

From Healthy to Severely Wasted: Marasmic-Kwashiorkor and Suspected Necrotizing Fasciitis of the Lip in a 9-Month-Old Infant

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ABSTRACT

Background: Severe Acute Malnutrition (SAM) remains a major cause of infant mortality in low-income countries, often arising from a complex interplay of dietary insufficiency and adverse social determinants of health. Cutaneous complications are common, but severe, rapidly progressive soft tissue infections like necrotizing fasciitis are rare and carry a high mortality risk.

Case Presentation: We report a 9-month-old female infant who presented with a three-month history of progressive weight loss and a one-month history of a non-healing lower lip ulcer. The infant's weight had plummeted from a healthy 8kg at six months to 4.6kg at admission. Anthropometric measurements confirmed severe wasting and stunting (weight-for-height and weight-for-age < -3SD), with bilateral pitting edema, consistent with marasmic kwashiorkor. The lower lip lesion had evolved from a sore to a pustule and finally to a 2×1.5cm ulcer with regular margins, provisionally diagnosed as suspected necrotizing fasciitis in the context of immunosuppression from SAM. Critically, the etiology was traced to severe dietary insufficiency following the mother's abandonment by her family after a subsequent pregnancy, leaving her without resources for adequate complementary feeding. The infant had no history of chronic illness, and HIV serology was negative. The infant initially demonstrated clinical improvement and was discharged home; however, she was readmitted three days later with aspiration pneumonia and sepsis and subsequently died.

Conclusions: This case illustrates the devastating and rapid progression of severe acute malnutrition when compounded by social factors. It highlights the rare but serious complication of necrotizing fasciitis of the lip in an infant with SAM, and tragically demonstrates the high risk of post-discharge relapse and death when underlying social determinants remain unaddressed. The case underscores the need for integrated management that addresses both severe medical complications and root causes—including family support, food security, robust discharge planning, and community-based follow-up—to prevent mortality.

KEYWORDS

Severe acute malnutrition, Marasmic kwashiorkor, Necrotizing fasciitis, Infant, Case report, Social determinants of health.

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Received: April 27, 2026; **Accepted:** May 29, 2026; **Published:** June 06, 2026

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Citation: Mercy Maya, Macrina Kato, Zivonishe Mwazyunga, Frank Sifael Kessy, Gladness Lyimo. From Healthy to Severely Wasted: Marasmic-Kwashiorkor and Suspected Necrotizing Fasciitis of the Lip in a 9-Month-Old Infant. J Oral Dental Care. 2026;3(1):1-5.

Introduction

Severe Acute Malnutrition (SAM) remains a critical public health challenge in low- and middle-income countries, contributing significantly to under-five mortality. It presents in various forms, including marasmus (severe wasting) and kwashiorkor (characterized by edema), with marasmic-kwashiorkor representing a mixed phenotype [1]. The etiology is often multifactorial, involving inadequate dietary intake, recurrent infections, and poor childcare practices [2]. Beyond the immediate medical issues, SAM is frequently a manifestation of profound social and economic vulnerability [3].

Cutaneous complications are common in SAM, particularly in kwashiorkor, where flaky paint dermatosis is a classic sign. However, severe soft tissue infections like necrotizing fasciitis (NF) are a less common but life-threatening complication. NF is a rapidly progressive bacterial infection that causes necrosis of the subcutaneous tissue and fascia, requiring prompt surgical and medical intervention [4]. Its occurrence in the context of SAM, where immune function is severely compromised, presents a grave prognostic challenge. Noma (cancrum oris), another devastating orofacial gangrenous condition associated with severe malnutrition and poverty, should also be considered in the differential diagnosis of rapidly progressive oral lesions in children.

We report a case of an infant with marasmic-kwashiorkor who developed progressive necrotizing fasciitis of the lower lip, set against a backdrop of severe dietary insufficiency and family breakdown. This case is notable for its dramatic clinical progression, the rarity of the infectious complication at this anatomical site, and the stark illustration of how social pathology can drive severe clinical deterioration.

Case Presentation

Clinical History

A 9-month-old female infant was brought to the pediatric ward by her biological mother with complaints of poor weight gain over three months and a lower lip ulcer for one month. The mother reported that the infant was born at term via SVD with a normal birth weight (2.7kg) and achieved a peak weight of 8kg at six months of age (approximately October 2024). Subsequently, over the next three months, the infant lost weight progressively, dropping to 4.6kg at presentation at nine months of age.

The mother, a 22-year-old housewife and first-time mother, reported that the infant was exclusively breastfed for six months. Complementary feeding was then introduced, consisting of porridge made from maize flour, sometimes mixed with milk, soya, or sorghum. Crucially, the infant reportedly poorly tolerated and frequently refused the complementary feeds. The mother reported profound social distress: she became pregnant with her second child when the index infant was five months old. Following this, the paternal family withdrew all support, leaving her without resources for food or childcare. There was no history of diarrhea, vomiting, fever, or cough.

One month prior to admission, a sore developed on the lower lip. It progressed to form a pustule, which ruptured, leaving an ulcer that failed to heal despite treatment at multiple health centers.

Clinical Examination

On examination, the infant was alert but visibly wasted and edematous. She was afebrile with no signs of respiratory distress.

Anthropometric measurements were severe:

- **Weight:** 4.6 kg (Weight-for-age < -3SD, severely underweight)
- **Height:** 60 cm (Height-for-age < -3SD, severe stunting)
- **Weight-for-Height:** < -3SD (severe wasting)
- **Mid-upper arm circumference (MUAC):** 11 cm (< -3SD, severe wasting)

General examination revealed pallor, bilateral pitting edema of the lower limbs, and a visible wasted appearance. Systemic examinations (respiratory, cardiovascular, abdominal, CNS) were unremarkable except for signs of muscle wasting.

Local Examination (Figure 1A-C): A solitary, well-demarcated ulcer was present on the lower lip, measuring approximately 2 x 1.5 cm. It had regular margins, a clean base with no visible pus, and was non-tender. The surrounding tissue did not show significant induration at the time of admission. No crepitus or active bleeding was noted.



Figure 1: Clinical Progression of the Disease.

A. The infant at approximately 6 months of age, appearing well-nourished and healthy.

Diagnostic Investigations

Basic investigations were performed, though limitations in resources prevented extensive workup.

- **Hemoglobin:** 8.2 g/dL (indicating moderate anemia)
- **HIV Serology (Mother & Child):** Negative
- **Malaria Blood Smear:** Negative
- **Stool Microscopy:** No ova, cysts, or parasites seen.

A clinical diagnosis of **Severe** Acute Malnutrition (Marasmic-Kwashiorkor type) secondary to severe dietary insufficiency was made. The lip ulcer was provisionally diagnosed as *suspected necrotizing fasciitis*, given its rapidly progressive, destructive, and non-healing nature in the context of profound immunosuppression from severe acute malnutrition, even in the absence of initial systemic signs. Advanced imaging and histopathological confirmation were not available because of resource limitations; however, pus culture and sensitivity testing was performed.



B. The infant at 8-9 months, showing the early signs of wasting and the initial sore on the lower lip.



C. The infant at admission, showing profound wasting, bilateral limb edema, and the established, non-healing ulcer on the lower lip. This image illustrates the marked progression of wasting and tissue injury over time. (A) weight 8 kg. (B) weight approximately 5.5 kg. (C) weight 4.6 kg. Images published with written parental consent

Clinical Course and Outcome

The child was admitted to Ward 2A and started on therapeutic feeding according to WHO guidelines. She was given locally made F75 (38 mL every 2 hours over 24 hours) for 5 days, then shifted to F100 (75 mL every 3 hours) for 4 days. She tolerated the feeds well. The patient was shifted to ready-to-use therapeutic food (RUTF) as she had a good appetite after the appetite test. The mother was trained on how to feed her daughter given the lip ulcer, which impaired the child's ability to feed properly. Pus culture and sensitivity testing was performed, and the isolated organism was *Enterobacter* species, sensitive to ceftriaxone-sulbactam. The organism was resistant to ampicillin, ceftriaxone, ciprofloxacin, and gentamicin. Other medications provided were folic acid, Pedzinc, and SlowK. Daily dressing was performed with topical metronidazole gel.

Although edema subsided during treatment, the discharge weight was 4.48 kg, likely reflecting loss of excess fluid rather than nutritional deterioration. The patient demonstrated clinical improvement, and the ulcer gradually reduced in size from 2×1.5 cm to 0.9×0.7 cm. She was discharged home with nutritional counseling, a meal plan, and a follow-up appointment.

Unfortunately, the infant was readmitted three days later with sudden onset difficulty in breathing following feeding, raising concern for aspiration. On readmission, she appeared critically ill with features consistent with aspiration pneumonia and sepsis. Despite emergency supportive management and resuscitative efforts, her condition deteriorated rapidly, and she died the same night.

Discussion

This case presents a confluence of medical and social emergencies leading to a critical condition in an infant. It provides several key learning points regarding the rapid onset of SAM, an unusual infectious complication, and the indispensable role of social history.

The Rapid Trajectory of Severe Acute Malnutrition

The infant's weight loss from 8kg to 4.6kg over approximately three months is a stark indicator of the acute and severe nature of her nutritional decline. This trajectory from a healthy weight to severely wasted, coupled with the development of edematous malnutrition (kwashiorkor features), is characteristic of a rapid and profound nutritional insult [5]. The failure of complementary feeding, due to both food insecurity (reliance on a nutritionally inadequate, rejected porridge) and social disruption, was the primary driver. This case reinforces that the transition from marasmus to kwashiorkor can occur quickly when oxidative stress and infection trigger a maladaptive metabolic response in a malnourished child [6].

Necrotizing Fasciitis of the Lip: A Rare and Severe Complication

While skin breakdown and infections are common in SAM,

necrotizing fasciitis is a rare but life-threatening complication [7]. The diagnosis is primarily clinical, especially in resource-limited settings. In this infant, the diagnosis was suspected based on the progressive, non-healing nature of the ulcer following a pustule, in the context of severe immunosuppression. Malnutrition leads to impaired cell-mediated immunity, defective phagocyte function, and compromised skin integrity, creating a perfect storm for aggressive bacterial soft tissue infections [8]. The lip, while an unusual site for NF, is plausible following minor trauma or a mucosal breach. The absence of systemic toxicity initially could be attributed to a blunted inflammatory response, a known phenomenon in malnourished children, which can mask the severity of the infection [9]. Differential diagnoses considered included noma (cancrum oris), severe bacterial cellulitis, and ulcerative impetigo. Although noma was considered because of the severe malnutrition and orofacial involvement, the lesion remained relatively localized to the lower lip without the extensive gangrenous destruction of facial tissues classically associated with cancrum oris.

The Social Determinants of Health as Primary Etiology

Perhaps the most critical aspect of this case is the social history. The 22-year-old mother, unsupported by her family after a new pregnancy, became the sole caregiver for an infant while likely pregnant and without resources. This loss of family support directly caused the dietary insufficiency. The case highlights that medical intervention alone is futile without addressing the root cause. As the World Health Organization emphasizes, managing SAM requires not only therapeutic feeding but also addressing the underlying social and economic context [12]. This includes family counseling, nutritional education, and linkage to social support systems to prevent relapse after discharge. Structured community follow-up and linkage to social welfare support services remain critical yet under-resourced components of severe acute malnutrition management in many low-income settings.

This case tragically illustrates a well-documented but under-addressed phenomenon in the management of SAM: the high rate of post-discharge relapse and mortality [10]. While the initial hospitalization successfully treated the acute medical presentation, the underlying social determinants—food insecurity and lack of family support—remained unaddressed. This underscores the critical importance of not only in-patient management but also robust discharge planning, community-based follow-up, and social support systems to ensure sustained recovery. Without addressing the root cause, the cycle of malnutrition and vulnerability is likely to repeat, often with fatal consequences [11]. This case reinforces the need for integrating medical treatment with social protection systems to reduce post-discharge mortality in vulnerable children. This report has limitations. Histopathological confirmation and advanced imaging were unavailable because of resource constraints. Therefore, the diagnosis of necrotizing fasciitis remained clinical and presumptive.

Conclusion

We report a case of a 9-month-old infant with marasmic-kwashiorkor and suspected necrotizing fasciitis of the lip, directly resulting from severe dietary insufficiency driven by family breakdown and poverty. This case highlights the interplay between social and biological factors through vivid photographic documentation of clinical deterioration. It serves as a potent reminder to clinicians that a comprehensive history, including the social environment, is as crucial as the physical exam. This case serves as an important reminder of the lethal potential of severe malnutrition and the fatal consequences of its relapse. It underscores that medical treatment alone is insufficient without concurrent, aggressive intervention to address the underlying social determinants of health. Preventing such fatal outcomes requires a holistic, long-term approach that extends well beyond hospital discharge.

Acknowledgments

We extend our sincere gratitude to the mother of the infant for her cooperation and for allowing us to share her child's story in the hope of improving care for others. We also acknowledge the nursing and medical staff of Ward 2A for their committed efforts in managing this challenging case.

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