Case report

*Neisseria gonorrhoeae* pyomyositis complicated by compartment syndrome: A rare manifestation of disseminated gonococcal infection

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**Abstract**

Pyomyositis is a rare manifestation of disseminated gonococcal infection with few reported cases. A review of the literature reveals no such cases complicated by compartment syndrome. We present the first reported case of disseminated gonococcal infection presenting with pyomyositis complicated by compartment syndrome. Prompt surgical intervention and appropriate antimicrobial therapy are key components in management of this disease state.

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**Introduction**

Disseminated gonococcal infection (DGI) is rare and occurs in 0.5–3% of patients with *Neisseria gonorrhoeae* infection. While DGI is often associated with polyarthritis, tenosynovitis-dermatitis syndrome, or a suppurative arthritis syndrome, it has been rarely associated with pyomyositis or compartment syndrome. Patients with pyomyositis from DGI rarely have urinary symptoms or testing suggestive of *Neisseria gonorrhoeae* infection.

**Case report**

A 44-year-old male presented to the emergency department with a chief complaint of four days of constant, moderate left forearm pain with increasing swelling and erythema. The pain was gradual in onset and atraumatic. Review of systems was notable for upper respiratory infection symptoms including fever, cough, rhinorrhea, and myalgias. He denied nausea, vomiting, diarrhea, rash, joint pain, or genitourinary symptoms. The past medical history was significant for mild hypertension, not on pharmacotherapy. Social history was notable only for smoking. Surgical and family histories were unremarkable.

Initial vitals had temperature 36.5°C, blood pressure 139/109, heart rate 106, respiratory rate 17, and normal oxygen saturation. Physical exam revealed left forearm edema with tense compartments on the volar aspect, with mild erythema and severe pain with palpation and passive extension of the left digits and wrist.

There was no erythema or tenderness to the left wrist or elbow, and compartments were soft proximal to the elbow. The left radial and ulnar pulses were 2+ and capillary refill was less than 2 s.

Initial labs were significant for a white blood cell count 20,800/mL with 89% neutrophils, C-reactive Protein 16.6 mg/dL, sedimentation rate 51 mm/hr, glucose 313 mg/dL, and urinalysis with 3+ glucose, and 2+ ketones. A non-contrast CT of the left forearm revealed a hypodensity in the flexor compartment of the proximal forearm, with fluid extending along the subcutaneous myofascial border suggestive of pyomyositis. Empiric broad spectrum antimicrobial therapy with vancomycin and ceftriaxone was initiated. Due to concern for compartment syndrome, an orthopedic surgeon was consulted and compartment pressure testing measured 40 mmHg in the left forearm volar compartment. An emergent fasciectomy with incision and drainage of the left forearm was performed by the orthopedic surgeon.

Following surgery, antimicrobials were continued and adjusted to monotherapy with ceftriaxone after wound cultures grew gram-negative diplococci. Ceftriaxone was continued for a total of two weeks after wound culture confirmed *Neisseria gonorrhoeae*. Additional laboratory testing to include urine gonorrhoeae and chlamydia, blood cultures, anaerobic and fungal cultures, tuberculosis testing, rapid plasma reagin, and HIV testing all returned negative.

The patient had a good recovery with near-complete return to pre-illness functional status of the left upper extremity.

**Discussion**

Primary infection with *Neisseria gonorrhoeae* occurs through sexual contact or perinatally and involves genitourinary tract mucosa, or mucosa of the rectum, oropharynx, or conjunctiva.
Disseminated gonococcal infection (DGI) is the result of bacteremic spread, typically two to three weeks following primary infection [1]. This has classically been reported to occur in 0.5%–3% of infected individuals, however, recent evidence suggests that this rate is in decline [2]. DGI most often presents with either a tenosynovitis-dermatitis syndrome, with fever, skin lesions, and polyarthralgia affecting the hands, wrists, arms, and fingers, or a suppurrative arthritis syndrome, characterized by monarticular arthritis in a larger joint such as the knee, and fewer systemic signs and symptoms or skin lesions [3]. Rare manifestations of DGI include endocarditis, meningitis, and osteomyelitis. It should be noted that patients with DGI typically will not have urogenital symptoms at the time of presentation, such as the patient presented in this report, making DGI a difficult diagnosis [4].

This patient with pyomyositis secondary to DGI represents an exceptionnally rare diagnosis. Infectious myositis, the acute infection of skeletal muscle, is caused by a variety of organisms [4]. In temperate regions, Staphylococcus aureus is responsible for 66%–70% of cases [5]. Most other cases are caused by various streptococci bacteria. Neisseria gonorrhoeae has been reported in the literature as the etiologic agent of infectious pyomyositis in a paucity of cases. A review of the literature revealed 5 case reports dating back to 1943. These patients ranged from 16 to 48 years of age, with a mean of 26.8 years. 60% were female and 40% were male [6–10]. Sites of muscular involvement included upper extremity biceps (3) and lower extremity calf (2). Only one patient reported recent genitourinary symptoms. One patient’s symptoms were associated with trauma (ground level fall), and one patient’s symptoms were preceded by symptoms of an upper respiratory tract infection. Treatment typically involved a combination of antimicrobial therapy with incision and drainage or surgical debridement with good outcomes.

Pyomyositis as a complication of DGI is rare but should be considered in a sexually active patient with pyomyositis regardless of the presence or absence of genitourinary symptoms. Early diagnosis and a prompt surgical intervention coupled with optimal antimicrobial therapy remain the best option to reduce morbidity.

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Author contribution

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Declaration of Competing Interest

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