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Case Report
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A Rare Case of Spontaneous Non-Surgical Meleney's Gangrene in a Middle-Aged Female with Poorly Controlled Diabetes Mellitus

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ABSTRACT:

Meleney's gangrene is a rare form of necrotizing fasciitis that most often arises after surgical operations or minor injuries. It is about a 52-year-old woman who had a history of poorly controlled diabetes mellitus and, without any history of surgery or trauma, developed spontaneous Meleney's gangrene in the infraumbilical and medial thigh areas. This case highlights the need for prompt diagnosis and intensive therapy of necrotizing soft tissue infections, particularly in individuals with diabetes.

KEYWORDS: *Soft tissue infections, Bacterial infections, Diabetes mellitus(dm), Meleney's gangrene*

List of Abbreviations

WBC = White Blood Cell Count, HbA1c = Hemoglobin A1c, ALT = Alanine transaminase, RBS = Random Blood Sugar, SpO_2 = Peripheral Oxygen Saturation.

INTRODUCTION:

Melaney's gangrene, a condition also termed progressive bacterial synergistic gangrene, is an infrequent and highly contagious infection presenting with the death of subcutaneous tissue and skin. If not carefully treated, it can lead to muscle damage. [1]. The epidemic condition was initially diagnosed in the 18th century, under many new names such as Fournier's gangrene, hospital gangrene, and necrotizing fasciitis. [2]. In 1926, Drs. Brewer and Meleney reported a case of this progressive gangrene in New York, and in 1931, they identified the microorganisms responsible for it. [3]. The new name of the condition, Meleney's ulcer or postoperative synergistic bacterial gangrene, comes from the fact that it is an infection caused by the mutual infection of non-hemolytic Streptococcus and hemolytic Staphylococcus species. [4]. The symptoms first appear during the second week after a surgical operation or moderate trauma. Successful treatment involves thorough debridement and suitable antibiotic therapy; if it is not provided in time, severe complications, including death, could happen [5].

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CASE PRESENTATION

A 52-year-old female, who was a known case of poorly controlled diabetes mellitus, was brought to the outpatient department of Faisalabad Medical Hospital. She was then managed in the medical ward from February 2, 2025, to March 1, 2025.

Figure 1: Necrotic lesion in the infraumbilical region showing classic features of Meleney's gangrene with surrounding erythema and induration. Patient identity has been removed to preserve confidentiality.

The patient was informed, and written consent was taken at the time of admission. Although the patient was admitted to Faisalabad Medical Hospital, the case was collaboratively studied and managed by a multidisciplinary team, including the authors, who were affiliated with various medical institutions, including Quaid-e-Azam Medical College, Multan Medical and Dental College, and Faisalabad Medical University.

The patient came in with a two-month history of worsening blackish discoloration and dead tissue in the areas below her navel and on her inner thighs. The problem began as dark patches and gradually developed into open sores. The patient reported no history of injury, recent surgery, fever, or infection. Her medical background included poorly controlled diabetes and high blood pressure, treated with regular medication. During the physical exam, her vital signs were as follows: blood pressure was 130/60 mmHg, pulse rate was 82 beats per minute, respiratory rate was 18 breaths per minute, and oxygen saturation was 98%. Upon local examination, a 15x5 cm necrotic lesion was discovered in the infraumbilical region of the patient. The lesion was surrounded by redness and swelling. A similar necrotic patch with the same features was found on the inner thigh. However, no crepitus or pus was observed (Figure 1). Investigations revealed leukocytosis with neutrophilia, and other laboratory findings are summarized in Table 1. Liver and kidney function tests were routine. Blood cultures and wound swabs were pending.

When the patient was admitted, the glycated hemoglobin level was 9.5%, indicating poor blood sugar control. The patient was treated with a structured plan that focused on controlling blood sugar, managing infections, stabilizing cardiovascular health, and providing overall supportive care. Random blood sugar levels were checked three times daily to guide the administration of regular subcutaneous insulin, which was adjusted based on sliding scale protocols. Intravenous Risek

40 mg was given once daily for gastric protection against stress-related mucosal damage. Additionally, intravenous Cleare 0.6 cc was administered twice daily to reduce the risk of blood clots and improve vascular health during hospitalization.

To manage high blood pressure, oral Amlodipine 10 mg was prescribed once daily, and oral Aldomet 25 mg was given twice daily for extra blood pressure control. For pain or supportive needs, injection Provas was provided as needed. For infection management, intravenous Meropenem 500 mg was given twice daily.

Figure 2: Laboratory Findings on Admission

Test	Result	Reference Range	Unit
White Blood Cell Count	**14,500**	**4,000–11,000**	**cells/µL**
Neutrophils	82%	40–70%	%
Hemoglobin A1c (HbA1c)	9.5	<5.7	%
Random Blood Sugar (RBS)	235	70–140	mg/dL
Serum Creatinine	0.9	0.6–1.3	mg/dL
ALT (Alanine Transaminase)	25	7–56	U/L
Blood Pressure	130/60	90/60–120/80 (normal)	mmHg
Pulse Rate	82	60–100	bpm
Respiratory Rate	18	12–20	breaths/min
Oxygen Saturation (SpO_2)	98%	95–100%	%

Polyfax ointment was applied topically to prevent and treat localized infections. Finally, fluid and electrolyte balance was maintained using cap D/S with normal saline intravenously. The treatment approach was comprehensive.

DISCUSSION

Meleney's gangrene is a rare condition, and it is a very severe necrotizing fasciitis. It has a death rate of 30% to 40%, which can go up to 90% and more if the patient has untreatable diabetes. The infection is most often seen in people whose immune systems are compromised [6]. These people are patients after surgery, those with diabetes, older adults, or those who have HIV or any other condition that causes immunosuppression [7].

The disease can begin with a small, painless skin ulcer or a wound. But quickly it gets to the deepest skin layer, it also results in small blood vessels clotting, and thus it causes widespread tissue death and gangrene [8]. Though it can happen anywhere, Meleney's gangrene is most frequently on the trunk, especially after abdominal surgery [6,9].

One of the significant difficulties in diagnosing this illness is that the initial signs are very similar to those of other infections, such as cellulitis or abscesses. That is why it can lead to misdiagnosis or a late diagnosis. The reason why the results might not be good is the lack of prompt treatment.

To simplify treatment, specialists now recommend referring to all these severe infections as necrotizing soft tissue infections (NSTIs). Monitoring patient conditions earlier and employing standardized treatment protocols will help improve patient outcomes and decrease mortality [9].

Meleney's gangrene treatment should be started as soon as possible. Extensive removal of necrotic tissue should be carried out, and antibiotics with a broad spectrum of activity should be used to treat the infection. Furthermore, negative pressure wound therapy (NPWT) has also been indicated to be helpful in those patients who accept this type of treatment [6,10]. This case is very special and rare

because the patient did not have any history of surgery or trauma, which are the most common causes of the disease. She had diabetes mellitus

Patients with Meleney's gangrene who have underlying conditions like diabetes mellitus are amongst the cohorts that are most likely to develop a significant number of potentially serious complications. The most vital issue that comes to mind with such patients is the appearance of diabetic ketoacidosis (DKA) and hyperosmolar hyperglycemic state (HHS), which are both very dangerous and have to be treated urgently. Both of them require continuous monitoring and timely intervention [11]. Besides that, hypoglycemia is the other problem that can arise as a result of insulin therapy. In particular, in case a sliding scale treatment plan is used, and no proper regulation of food intake and blood sugar levels is carried out, hypoglycemia will be inevitable [12].

Furthermore, the patients are prone to develop cardiovascular complications; the probability is even higher if they take such medications as amlodipine and methyldopa, and if these drugs are prescribed along with their chronic treatment, the chances are the highest.

CONCLUSIONS

This case emphasizes the need to include Meleney's gangrene when diagnosing fast-spreading necrotic skin issues, even if the patient has no history of surgery or apparent injuries. Close monitoring is crucial for patients with diabetes mellitus or other conditions that weaken the immune system to detect such infections, and swift, intensive treatment is vital for better results.

INFORMED CONSENT

Informed consent for treatment and open access publication was obtained or waived by all participants in this study. Department of Medical Education issued approval Exemption. This retrospective study was granted exemption according to the IRB exemption rule, as patient consent had already been obtained at the time of admission. This study occurs for educational purposes as well. All data were anonymized to ensure confidentiality, and the study complied with ethical standards.

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