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Case Report

Nasal Vestibulitis in a 56-Year-Old Man with Type 2 Diabetes Mellitus: A Case Report

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ABSTRACT

Background: Nasal vestibulitis is a localized bacterial infection of the nasal vestibule, most commonly caused by *Staphylococcus aureus*. It is frequently associated with local trauma, including habitual nose picking, hair plucking, and intranasal procedures. Patients with diabetes mellitus have higer risk of getting nasal vestibulitis due to impaired host immune function. Although generally regarded as a mild infection, delayed diagnosis and inappropriate treatment may lead to severe complications, including facial cellulitis, abscess formation, and cavernous sinus thrombosis. **Case Presentation:** A 56-year-old man with a history of type 2 diabetes mellitus presented with a five-day history of bilateral nasal pain and swelling, accompanied by tenderness over the nasal tip, nasal obstruction, and purulent nasal discharge. The patient had previously undergone nasogastric tube insertion during a previous hospitalization. Physical examination revealed bilateral erythema and edema of the nasal vestibule with crust formation, while laboratory investigations demonstrated a normal leukocyte count. Based on the clinical findings, the patient was diagnosed with bilateral nasal vestibulitis and treated with intravenous ceftriaxone, intravenous methylprednisolone, topical gentamicin ointment, analgesics, and saline nasal irrigation. Marked clinical improvement was observed after six days of treatment, with complete resolution of symptoms and no local or systemic complications during follow-up. **Method:** A systematic literature search was conducted using PubMed, Scopus, and Google Scholar. The search strategy combined controlled vocabulary (MeSH) and free-text terms for the principal concepts, including nasal vestibulitis, nasal vestibular furunculosis, *Staphylococcus aureus,* and diabetes mellitus. The search was limited to studies involving human subjects that were published between 2020 and 2025, and written in English or Indonesian. Data extracted from eligible studies included patient demographics, predisposing factors, clinical manifestations, microbiological findings, treatment modalities, and clinical outcomes. Five relevant case reports met the inclusion criteria and were included in the evidence synthesis. **Result:** Conservative management consisting of systemic antibiotics, topical antibiotic ointment, corticosteroids, analgesics, and saline nasal irrigation resulted in rapid clinical improvement without complications. Bilateral edema, erythema, tenderness, and crusting of the nasal vestibules resolved completely after six days of treatment. At follow-up, the patient remained asymptomatic with complete resolution of inflammatory signs and no evidence of recurrence or progression to facial cellulitis or intracranial complications. **Conclusion:** This case emphasizes the importance of early recognition and prompt treatment of nasal vestibulitis, particularly in patients with diabetes mellitus and a history of intranasal procedures. Combined systemic and topical antimicrobial therapy resulted in favorable clinical outcomes and effectively prevented potentially life-threatening complications associated with infection within the facial "danger triangle."

Conclusion: This case emphasizes the importance of early recognition and prompt treatment of nasal vestibulitis, particularly in patients with diabetes mellitus and a history of nasal instrumentation. Combined systemic and topical antimicrobial therapy provides favorable clinical outcomes and effectively prevents potentially life-threatening complications associated with infection within the facial "danger triangle."

Keywords: Nasal vestibulitis, Staphylococcus aureus, Type 2 diabetes mellitus

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JOOB 002 Volume I No.2, p 33-40

INTRODUCTION

Nasal vestibulitis is a localized bacterial infection ~~involving the~~ of the nasal vestibule, ~~and is~~ most commonly caused by *Staphylococcus aureus*. Although generally regarded as a minor infectious condition, it is one of the most frequently encountered bacterial infections of the anterior nasal cavity in otorhinolaryngology practice.[1,2,9] This disease typically develops by disruption of the vestibular epithelium secondary to local trauma, including habitual nose picking, hair plucking, excessive nasal cleaning, or iatrogenic intranasal procedures such as nasogastric tube insertion and nasal packing.[1,2,5,9] Patients with impaired immune function, particularly those with diabetes mellitus, are more susceptible to developing nasal vestibulitis because of reduced neutrophil function, impaired wound healing, increased bacterial colonization, and a higher risk of infectious complications.[3,10,12]

The clinical manifestations of nasal vestibulitis include localized pain, erythema, edema, crust formation, tenderness over the nasal tip, and occasionally purulent nasal discharge.[2,5,6] Although these symptoms are usually mild and localized, delayed diagnosis or inadequate treatment may allow the infection to extend beyond the nasal vestibule, resulting in facial cellulitis, nasal abscess formation, and potentially life-threatening intracranial complications, including cavernous sinus thrombosis through the valveless venous system of the facial "danger triangle".[4,7,13,14] Therefore, early diagnosis and prompt antimicrobial therapy are essential to prevent disease progression, minimize antimicrobial resistance through appropriate antibiotic selection, and improve clinical outcomes.[2,8,9,11,12]

The diagnosis of nasal vestibulitis is primarily established through careful history taking and physical examination, while microbiological culture is generally reserved for severe, recurrent, or treatment-resistant infections.[2,5,9] Management is determined by disease severity. Mild cases are usually treated with topical antibiotics such as mupirocin, whereas moderate-to-severe infections require systemic antibiotics combined with topical antimicrobial therapy, analgesics, and elimination of predisposing factors.[2,5,8,9,10] Recent advances in antimicrobial therapy and increased awareness of predisposing conditions have contributed to excellent clinical outcomes and a lower incidence of serious complications when treatment is initiated promptly.[9,10,11,12]

This evidence-based case report describes the clinical presentation and successful management of bilateral nasal vestibulitis in a 56-year-old man with type 2 diabetes mellitus following nasogastric tube insertion. The report highlights the importance of recognizing predisposing factors, establishing an early clinical diagnosis, and initiating timely combined systemic and topical antimicrobial therapy to achieve favorable clinical outcomes while preventing potentially life-threatening complications.[2,3,5,8,9]

CASE REPORT

A 56-year-old man was referred from the Department of Internal Medicine to the Rhinology Division, Department of Otorhinolaryngology–Head and Neck Surgery, on September 21, 2024, with a five-day history of bilateral nasal pain and swelling. The patient reported ~~of~~ tenderness over the nasal tip accompanied by progressive swelling of the nasal tip, bilateral nasal obstruction, and intermittent purulent nasal discharge. He denied epistaxis, facial trauma, recurrent nasal infections, habitual nose picking, or nasal hair plucking.

The patient had recently been admitted to the High Care Unit (HCU) for evaluation of hematemesis with a suspected hepatic malignancy and underlying type 2 diabetes mellitus. During hospitalization, a nasogastric tube (NGT) was inserted for nutritional support. He reported a low-grade fever on the morning before the otorhinolaryngology consultation. The patient's clinical appearance at presentation is shown in Figure 1.

On physical examination, the patient appeared mildly ill but was fully alert and oriented (compos mentis). Vital signs were stable, with a blood pressure of 110/70 mmHg, pulse rate

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JOOB 002 Volume I No.2, p 33-40

of 80 beats/min, respiratory rate of 20 breaths/min, and body temperature of 37.2°C.

Figure 1. Clinical appearance of the patient at the initial presentation.

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Otologic and oropharyngeal examinations were unremarkable. Anterior rhinoscopy demonstrated bilateral edema and erythema of the nasal vestibules with crust formation. No active purulent discharge, fluctuance, septal hematoma, or cervical lymphadenopathy was observed.

Laboratory investigations revealed a hemoglobin count of 14.0 g/dL, leukocyte count of 5.81 × 10^3/µL, platelet count of 102 × 10^3/µL, and a random blood glucose count of 126 mg/dL. Chest radiography demonstrated no significant abnormalities.

Based on the patient's clinical history, physical examination, and laboratory findings, bilateral nasal vestibulitis was diagnosed. The patient was treated with intravenous ceftriaxone (1 g every 12 hours), intravenous methylprednisolone (62.5 mg every 12 hours), oral paracetamol (500 mg every 8 hours), topical gentamicin ointment applied twice daily, and isotonic saline nasal irrigation. In addition, a nasal vestibular swab was obtained for bacterial culture and antimicrobial susceptibility testing to guide further antibiotic therapy if required.

Following six days of treatment, the patient demonstrated marked clinical improvement with a significant reduction in nasal vestubules pain, edema, erythema, and crusting. No evidence of local extension or systemic complications was observed throughout hospitalization. The patient was discharged in stable condition on September 27, 2024.

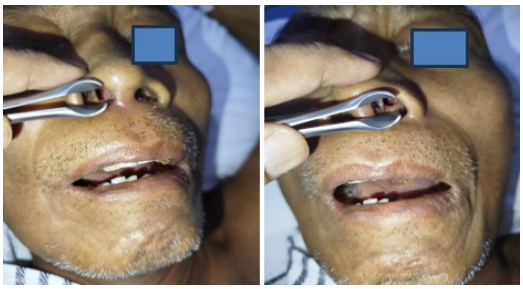

Figure 2. Clinical appearance of the patient after six days of treatment.

The patient underwent follow-up evaluation on October 1, 2024, during readmission to the Department of Gastroenterology and Hepatology for further management of his underlying medical condition. At follow-up, he reported complete resolution of nasal pain, swelling, and obstruction. Physical examination revealed a normal-appearing nasal vestibule without erythema, edema, crusting, or purulent discharge. No signs of recurrent infection or other complications were identified. The patient was advised to maintain appropriate nasal hygiene and to avoid excessive manipulation or trauma to the nasal vestibule to reduce the risk of recurrence.

CLINICAL QUESTION

The clinical question addressed in this evidence-based case report is:

"Does combined systemic and topical antibiotic therapy provide favorable clinical outcomes and prevent complications in patients with nasal vestibulitis?"

Structured clinical question in PICO format:

- Population: Patients diagnosed with nasal vestibulitis.
- Intervention: Combined systemic and topical antibiotic therapy with supportive treatment.
- Comparison: None.
- Outcome: The Clinical resolution of nasal pain, erythema, edema, and crusting, the prevention of local and intracranial complications, and recurrence-free recovery.

METHODS

P-ISSN **3125-0920** and E-ISSN **XXXX-XXXX**

JOOB 002 Volume I No.2, p 33-40

A systematic literature search was conducted in international databases, including PubMed, Scopus, and Google Scholar, to identify published case reports describing the clinical presentation and management of nasal vestibulitis. The search strategy combined Medical Subject Headings (MeSH) term and free-text terms using the following keywords: "nasal vestibulitis," "nasal vestibular furunculosis," "Staphylococcus aureus," "nasal infection," "diabetes mellitus," and "case report." Boolean operators ("AND" and "OR") were applied to optimize the search strategy.

The search was limited to human studies published between 2020 and 2025, written in English or Indonesian, and reporting individual case reports or case series with detailed clinical presentations, treatments, and outcomes. Review articles, conference abstracts, editorials, animal studies, and reports lacking sufficient clinical information were excluded.

Data extracted from the eligible studies included patient demographics, predisposing factors, clinical manifestations, microbiological findings, treatment modalities, duration of therapy, clinical outcomes, and reported complications.

RESULTS

Google Scholar. After the removal of duplicates and title–abstract screening, 18 articles remained for full-text assessment. Of these, 4 articles were excluded because they were review articles or did not provide sufficient clinical information, while 11 studies were excluded because they described case series, were non-human studies, or focused on conditions other than nasal vestibulitis. Consequently, 3 case reports fulfilled all inclusion criteria and were included in this evidence-based review.

Relevant clinical data from the included case reports were extracted and compared with the present case, including patient demographics, predisposing factors, clinical manifestations, microbiological findings, treatment modalities, duration of therapy, and clinical outcomes. A summary of the included studies is presented in Table 1.

DISCUSSION

Nasal vestibulitis is a localized bacterial infection of the nasal vestibule that most commonly arises following the disruption of the vestibular epithelium, which allows bacterial colonization, predominantly by Staphylococcus aureus.[1,2] The condition is generally considered a mild superficial infection; however, delayed diagnosis or inadequate treatment may result in local extension to facial cellulitis, nasal abscess, or intracranial complications, including cavernous sinus thrombosis, because of the valveless venous communication within the facial "danger triangle."[4,7] In the present case, the patient presented with the characteristic clinical manifestations of bilateral nasal pain, nasal tip tenderness, vestibular swelling, erythema, crust formation, and purulent nasal discharge, all of which are consistent with the typical presentation of nasal vestibulitis described in previous reports.[2,5,6]

The development of nasal vestibulitis in this patient was likely multifactorial. The patient had underlying type 2 diabetes mellitus, a well-recognized risk factor for bacterial infections because of impaired neutrophil function, reduced chemotaxis, diminished phagocytic activity, and delayed tissue repair.[3] In addition, the recent insertion of a nasogastric tube may have caused mechanical trauma to the nasal vestibular mucosa, disrupting the epithelial barrier and facilitating bacterial invasion.[1,2] Although the patient denied habitual nose picking or nasal hair plucking, iatrogenic intranasal procedures has been recognized as an important predisposing factor for vestibular infections.[1,2] Sheik-Ali et al. reported that local trauma and underlying systemic diseases, including diabetes mellitus, were among the most common predisposing conditions in patients with nasal vestibular furunculosis, supporting the clinical findings observed in our patient.[2]

P-ISSN **3125-0920** and E-ISSN **XXXX-XXXX**

JOOB 002 Volume I No.2, p 33-40

Table 1. Summary of eligible studies identified through systematic literature selection.

No	Author, Year	Patient's Characteristics	Clinical presentation	Microbiological finding	Treatment	Outcome/ Follow-Up
1	Mohamed-Yassin et al. (2020)	Female, 36 years old, Type 2 diabetes mellitus	Painful erythematous swelling of the nasal tip and right nasal vestibule associated with fever; diagnosed as nasal vestibular furunculosis	Clinical diagnosis consistent with *Staphylococcus aureus* infection; no culture reported	Oral amoxicillin-clavulanate, topical mupirocin ointment, analgesics, and warm compresses	Marked clinical improvement after one week with complete resolution of pain and swelling; no recurrence or complications during follow-up
2	Sil and Panigrahi (2022)	Male, 53 years old	Painful erythematous swelling of the nasal tip ("Rudolph sign") with tenderness and nasal vestibular furunculosis	Clinical diagnosis; microbiological examination not reported	Systemic antibiotics, topical antibiotic ointment, and local supportive care	Complete clinical recovery following conservative treatment without progression to facial cellulitis or cavernous sinus thrombosis
3	Sheik-Ali et al. (2022)	Multiple patients (case series), adults with nasal vestibular furunculosis	Localized pain, erythema, edema, crusting, and pustular lesions of the nasal vestibule; some patients had diabetes mellitus or local nasal trauma as predisposing factors	*Staphylococcus aureus* was the predominant pathogen in cultured cases	Topical mupirocin with or without systemic antibiotics depending on disease severity	Most patients achieved complete clinical resolution with conservative therapy; recurrence was uncommon, and no intracranial complications were reported

P-ISSN **3125-0920** and E-ISSN **XXXX-XXXX**

JOOB 002 Volume I No.2, p 33-40

The diagnosis of nasal vestibulitis is primarily clinical and relies on careful history taking and thorough physical examination. In this case, anterior rhinoscopy demonstrated bilateral erythema, edema, and crusting confined to the nasal vestibule without evidence of septal abscess, fluctuance, or cervical lymphadenopathy. Laboratory investigations were unremarkable except for mild thrombocytopenia, while the leukocyte count remained within the normal range. These findings emphasize that normal inflammatory markers do not exclude localized bacterial infection. Similar observations were reported by Mohamed-Yassin et al., in which the diagnosis was established predominantly on clinical findings despite the absence of significant laboratory abnormalities.[5] Therefore, clinicians should maintain a high index of suspicion when evaluating patients presenting with localized nasal pain and vestibular inflammation, particularly in the presence of recognized risk factors.[1,2]

The cornerstone of treatment for nasal vestibulitis is the eradication of the underlying bacterial infection while preventing disease progression and serious complications. Current evidence recommends topical antibiotic therapy for mild disease and the addition of systemic antibiotics for patients with extensive inflammation, significant pain, surrounding cellulitis, immunocompromised status, or uncontrolled diabetes mellitus.[2,5,8] In our patient, combined therapy consisting of intravenous ceftriaxone, topical gentamicin ointment, saline nasal irrigation, analgesics, and short-course intravenous methylprednisolone resulted in rapid clinical improvement. Because the patient had diabetes mellitus and bilateral involvement, systemic antimicrobial therapy was considered appropriate to minimize the risk of disease progression. A nasal vestibular swab was also obtained for bacterial culture and antimicrobial susceptibility testing to guide subsequent antibiotic therapy if clinically indicated.[2,8]

Our findings are consistent with previous reports demonstrating excellent outcomes following early conservative management. Mohamed-Yassin et al. described complete resolution of nasal vestibular furunculosis after treatment with oral amoxicillin-clavulanate and topical mupirocin without complications.[5] Likewise, Sil and Panigrahi reported successful treatment of nasal vestibular furunculosis presenting with the characteristic "Rudolph sign" using conservative antibiotic therapy, highlighting the importance of prompt recognition before extension of infection into the facial soft tissues.[6] Furthermore, the case series by Sheik-Ali et al. demonstrated that the majority of patients achieved complete recovery with topical antibiotics alone or in combination with systemic antimicrobial agents, while recurrence and severe complications were uncommon when treatment was initiated early.[2] These reports collectively support the current management strategy employed in our patient.

One of the major concerns in patients with nasal vestibulitis is the potential for progression to severe infectious complications. The anatomical communication between the facial veins and the cavernous sinus provides a potential route for retrograde spread of infection, making delayed treatment potentially life-threatening.[4,7] Although such complications are rare in the modern antibiotic era, early diagnosis, appropriate antimicrobial therapy, and close clinical follow-up remain essential.[2,5] In the present case, no evidence of facial cellulitis, septal abscess, orbital involvement, or intracranial extension developed during hospitalization or subsequent follow-up, suggesting that timely intervention effectively prevented disease progression.

Patient education also plays an important role in preventing recurrence. Individuals should be advised to avoid repetitive manipulation of the nasal vestibule, including nose picking and excessive nasal hair plucking, and to maintain adequate nasal hygiene. Particular attention should be given to patients with diabetes mellitus or those requiring nasal instrumentation, as these conditions increase susceptibility to infection.[2,3,8] During follow-up, our patient demonstrated complete resolution of erythema, edema, pain, and

P-ISSN **3125-0920** and E-ISSN **XXXX-XXXX**

crusting without recurrent symptoms, indicating an excellent short-term clinical outcome following comprehensive medical management and preventive counseling.

Overall, this case highlights that nasal vestibulitis, although frequently perceived as a minor infection, requires prompt recognition and appropriate treatment, particularly in patients with predisposing factors such as diabetes mellitus and recent nasal instrumentation. Comparison with previously published case reports demonstrates that early diagnosis based on careful clinical examination, combined with appropriate systemic and topical antimicrobial therapy, consistently results in favorable clinical outcomes while minimizing the risk of potentially life-threatening complications.[2,5,6,8]

CONCLUSION

This case illustrates bilateral nasal vestibulitis in a 56-year-old man with type 2 diabetes mellitus and a recent history of nasogastric tube insertion, both of which were considered important predisposing factors for the development of the infection. The patient presented with bilateral nasal pain, swelling, tenderness over the nasal tip, nasal obstruction, and purulent nasal discharge. The diagnosis was established based on the clinical history and anterior rhinoscopic findings, which demonstrated bilateral erythema, edema, and crusting of the nasal vestibule. Early treatment with combined systemic and topical antibiotic therapy, supported by analgesics, saline nasal irrigation, and appropriate follow-up, resulted in complete clinical resolution without recurrence or local and intracranial complications..

This case emphasizes the importance of early recognition of nasal vestibulitis, particularly in patients with diabetes mellitus or recent nasal instrumentation. Prompt diagnosis, identification of predisposing factors, and timely initiation of appropriate antimicrobial therapy are essential to prevent disease progression and potentially life-threatening complications such as facial cellulitis and cavernous sinus thrombosis. Comparison with previously published case reports supports the finding that conservative management remains highly effective when initiated early. Comprehensive patient education regarding nasal hygiene, the avoidance of unnecessary nasal manipulation, and the optimal control of underlying comorbidities are fundamental to reducing recurrence and achieving favorable clinical outcomes.

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P-ISSN **3125-0920** and E-ISSN **XXXX-XXXX**