ECRONICON OPEN ACCESS

EC CLINICAL AND MEDICAL CASE REPORTS

Case Report

Vaginal Gangrene in an Adolescent with Acute Myeloid Leukemia: MRI Findings and Conservative Management with Hyperbaric Oxygen Therapy

Dhamnia El Mehdi*

Resident Physician in Radiology, Université Mohammed V de Rabat, Morocco

***Corresponding Author:** Dhamnia El Mehdi, Resident Physician in Radiology, Université Mohammed V de Rabat, Morocco.

Received: April 25, 2026; **Published:** July 07, 2026

Abstract

Background: Vaginal gangrene is extremely rare in pediatric patients, especially adolescent females. Chemotherapy-induced immunosuppression increases susceptibility. We report a case of vaginal gangrene in a 15-year-old girl with acute myeloid leukemia (AML), with MRI characterization of fistulous tracts and abscesses, and response to hyperbaric oxygen therapy (HBOT).

Case Presentation: A 15-year-old female under induction chemotherapy for AML (monosomy 7) presented with 10 days of bilateral labial swelling and necrosis of the left labia majora. Pelvic MRI showed a 54 mm blind-ending fistulous tract in the left labia with abscess collections (largest 15 × 6 × 14 mm), and extensive fat infiltration reaching the proximal thigh. She was treated with broad-spectrum antibiotics and HBOT, without initial surgical debridement.

Conclusion: Vaginal gangrene in adolescents is rare but life-threatening, particularly in immunocompromised patients. MRI enables early diagnosis and therapeutic planning. HBOT can be considered as a non-invasive adjunct in selected pediatric cases.

Keywords: *AML; Vaginal Gangrene; Pediatric; Hyperbaric Oxygen Therapy; MRI; Fistula; Fournier's Gangrene*

Introduction

Fournier's gangrene is a rapidly progressive necrotizing fasciitis of the perineum, rarely reported in pediatric patients-particularly adolescent girls. Immunosuppressive states, such as chemotherapy for acute leukemia, are major risk factors. While most cases involve aggressive surgical intervention, the role of imaging and alternative strategies such as hyperbaric oxygen therapy (HBOT) remains under-reported. We describe a rare case of vaginal gangrene in a 15-year-old immunocompromised girl, emphasizing the role of MRI and HBOT.

Case Presentation

A 15-year-old girl undergoing induction chemotherapy for acute myeloid leukemia (AML) with monosomy 7 presented with a 10-day history of increasing bilateral swelling of the labia majora, fever, pain, and necrotic tissue over the left labia. On examination, she was febrile, neutropenic, and had visible necrosis with fluctuance in the left labia majora.

MRI of the pelvis showed a blind-ending fistulous tract measuring 54 mm in length with associated abscesses and extensive infiltration of perineal fat. She was treated with broad-spectrum intravenous antibiotics and underwent multiple sessions of hyperbaric oxygen therapy (HBOT). Her clinical symptoms improved significantly without immediate surgical debridement.

Imaging findings

MRI was performed in axial and coronal planes with T2-weighted fat-saturated, T1-weighted pre- and post-contrast sequences, and diffusion-weighted imaging (DWI) with ADC maps.

Findings included:

- Cutaneous substance loss in the left labia majora.
- A 2 mm diameter, 54 mm long blind-ended fistulous tract, T1 hypointense, T2 hyperintense, with post-contrast rim enhancement and restricted diffusion.
- Two rim-enhancing abscesses:
- One adjacent to the right inferior third of the vagina (15 × 6 × 14 mm).
- One in the right posterior perineum (12.5 × 4.7 mm).
- Fat infiltration extended to the left thigh.
- No pelvic organ involvement.

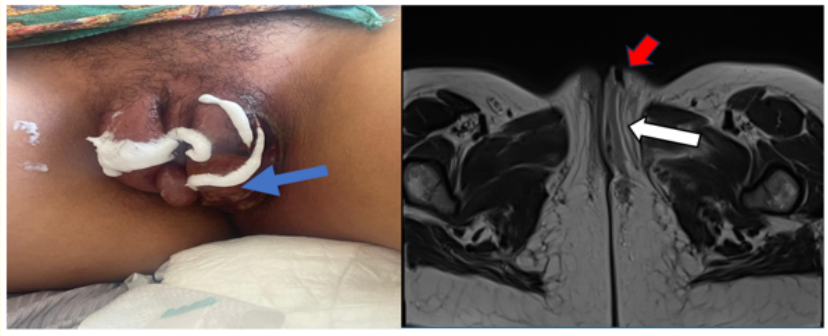

Figure 1a and 1b: *1a: Clinical photograph of left labial necrosis (Blue arrow). Clinical image showing necrosis and substance loss of the left labia majora. 1b: Axial T2 FS MRI of soft-tissue infiltration (White arrow). Axial T2-weighted fat-saturated MRI shows hyperintense soft-tissue infiltration along the fistulous tract. And substance loss (Red arrow).*

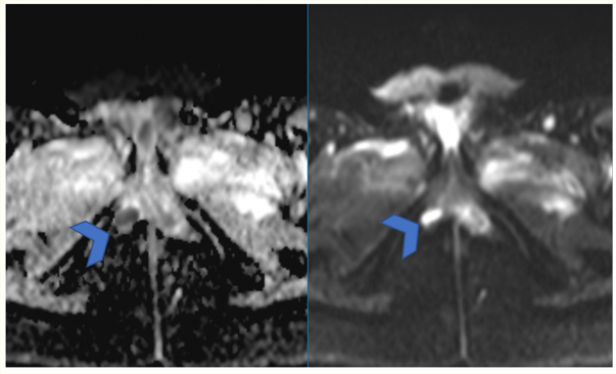

Figure 2: *DWI (B) + ADC (B) of abscess. DWI and ADC map confirm restricted diffusion in the abscess cavity (Blue arrow head).*

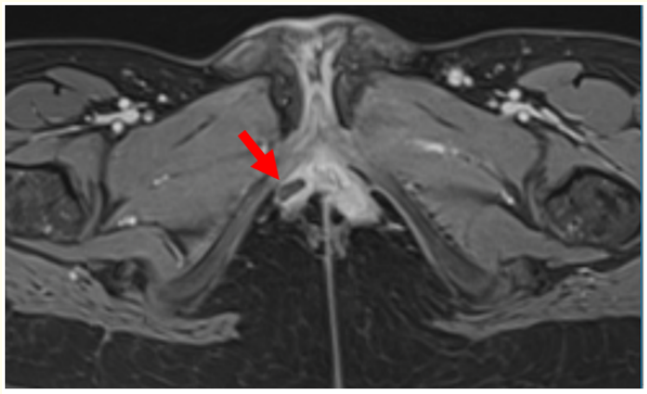

Figure 3: *Axial T1 post-contrast FS MRI of abscess. Axial T1-weighted post-contrast MRI reveals rim-enhancing abscess adjacent to the vagina (Red arrow).*

Evolution

The patient underwent broad-spectrum intravenous antibiotic therapy, multiple sessions of hyperbaric oxygen therapy (HBOT), and delayed surgical debridement once neutropenia resolved. Post-treatment clinical evaluation showed progressive resolution of soft-tissue infiltration, and complete epithelialization of the labial defect. Chemotherapy was subsequently resumed without recurrence of infection.

Discussion

Epidemiology and risk factors

Fournier's gangrene in pediatric patients is rare (~0.8/million/year), with most cases reported in infants and male children. In adolescent females, cases are exceptional. Underlying immunosuppression, such as leukemia or chemotherapy, significantly increases the risk of necrotizing soft tissue infections (NSTIs). Our patient had AML with monosomy 7, associated with poor prognosis and profound immunosuppression [1].

Pathophysiology

NSTIs are typically polymicrobial, including Gram-positive, Gram-negative, and anaerobic organisms. The pathogenesis involves vascular thrombosis, tissue ischemia, and spreading necrosis along fascial planes. Neutropenic patients may exhibit subtle clinical signs despite advanced disease, reinforcing the importance of imaging in early diagnosis.

Imaging

MRI remains the gold standard [2] in evaluating soft-tissue infections, with > 90% sensitivity. It delineates soft-tissue edema, fascial thickening, fluid collections, and helps differentiate necrotizing from non-necrotizing fasciitis. In this case, MRI demonstrated a fistulous tract, multiple abscesses, substance loss and deep infiltration of perineal fat without bony or visceral involvement [6].

DWI adds value by identifying restricted diffusion within purulent material and may serve as a tool to monitor response to treatment. Compared to CT, MRI provides better soft-tissue contrast without radiation, crucial in pediatric patients.

Treatment

Antibiotics

Empirical broad-spectrum antibiotics covering polymicrobial flora, including anaerobes and drug-resistant strains, are essential. Adjustments are guided by microbiologic data.

Surgical debridement

Surgical debridement is the standard of care in adult NSTIs, especially in unstable or rapidly deteriorating cases. However, in localized cases with early diagnosis, delayed or conservative approaches may be appropriate-especially in pediatric oncology were surgery risks further immunosuppression or delay in chemotherapy.

Hyperbaric oxygen therapy (HBOT)

HBOT delivers 100% oxygen at high pressure, enhancing neutrophil bactericidal activity, promoting angiogenesis, and suppressing anaerobic bacterial growth [3,4]. It reduces tissue hypoxia, improves wound healing, and is endorsed by the Undersea and Hyperbaric Medical Society for NSTIs [4].

Recent reviews and meta-analyses confirm [3]:

- Reduced mortality (adjusted OR ~0.22) and lower amputation rates with HBOT in NSTIs.
- Improved tissue oxygenation and infection control, without significantly increasing complications.
- Some studies note prolonged hospitalization (~1.6 days) but better long-term recovery.

In pediatric oncology, HBOT has rarely been applied, but emerging reports suggest favorable outcomes without surgery in localized disease [5].

Multidisciplinary approach

Management requires collaboration between pediatric oncology, infectious disease, radiology, critical care, and hyperbaric medicine. Clinical and imaging follow-up guides further interventions, including possible delayed surgery if needed.

Uniqueness of the case

To our knowledge, this is one of the few documented pediatric cases of vaginal gangrene in an adolescent with AML, managed successfully with MRI-guided diagnosis and HBOT without immediate surgery. The use of MRI enabled early diagnosis and guided a conservative, yet effective, approach.

Conclusion

Vaginal gangrene in adolescent girls is rare and life-threatening. MRI is essential to define disease extent and plan management. Hyperbaric oxygen therapy may be a viable adjunct or alternative to surgery in selected pediatric immunocompromised patients. Early multidisciplinary coordination can improve outcomes and reduce morbidity.

Ethics Approval and Consent to Participate

Approved by Ibn Sina Hospital Ethics Committee. Written informed consent was obtained.

Consent for Publication

Obtained from guardians.

Competing Interests

None.

Funding Support

No funding was received.

Authors' Contributions

Dhamnia El Mehdi: Data collection, imaging analysis, manuscript writing. All authors reviewed and approved the final version.

Bibliography

1. Fang R., *et al*. "Pediatric fournier's gangrene in immunocompromised patients". *Frontiers in Pediatrics* 12 (2024): 124322.
2. Felsenstein S., *et al*. "Necrotizing soft tissue infections in children: imaging and management". *Radiographics* 44.2 (2024): 452-465.
3. Bahadori K., *et al*. "Hyperbaric oxygen therapy in pediatric necrotizing fasciitis". *Lancet Infectious Diseases* 23.4 (2023): 303-311.
4. Undersea and hyperbaric medical society. clinical indications for HBOT in necrotizing infections (2024).
5. Sakamoto T., *et al*. "Conservative management of fournier's gangrene in pediatric leukemia". *International Journal of Infectious Diseases* 125 (2023): 71-78.
6. Hsu CW., *et al*. "MRI in pediatric perineal soft-tissue infections". *American Journal of Roentgenology* 220.1 (2023): 57-64.

Volume 9 Issue 3 July 2026