The Rapid Diagnosis and Management of Fournier's Gangrene in a Diabetic Patient

Samantha Boever, OMS-IV, Setayesh Tsiao, OMS-II, and Ryan Hubbard, D.O., Clinical Assistant Professor
A.T. Still University, School of Osteopathic Medicine, Mesa AZ 85206
Author of Correspondence: sa207391@atsu.edu

Objective:

- The goal of this case report is to outline the clinical features, treatment challenges, and outcomes associated with Fournier's gangrene in a high-risk patient with multiple comorbidities. This case emphasizes the critical importance of prompt diagnosis and immediate intervention to prevent fatal outcomes.

Introduction:

- Fournier's gangrene is a rare, rapidly progressing necrotizing fasciitis of the perineal and genital regions, driven by polymicrobial infection.[1,2] It often originates from UTIs, abscesses, or trauma.[2,3] Predominantly seen in men aged 50-79[1,2], it is more severe in immunocompromised or diabetic individuals.[3] Rapid diagnosis and immediate surgical and antibiotic treatment are vital for survival.[4]

Case Presentation:

- **HPI:** Our patient is a 66-year-old male with a history of hypertension, hyperlipidemia, and type 2 diabetes mellitus who presented to the emergency department complaining of a draining abscess on his perineum. He first noticed pain in the area four days ago, and in the last two days, he has experienced worsening swelling and pain in his testicles bilaterally. Although he has had draining abscesses on his back in the past, he has not experienced pain this severe before. He denies any recent fevers, chills, abdominal pain, dysuria, hematuria, diarrhea, or constipation. He notes that his blood sugars have been around 120 each day, except for four days ago when he noted it was in the 300s. He has no other concerns or complaints.
- **Physical Exam:**
  - Vitals: T: 36.6 BP: 135/78 HR: 99 RR: 18 O2: 100%
  - General: Moderate distress, unable to sit due to pain
  - Genitourinary: Swelling and tenderness of the scrotum bilaterally, crepitus and purulent drainage from the perineum and posterior scrotum
- **Labs & Imaging: (See Figures 1 & 2)**
  - WBC: 36.5, BUN/Cr: 43/2.4, Lactic Acid: 4.8
- **Assessment & Plan:**
  - Fournier's Gangrene – Consulted urology and general surgery, will take patient to OR immediately
  - Severe sepsis – Received IV fluid bolus (30mL/kg), Started IV Vancomycin (15 mg/kg), Zosyn (3.375 g), and Clindamycin (600mg)
  - 3. Acute Kidney Injury – No baseline creatinine available, continue hydration and monitor response

Figure 1: Imaging

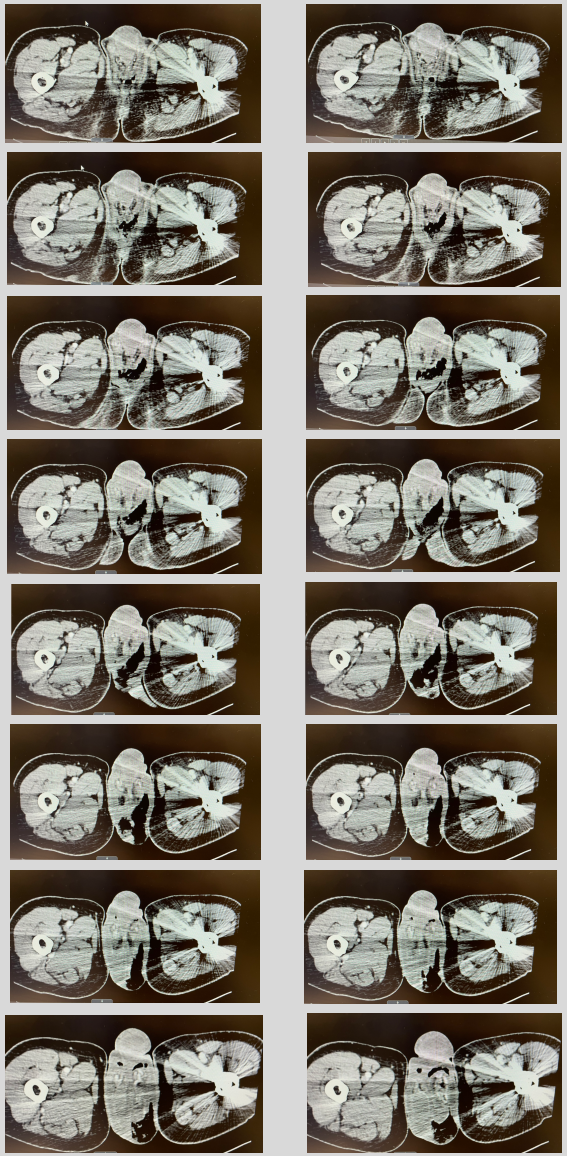
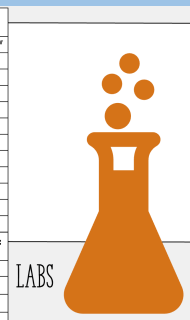


Figure 2: Pertinent Lab Values

CBC	Value:
WBC	36.5 (H)
RBC	3.56 (L)
Hgb	11.2 (L)
Hct	34.4 (L)
MCV	96.2
MCH	31.4
MCHC	32.6
RDW	15.2 (H)
Platelet Count	149 (L)
MPV	9.7
Automated Differential:	
Neutrophil Rel	82.7
Lymphocyte Rel	7.7 (L)
Monocyte Rel	9.4
Eosinophil Rel	0.1
Basophil Rel	0.1
Neutrophil Abs	30.2 (H)
Lymphocyte Abs	2.8
Monocyte Abs	3.4 (H)
Eosinophil Abs	0.1
Basophil Abs	0.1

UA Macroscopic	Value:
UA Color	Light Yellow
UA Appearance	Clear
UA Spec Grav	1.025
UA pH	5.5
UA Protein	30 (A)
UA Leuk Est	Trace (A)
UA Nitrite	Negative
UA Glucose	Normal
UA Ketones	Trace
UA Bili	Negative
UA Urobilinogen	Normal
UA Blood	Small (A)

UA Microscopic	Value:
UA WBC	6-10
UA RBC	0-2
UA Bacteria	Few
UA Squam Epith	0-2
UA Hyal Cast	0-3 (A)



CMP	Value:
Glucose Level	209 (H)
Sodium Lvl	138
Potassium Lvl	3.8
Chloride Lvl	106
CO2	19 (L)
AGAP	13.0
Calcium Lvl	8.7
BUN	43 (H)
Creatinine Lvl	2.40 (H)
BUN/Creat	18
Albumin Lvl	3.2 (L)
Globulin	3.0
A/G Ratio	1.1
Alk Phos	130 (H)
ALT	8
AST	8 (L)
eGFR CKD-EPI	29 (L)
Bilirubin Total	0.5
Lactic Acid	4.8 * (H)
Magnesium Lvl	1.5 (L)
Osmolality Calc	303
Total Protein	6.2

Discussion & Clinical Course:

- The patient was counseled on his options and **chose to undergo excision** of the necrotizing fasciitis, Fournier's gangrene.
- He was taken to the operating room and the skin was excised below the testicles and into the peritoneum. All tissue sent for culture.
- Then, **incision was extended near to the base of the penis. The excision extended deeply to the tunica vaginalis of the testicle.** At the end of the case, hemostasis was obtained.
- **There was healthy tissue at the edges of the excision**. Placed Kerlix gauze with Dakin solution across the excision.
- Wound care and plastic surgery consulted

Conclusion:

- Fournier's gangrene is a rapid, life-threatening infection with high mortality rate[1]
- Special attention should be given to patients with unexplained groin or scrotal pain, cellulitis or localized infection[1]
- Common in patients with DM, HTN, immunosuppressed[3,5]
- Physical exam with pain out of proportion to physical findings, may not be significant cutaneous manifestations in early stage[1]
- Interdisciplinary care is essential for improved outcomes[1]
- Medical resuscitation and antibiotics in combination with emergent surgical exploration and aggressive debridement is crucial[4]
- Medical treatment, labs, imaging should not delay surgery[3]
- Surgical debridement is the most important factor for survival[1]
- Hyperbaric oxygen and would care can help improve healing[1]
- Despite devastating complications, with appropriate management, patients are often pleased with their quality of life[1]
- Suprapubic tubes and diverting colostomies should be minimized[1]

References:

1: Leslie SW, Rad J, Foreman J. Fournier Gangrene. [Updated 2023 Jun 5]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK549821/
2: Wróblewska M, Kuzaka B, Borkowski T, Kuzaka P, Kawecki D, Radziszewski P. Fournier's gangrene--current concepts. Pol J Microbiol. 2014;63(3):267-73. Erratum in: Pol J Microbiol. 2015;64(1):60. PMID: 25546936.
3: Shyam DC, Rapsang AG. Fournier's gangrene. Surgeon. 2013 Aug;11(4):222-32. doi: 10.1016/j.surge.2013.02.001. Epub 2013 Apr 8. PMID: 23578806.
4: Stevens DL, Bisno AL, Chambers HF, Dellinger EP, Goldstein EJ, Gorbach SL, Hirschmann JV, Kaplan SL, Montoya JG, Wade JC; Infectious Diseases Society of America. Practice guidelines for the diagnosis and management of skin and soft tissue infections: 2014 update by the Infectious Diseases Society of America. Clin Infect Dis. 2014 Jul 15;59(2):e10-52. doi: 10.1093/cid/ciu444. Erratum in: Clin Infect Dis. 2015 May 1;60(9):1448. doi: 10.1093/cid/civ114. Dosage error in article text. PMID: 24973422.
5: Shubrook, Jay H. and Johnson, Amy W.. "An Osteopathic Approach to Type 2 Diabetes Mellitus" *Journal of Osteopathic Medicine*, vol. 111, no. 9, 2011, pp. 531-537. https://doi.org/10.7556/jaoa.2011.111.9.531