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CASE REPORT

Recurrent Axillary Hidradenitis Suppurativa in a Patient with Uncontrolled Type 2 Diabetes Mellitus

Kranthi Swaroopa Velisetti*, Grace Hadassah Busi, Annie Christine Nadipalli, Parash Niroula, Dileep Varma Inampudi

Pharm D Intern, Department of Pharmacy Practice, Aditya College of Pharmacy, Surampalem, Andhra Pradesh, India

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Abstract: Hidradenitis suppurativa (HS) is a debilitating chronic inflammatory skin condition that predominantly affects areas rich in apocrine glands. This case report presents a 43-year-old male patient with a two-year history of recurrent axillary HS complicated by uncontrolled type 2 diabetes mellitus. The patient initially developed small nodular lesions measuring 0.53 cm in both axillae, which progressively worsened into extensive lesions with pain and purulent discharge. His medical history was significant for a 15-year history of diabetes mellitus managed with metformin and glimepiride, past smoking history of 25 years, and alcohol consumption. Laboratory findings revealed elevated inflammatory markers, uncontrolled blood glucose levels, and mild anemia. The patient underwent surgical excision of the lesions, followed by reconstruction using a thoracodorsal artery perforator (TDAP) fasciocutaneous flap for wound coverage. Postoperative management included a comprehensive approach with broad-spectrum antibiotics (amoxicillin-clavulanate, doxycycline, and metronidazole) and intensive insulin therapy. The patient showed significant improvement during the four-week hospital stay, with successful wound healing and better glycemic control. The case shows the potential impact of metabolic disorders on the progression and management of HS.

Keywords: Hidradenitis suppurativa; Type 2 diabetes mellitus; Thoracodorsal artery perforator flap; Surgical excision; Chronic inflammatory skin disease.

1. Introduction

Hidradenitis suppurativa (HS) is a chronic, recurrent, inflammatory skin condition that primarily affects areas rich in apocrine glands. The condition typically manifests after puberty and is characterized by painful, deep-seated nodules, abscesses, and sinus tracts that can significantly impact a patient's quality of life [1]. The pathogenesis of HS involves follicular occlusion (as shown in Figure 1), followed by subsequent inflammation and potential secondary bacterial infection, leading to the formation of painful subcutaneous nodules and abscesses [2]. The disease predominantly affects the axillae, groin, and anogenital regions, with varying degrees of severity. The chronic nature of HS often results in scarring and formation of sinus tracts, which can lead to substantial physical and psychological morbidity [3]. While the exact etiology remains multifactorial, several risk factors have been identified, including genetics, obesity, smoking, and hormonal influences [4].

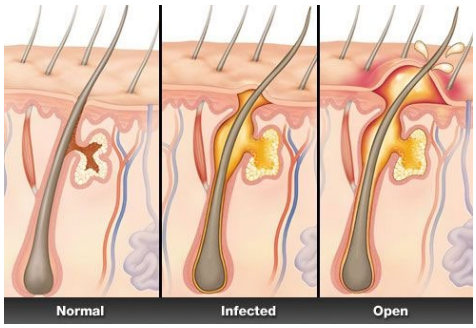

Figure 1. Hidradenitis suppurativa progression (Image source: Drsanayounas)

The association between HS and metabolic disorders, particularly diabetes mellitus, has gained increasing attention in recent years. Diabetes can significantly complicate the management of HS through various mechanisms, including impaired wound healing,

* Corresponding author: Kranthi Swaroopa Velisetti

altered immune response, and increased susceptibility to infections [5]. The presence of uncontrolled diabetes may not only exacerbate the severity of HS but also influence treatment outcomes and recovery [6].

Management of HS requires a comprehensive approach, particularly in cases complicated by comorbidities such as diabetes mellitus. Treatment strategies typically involve a combination of medical and surgical interventions, with the choice of treatment modality depending on disease severity, extent of involvement, and associated complications [7]. Surgical intervention, ranging from local excision to wide surgical excision with reconstruction, often becomes necessary in severe or recalcitrant cases [8]. This case report shows a complex presentation of axillary HS in a patient with uncontrolled type 2 diabetes mellitus, highlighting the challenges in management and the importance of a multidisciplinary approach to achieve better outcomes.

2. Hidradenitis suppurativa (HS)

2.1. Epidemiology and Prevalence

Despite being considered relatively rare, HS affects approximately 1% of the global population, with a notable predilection for females [9]. The female-to-male ratio stands at approximately 3.3:1, though this ratio may vary across different populations and geographic regions [10]. The disease typically manifests between puberty and age 40, with peak onset during the second and third decades of life. Studies have shown that the prevalence may be underestimated due to underreporting, delayed diagnosis, and varying clinical presentations [11].

2.2. Clinical Presentation

HS manifests through distinct clinical patterns and can be categorized into three main subtypes based on anatomical distribution and clinical characteristics [12]:

2.2.1. Axillary-Mammary Pattern (48%)

This represents the most common presentation, primarily affecting the axillary regions and inframammary folds. Lesions typically begin as tender nodules that may progress to form abscesses and sinus tracts. The chronic inflammatory process often leads to scarring and tissue fibrosis.

2.2.2. Follicular Pattern (26%)

More commonly observed in male patients and smokers, this pattern is characterized by widespread involvement and often presents with atypical lesions. Patients with this subtype generally experience earlier disease onset and more severe manifestations.

2.2.3. Gluteal Pattern (26%)

This pattern predominantly affects the gluteal, perineal, and perianal regions. Patients with this subtype typically have a lower body mass index and may experience a milder disease course compared to other patterns.

2.3. Disease Progression

The natural course of HS typically follows a progressive pattern [13]:

- Initial Stage: Characterized by the development of solitary or multiple painful nodules
- Intermediate Stage: Formation of abscesses and tunnels (sinus tracts)
- Advanced Stage: Extensive scarring, tissue destruction, and chronic drainage

2.4. Assessment of Severity

The severity of HS can be evaluated using various classification systems, with the Hurley staging system being the most widely used [14]:

- Stage I: Formation of single or multiple abscesses without sinus tracts and scarring
- Stage II: Recurrent abscesses with tract formation and scarring, occurring as single or multiple widely separated lesions
- Stage III: Diffuse or near-diffuse involvement with multiple interconnected tracts and abscesses across entire areas

2.5. Clinical Features in Diabetic Patients

In patients with concurrent diabetes mellitus, the clinical presentation of HS may be modified by the underlying metabolic disorder [15]. These patients often experience:

- More severe inflammatory responses
- Delayed wound healing
- Increased risk of secondary infections
- Greater extent of tissue involvement
- Higher likelihood of complications

The interaction between HS and diabetes creates a complex clinical scenario that requires careful consideration in treatment planning and management strategies. The presence of uncontrolled diabetes can significantly impact the disease course and treatment outcomes, necessitating a comprehensive approach to both conditions [16]

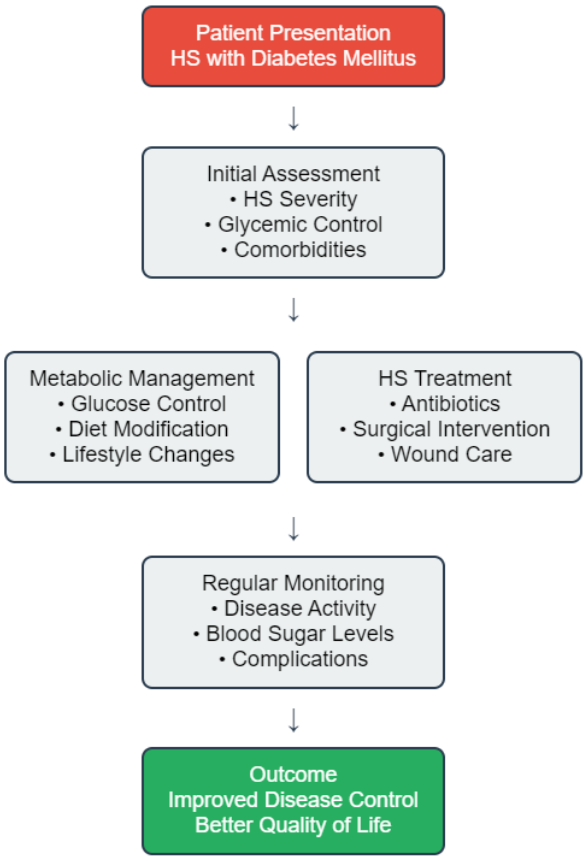

Figure 2. Case presentation of HS with Diabetes mellitus

2.6. Treatment and Management

The management of hidradenitis suppurativa requires a comprehensive, individualized approach that addresses both the primary condition and any underlying comorbidities. Medical management forms the cornerstone of initial treatment, particularly in mild to moderate cases [22]. Topical therapies, including clindamycin and benzoyl peroxide, serve as first-line treatments for localized lesions. These agents help control superficial inflammation and manage secondary bacterial colonization [23].

Systemic antibiotics play a crucial role in managing more extensive disease. Tetracyclines, particularly doxycycline and minocycline, are commonly prescribed for their anti-inflammatory properties in addition to their antimicrobial effects. In cases of severe or resistant disease, combination therapy with rifampicin and clindamycin has shown significant efficacy [24].

Hormonal therapy represents another important treatment modality, especially in female patients with evidence of hormonal influence on disease activity. Antiandrogens and oral contraceptives may be considered in appropriate cases. Retinoids, such as acitretin, have demonstrated effectiveness in some patients, particularly those with follicular-pattern disease [25].

Biological agents have revolutionized the treatment of moderate to severe HS. Adalimumab, a tumor necrosis factor-alpha inhibitor, has received regulatory approval for HS treatment and has shown remarkable efficacy in reducing inflammation and preventing new lesion formation. Other biologics, including infliximab and anakinra, have also shown promise in resistant cases [26].

Surgical intervention becomes necessary in cases of severe or recalcitrant disease. The surgical approach varies based on disease severity and extent. Minor procedures include incision and drainage for acute abscesses, while more extensive disease may require wide local excision with various reconstruction techniques. The choice of reconstruction method depends on defect size, location, and patient factors [27].

Pain management represents a critical aspect of HS treatment. A multimodal approach to pain control, incorporating both pharmacological and non-pharmacological methods, helps improve patient quality of life. Regular assessment and adjustment of pain management strategies ensure optimal patient comfort throughout the treatment course [28].

The management of concurrent diabetes mellitus requires particular attention in HS patients. Strict glycemic control through appropriate insulin therapy or oral hypoglycemic agents is essential for optimal wound healing and prevention of complications. Regular monitoring of blood glucose levels and adjustment of diabetes medications help maintain metabolic stability during HS treatment [29].

Lifestyle modifications form an integral part of long-term management. Smoking cessation counseling should be provided, as smoking significantly impacts disease severity and treatment response. Weight management through dietary modification and exercise helps reduce mechanical friction and inflammatory burden. Proper skin hygiene and wearing loose-fitting clothes can help prevent disease exacerbation [30].

3. Case Presentation

A 43-year-old male patient presented to the plastic surgery department with a primary complaint of recurrent nodular lesions in both axillae persisting for two years. The initial presentation began with small nodules measuring approximately 0.53 cm, which progressively evolved into widespread lesions accompanied by significant pain and purulent discharge [31].

3.1. Medical History

The patient's medical history revealed a 15-year history of type 2 diabetes mellitus managed with metformin hydrochloride 1000 mg and glimepiride 3 mg daily. His surgical history included circumcision performed 15 years prior. The social history was significant for a 25-year history of smoking, which he had discontinued three years before presentation, and alcohol consumption spanning 25 years, ceased one week before admission [32].

3.2. Physical Examination and Laboratory Findings

Upon examination, vital signs were within normal limits. Laboratory investigations revealed significant abnormalities in multiple parameters. Hematological findings showed anemia with hemoglobin at 9.4 g/dL, elevated white blood cell count of 17,600 cells/cumm, and platelet count of 577,000/cumm. Inflammatory markers were markedly elevated, with ESR at 104 mm/hr and CRP at 161 mg/L. The patient's uncontrolled diabetic state was evident through elevated blood glucose levels: fasting blood sugar of 323 mg/dL, post-prandial blood sugar of 362 mg/dL, and random blood sugar of 301 mg/dL [33].

3.3. Treatment Course

The management approach incorporated both preoperative and postoperative interventions. Preoperative preparation included administration of intravenous augmentin 625 mg, tetanus toxoid prophylaxis, and supportive medications including dulcolax, pantoprazole, and metoclopramide. Surgical intervention involved excision of the affected tissue followed by reconstruction using a thoracodorsal artery perforator (TDAP) fasciocutaneous flap [34].

Postoperative care consisted of a comprehensive medication regimen including intravenous amoxicillin-clavulanate 1.25 g twice daily, metronidazole 100 ml thrice daily, and oral medications including pantoprazole 40 mg daily, paracetamol 650 mg thrice daily, and doxycycline 100 mg twice daily. Diabetes management was optimized with a combination of short-acting insulin (Humulin Actrapid 22-22-18 units subcutaneously thrice daily) and long-acting insulin (Lantus 10 units at bedtime) [35].

During the four-week hospital stay, the patient demonstrated significant improvement. The surgical site showed appropriate healing with the TDAP flap providing adequate coverage. The patient's glycemic control improved with the adjusted insulin regimen. Upon discharge, the medication regimen was modified to include oral antibiotics (amoxicillin-clavulanate, doxycycline, and metronidazole), along with continued insulin therapy and supportive medications [36].

4. Discussion

This case shows the typical interactioin between hidradenitis suppurativa and diabetes mellitus, highlighting several critical aspects of disease management and treatment outcomes. The patient's presentation demonstrated the characteristic progression of HS from initial nodular lesions to extensive inflammatory involvement, complicated by the presence of uncontrolled diabetes [37].

The role of metabolic dysfunction in disease severity became evident through this case. The patient's poorly controlled diabetes, as indicated by elevated blood glucose levels, likely contributed to the aggressive nature of his HS lesions and the subsequent complications. This observation aligns with current literature suggesting that metabolic disorders can significantly impact the natural history and treatment response of HS [38]. The surgical approach employed in this case merits particular attention. The decision to utilize a thoracodorsal artery perforator flap for reconstruction represented a careful balance between achieving adequate tissue coverage and maintaining functional outcomes. The success of this approach, despite the presence of significant metabolic derangement, underscores the importance of proper surgical planning and technique selection [39]. Perioperative management proved crucial in this case. The implementation of a comprehensive antibiotic regimen, combined with aggressive glycemic control through insulin therapy, created an optimal environment for surgical success and wound healing. This multifaceted approach addressed both the primary pathology and the underlying metabolic disorder [40].

The case also shows the significance of prolonged postoperative monitoring and management. The extended hospital stay allowed for close observation of wound healing, adjustment of insulin therapy, and management of potential complications. This intensive monitoring period proved beneficial in achieving favorable outcomes despite the presence of significant risk factors [41].

From a broader perspective, this case reinforces several important principles in the management of complex HS cases. First, the importance of addressing metabolic comorbidities cannot be overstated. Second, the timing of surgical intervention must be carefully considered in relation to metabolic control. Third, the choice of reconstruction technique must account for both local tissue quality and systemic factors affecting wound healing [42]. The successful outcome in this case can be attributed to several factors: proper patient selection, meticulous surgical technique, appropriate flap choice, and comprehensive metabolic control. However, it is important to note that such results require significant resources and prolonged hospital stay, factors that must be considered in treatment planning [43].

Long-term follow-up remains essential in such cases to monitor for disease recurrence and maintain metabolic control. The establishment of a comprehensive care plan, including regular monitoring of both HS and diabetes, represents a crucial element in preventing future complications and maintaining therapeutic gains [44].

5. Conclusion

This case shows the importance of early recognition and aggressive treatment of hidradenitis suppurativa in patients with concurrent diabetes mellitus. Blood sugar control plays a vital role in the patient's overall treatment success, indicating that managing underlying metabolic conditions is crucial for better outcomes. The combination of surgical intervention and targeted medical therapy led to significant improvement in symptoms and prevented disease progression. This case shows that successful treatment requires both proper wound care and strict metabolic control, serving as a valuable example for managing similar complex cases in clinical practice.

Compliance with Ethical Standards

Acknowledgments

We extend our sincere gratitude to the multidisciplinary healthcare team involved in patient care. We also thank the diagnostic departments for their prompt support and the nursing staff for their dedicated care.

Conflicts of Interest

The authors declare no conflicts of interest that could have influenced this study. No funding was received for this case report.

Ethical Compliance

This case report adheres to the ethical guidelines of our institutional review board and complies with the 1964 Helsinki Declaration and its subsequent amendments. As per institutional policy, ethics committee approval is not required for case reports.

Informed Consent

Written informed consent was obtained from the patient for publication of this case report and associated clinical data. All identifying information has been removed to maintain patient confidentiality in accordance with international privacy standards and HIPAA regulations.

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