

CASE REPORT

## Disseminated gonococcal infection: an unusual presentation

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Gonococcus typically affects the mucosal surfaces but in rare cases can spread to bloodstream causing disseminated gonococcal infection (DGI). The usual presentation of DGI is rash, polyarthralgia, and tenosynovitis. We present the case of a 23-year-old female who presented to our hospital with pustular rash and tenosynovitis of hand and was sent home on Augmentin. Her symptoms worsened despite treatment and she presented back to the ED. On investigation, she was found to have DGI and was appropriately treated. DGI should be kept in mind in sexually active youngsters who have only one or two features of the classic triad of rash, tenosynovitis, and arthritis. Timely management and appropriate treatment of DGI is very important to avoid complications and morbidity.

Keywords: *disseminated; gonococcus; tenosynovitis; culture; rash; arthritis*

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Gonococcus mostly affects mucosal surfaces. However, in some instances, the organism can spread to the bloodstream resulting in disseminated gonococcal infection (DGI) (1). It commonly manifests as rash, tenosynovitis, and polyarthralgia, but it can also present as an isolated rash and tenosynovitis without polyarthralgia. DGI can be present in the absence of urogenital, rectal, or pharyngeal infection (2). We report the case of a 23-year-old sexually active female presenting with localized pustular rash and flexor tenosynovitis of hand without polyarthralgia or mucosal symptoms who was found to have DGI. She underwent treatment with IV ceftriaxone and tenosynovectomy with resolution of her symptoms.

### Case presentation

A 23-year-old sexually active female presented to the emergency department of our hospital complaining of left wrist pain and two small pustular lesions on palm of the left hand. The pain was associated with movements of hand. She denied history of drainage from pustules and fever. The review of systems was otherwise unremarkable. The initial vitals revealed heart rate of 126 bpm, temperature of 99.1 F, respiratory rate of 18/min, and blood pressure of 130/76 mmHg. On physical examination, the left wrist was tender on palpation while the hand movements were limited especially upon extension. There were two small pustular lesions one on the palm and the other on

the left thenar eminence with minimal erythema but no active drainage. The laboratory data revealed total white count of 24,900/ $\mu$ l (normal 4,500–1,000/ $\mu$ l). X-ray of left hand and wrist revealed no abnormalities. Wound culture was taken from one of the skin lesions. She was discharged home on Augmentin for presumed staphylococcal infection. Her pain continued to worsen despite antibiotic and she came back to the emergency department. A CT scan of the left hand revealed findings suggestive of tenosynovitis in the fourth extensor compartment but no abscess or septic arthritis. Due to her prior history of allergy to vancomycin, she was started on intravenous (IV) daptomycin and clindamycin. Further history revealed she had genitourinary gonococcal infection 3 years back and was treated appropriately with antibiotics. Her wound culture sent previously came back positive for *Neisseria gonorrhoeae*. Urine test was negative for gonococcus but positive for chlamydia. Blood cultures came back negative. Erythrocyte Sedimentation Rate (ESR) and C Reactive Protein (CRP) were within normal limits. Daptomycin and clindamycin were discontinued and she was started on IV ceftriaxone and azithromycin for the treatment of DGI and concomitant chlamydial infection. The edema and limitation of range of motion of the left hand persisted despite appropriate antibiotic therapy; hence, she underwent radical tenosynovectomy of the extensor compartment of the left wrist with resolution of her symptoms.

She was discharged home on IV ceftriaxone with follow-up in the infectious disease clinic. The duration of IV antibiotic treatment would be determined per her clinical improvement on subsequent follow-up.

## Discussion

*N. gonorrhoeae* commonly affects mucosal surfaces of the genital tract, rectum, or pharynx in sexually active adults resulting in localized infection. In some instances, gonococcus can spread to the bloodstream, resulting in systemic manifestations which are called DGI – a common cause of clinic or hospital visits in sexually active young adults (3). Common manifestations of DGI are mild fever, rash, tenosynovitis, and polyarthralgia; however, uncommon manifestations such as myocarditis and liver abscess have been reported in literature (4–6). The rash typically has a maculopapular, pustular, necrotic, or vesicular appearance and occurs in the trunk, limbs, palms, and soles of feet (1). Tenosynovitis typically affects small joints of upper limbs; however, lower joints can also be affected in rare cases. Joint involvement in DGI is manifested by polyarthralgia but never as suppurative arthritis (7). Unlike typical gonococcal septic arthritis, DGI is not typically associated with positive synovial fluid cultures. Blood culture is negative in most cases. It is recommended to obtain culture from the genital tract, rectum, and pharynx in a patient suspected to have DGI. Majority of patients with DGI have evidence of infection in the genital tract, rectum, or pharynx despite no symptoms related to those sites. Gonococcus has been isolated from wound and tenosynovectomy specimens in some cases.

DGI is a common cause of morbidity in sexually active young adults. We should have a low threshold for clinical suspicion of DGI in a sexually active young patient presenting with symptoms of rash and tenosynovitis even without polyarthralgia or other systemic complaints. It is not necessary for a patient to have all three manifestations of rash, tenosynovitis, and polyarthralgia to have a suspicion for DGI. In rare instances, a patient presenting with only one or two clinical features has been found to have DGI. A patient can be inappropriately treated for rash or tenosynovitis if DGI is not suspected as in our patient. This increases the health care cost and can lead to complications due to delayed diagnosis and treatment.

Treatment of DGI depends on manifestations and the duration depends on clinical response. IV ceftriaxone should be used to treat all cases of gonococcus. Patients with DGI should be treated for at least 1 week with IV ceftriaxone (8). Treatment duration should be extended in patients who do not improve adequately. Rash associated with DGI disappears after 4–5 days without treatment. Patients with tenosynovitis who do not improve with IV antibiotics may require tenosynovectomy and drainage.

Gonococcus and chlamydial infections coexist in a significant percentage of community patients. CDC recommends

initial treatment of gonococcal infection with ceftriaxone and azithromycin or doxycycline regardless of chlamydial co-infection status (9). The rationale behind this is to treat chlamydial co-infection and to prevent cephalosporin resistance. In recent years, drug-resistant *N. gonorrhoeae* have emerged which are resistant to ceftriaxone. This has posed a significant public health problem. Scientists have been able to develop rapid methods to characterize the genotype and drug resistance phenotype of *N. gonorrhoeae* strains which would allow clinicians to prescribe individualized treatment regimens for gonorrhea (10).

Learning points/take home message:

1. We should have a low threshold for clinical suspicion of DGI in any sexually active young adult presenting with rash, tenosynovitis, or polyarthralgia in the absence of typical mucosal symptoms involving the genital tract, rectum, or pharynx.
2. Cultures should be obtained from the genital tract, rectum, and pharynx in all patients suspected to have DGI.

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