The patient had migrated from Syria and lived in refugee camps, where limited access to specialized healthcare services and hygienic conditions may have contributed to the delayed diagnosis, which extended over 14 years. Family screening was not conducted in this case; however, given the chronic and potentially communicable nature of nasal colonization by *Klebsiella pneumoniae* ssp. *ozaenae*, such screening may be advisable in similar refugee settings. In refugee and low-resource populations, early screening programs and education on nasal hygiene and timely referral to otolaryngology specialists could help prevent prolonged diagnostic delays and complications associated with ozena.

In terms of long-term follow-up, the patient was monitored for twelve months after initial treatment. No relapse or recurrence of symptoms such as nasal crusting, discharge, or malodor was observed during this period. Regular nasal irrigation and moisturizing were maintained, and the patient was advised to continue these measures as part of long-term management. The absence of recurrence over one year suggests that early diagnosis, targeted antibiotic therapy, and consistent local care can prevent chronic relapse in similar cases.

Recent literature has increasingly emphasized that ozena remains a relevant public health issue, particularly in populations with limited healthcare access such as refugees. Sumaily et al. (2023) highlighted that *Klebsiella pneumoniae* ssp. *ozaenae* and disrupted nasal microbiota play a central role in the chronicity of atrophic rhinitis, suggesting that environmental and hygienic conditions may influence disease persistence.[10] Maalej et al. (2024) demonstrated that a combination of early microbiological confirmation and multidisciplinary therapy-including antibiotics, nasal irrigation, and surgical intervention-can yield substantial improvement in clinical outcomes.[1] Similarly, AlJindan (2024) reported that *K. ozaenae* infections show variable antibiotic susceptibility patterns, underlining the need for culture-based treatment strategies in resource-limited settings.[11] Together, these studies support the notion that in refugee populations, where sanitation and medical follow-up are often inadequate, early detection and long-term management of ozena are crucial not only for individual recovery but also for community health protection.

Ozena, or primary atrophic rhinitis, is rare and often misdiagnosed. Delayed or inadequate treatment can lead to irreversible long-term consequences. Therefore, appropriate follow-up and long-term management are essential.

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REFERENCES

1. Maalej F, Chaabouni MA, Ayadi S, Sellami M, Charfeddine I. Therapeutic management of primary atrophic rhinitis (Ozene): About 4 cases. *Ear Nose Throat J*. 2024;14:1455613241252586.
2. Flint PW, Haughey BH, Lund VJ, et al. Nonallergic rhinitis. Cummings Otolaryngology, 5th edition. Elsevier, 2010:696-697.
3. Yelenich-Huss MJ, Boyer H, Alpern JD, Stauffer WM, Schmidt D. Ozena in immigrants of differing backgrounds. *Am J Trop Med Hyg*. 2016;95(1):35-37.
4. Awad OGAN, Hasan MM. Topical mitomycin-C can help as an adjunct to alkaline nasal wash and rifampicin in primary atrophic rhinitis. *Am J Otolaryngol*. 2019;40(2):137-142.
5. Yuca SA, Yuca K, Kiroglu AF, et al. A forgotten difficult entity: Ozena report of 2 cases. *E J Med*. 2010;15:114-117.
6. Dutt SN, Kameswaran M. The aetiology and management of atrophic rhinitis. *J Laryngol Otol.* 2005;119(11):843-852.
7. Chhabra N, Houser SM. The diagnosis and management of empty nose syndrome. *Otolaryngol Clin North Am*. 2009;42(2):311-330.
8. Tomooka LT, Murphy C, Davidson TM. Clinical study and literature review of nasal irrigation. *Laryngoscope*. 2000;110(7):1189-1193.
9. Brown AC, Slocum PC, Putthoff SL, Wallace WE, Foresman BH. Exogenous lipoid pneumonia due to nasal application of petroleum jelly. *Chest.* 1994;105(3):968-969.
10. Sumaily IA, Hakami NA, Almutairi AD, et al. An updated review on atrophic rhinitis and empty nose syndrome. *Ear Nose Throat J*. 2023;1455613231185022.
11. AlJindan R. Epidemiological characteristics of *Klebsiella ozaenae* infection and its antibiotic susceptibility: Experience of a tertiary care hospital in the Eastern Province of Saudi Arabia. *J Family Community Med*. 2024;31(2):148-152.