

FOURNIER'S GANGRENE

- Fournier's gangrene is a disease characterized by necrotizing fasciitis of the perineal, perianal, or genital areas.
- In 1883, Jean Alfred Fournier, French venereologist, described a series in which 5 previously healthy young men suffered from a rapidly progressive gangrene of the penis and scrotum.
- Frequency is uncommon, but true incidence is unknown; an average of 97 cases per year were reported from 1989-1998.
- Male to female ratio is approximately 10:1.
- Most reported cases occur in patients aged 30-60 years.

Anatomy

- This infection rapidly spreads along the fascial planes, usually in a matter of hours;
- Colles' fascia – the most important superficial plane of the perineum;
 - continuous with dartos fascia of the scrotum, and fuses with the urogenital diaphragm
 - continuous superiorly to become the Scarpa's fascia of the abdomen
- Infections arising in the perineal area can rapidly involve the skin of the scrotum, penis, and the superficial plane of the abdominal wall.
- Testicular involvement is rare – the testicular arteries originate directly from the aorta and thus have a blood supply separate from the affected region.

Bacteriology

- Infection is usually polymicrobial from bacteria that are normally present within the distal rectum and perianal area.
- Presents as a combination of aerobes and anaerobes, with an average of four bacteria being cultured;
- E. coli – the predominant aerobe; Bacteriodes – the predominant anaerobe;
- Other common microflora: Proteus, Staph., Strep., Enterococcus, Pseudomonas, Klebsiella, and Clostridium;
- The bacteria act synergistically, to invade and destroy fascial planes.
- In small percentage of cases no bacteria are identified in the wound culture.
- Rarely, Candida can be responsible.

Etiology

- The common causes are infections or trauma to anorectal region, genitourinary region, or trauma/infections to perineal and genital skin.
- Recent surgery and the presence of foreign bodies may also lead to the disease.
- Perianal infection is the single most common cause (19%-50% of cases).
- Ultimately, an obliterative endarteritis develops, and the ensuing cutaneous and subcutaneous vascular necrosis leads to localized ischemia and further bacterial proliferation.
- About 5% of cases have no identifiable cause.

- When an origin of the infection cannot be determined by the clinical examination or necrotic testicles found – abdominal source should be suspected (appendicitis, diverticulitis, Crohn’s disease, or incarcerated hernia).
- Many patients have an associated comorbidity: chronic alcoholism, post-transplant, post-chemotherapy, immunosuppression, steroid therapy, diabetes mellitus (up to 60% of cases), malnutrition, HIV;
- The mechanism of the infection is multifactorial.

Clinical Presentation

- Fournier’s gangrene usually starts with perianal or perineal pain and tenderness, which is often disproportionate with physical findings such as swelling or pruritus in the affected area.
- Patients may have fever, malaise for a few days, nonspecific abdominal pain, without specific symptoms from the perineal area
- Rapidly spreading necrosis of the skin and soft tissue with rates as high as 2-3 cm/h.
- **Skin appearance often underestimates the degree of underlying disease.**
- As gangrene develops, pain actually may subside as nerve tissue becomes necrotic.
- Patients may also present with signs of sepsis.
- Crepitus may be present due to presence of gas-forming bacteria.

Differential

Cellulitis; gas gangrene, testicular torsion, epididymitis, hydrocele, orchitis;

Diagnosis

- Based on clinical examination;
- A thorough genital and perianal examination is required to detect potential portal of entry.
- Radiological evaluation can speed up the diagnostic process in unclear cases.
- Scrotal US → exclusion other causes of an “acute” scrotum, presence of gas in the scrotal skin (“sonographic hallmark” of Fournier gangrene)
- CT scan can demonstrate thickening of the fascial planes, presence of gas, intra-abdominal or retroperitoneal progression of the infection.
- CT scan can also be important by demonstrating involved areas that are not clinically evident (can be helpful in surgical planning)

Treatment

Medical

- Correction of fluid and electrolyte imbalance;
- Broad-spectrum empiric antibiotic therapy (Unasyn, Zosyn, etc.);
- Tetanus prophylaxis may be necessary

Surgical (primary treatment)

- Examination under general anesthesia to identify the cause and the extent of the disease;
- Surgical debridement should be extended until well-perfused, viable tissue is identified.
- Tissue that can easily be divided from the fascial plane has to be completely removed.
- Follow-up re-exploration should be performed 24-48 hours after initial operation.
- Serial re-explorations until the infection is well controlled.

- If the rectum is extensively damaged, → major operation (ex. abdominoperineal resection)
- Extensive sphincter damage or extensive perineal debridements → colostomy is required
- Urologic etiology of the infection with stricture and urine leakage → suprapubic catheter is needed
- In cases of extensive scrotal skin necrosis, the testes can be protected in subcutaneous thigh or abdominal skin pockets or with skin flaps.
- Orchidectomy is rarely required;
- Hyperbaric oxygen therapy – controversial; no randomized, prospective studies done
- After surgery – regular daily dressing changes, irrigating with saline or iodine solutions
- Unprocessed honey and lyophilized collagenase can be used in postoperative wound treatment.

Outcome

- Mortality rate on average 20-30%
- Influenced by timing and adequacy of surgical treatment, age, comorbidities
- Patients with an anorectal source tend to have a worse prognosis as compared to those with a urologic origin;
- Positive blood culture – adverse prognostic factor

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