Case report

Severe Group C Streptococcus infection in a veterinarian

Bryan Miles, BAAB, Krista Tuomela, MDb, Joyce Sanchez, MDC

a Medical College of Wisconsin, 8701 W Watertown Plank Rd, Wauwatosa, WI 53226, United States
b Medical College of Wisconsin, Pediatrics/Internal Medicine Department, 8701 W Watertown Plank Rd, Wauwatosa, WI, 53226, United States
c Medical College of Wisconsin, Infectious Disease Department, 8701 W Watertown Plank Rd, Wauwatosa, WI, 53226, United States

ARTICLE INFO

Article history:
Received 6 September 2020
Received in revised form 19 December 2020
Accepted 21 December 2020

Keywords:
Group C Streptococcus
Group C Streptococcus bacteria
Veterinarian
Endocarditis
Arthralgia
Discitis

ABSTRACT

Group C Streptococcus (GCS) is part of the normal commensal flora of the upper airway, as well as frequently colonizes the skin, gastrointestinal tract, and female genital tract. It can also be implicated in mono- and polymicrobial infections of the skin and soft tissue, pharyngitis, bacteremia and endocarditis, septic arthritis, osteomyelitis, and meningitis. Given their representation of normal human flora, infections are not restricted by geographic locale or particular social or occupational activities. Although, several clinical case series have found GCS infections to be more common among older adults and those with underlying chronic illness [1]. Moreover, the incidence of invasive disease may be increasing. A retrospective review of bacteremia from two centers in Canada between 2007 and 2014 noted an increase in the proportion of bacteremias due to GCS (4–6 percent) [2], while another study reported the incidence of invasive infection due to GCS in western Norway increased between 1999 and 2013 from 1.4 per 100,000–6.3 per 100,000 [3]. Zoonotic infections have been reported occasionally in individuals with exposure to farm animals, especially horses [4,5]. There have also been several well-documented outbreaks attributed to ingestion of inadequately pasteurized dairy products, in some cases implicated by poststreplococcal glomerulonephritis [6–9]. Ultimately, GCS has been implicated in a variety of human infections [10–13]. Our case study, which features a previously healthy 65-year-old male who retired as a veterinarian one month prior, highlights how GCS can masquerade as a variety of other infections, as well as the characteristic zoonotic transmission and sequela.

Symptoms started 7 days prior to admission and included fever, chills, and diffuse swelling with inability to bear weight or ambulate. He initially presented to an outside facility and was evaluated for reactive arthritis and rhabdomyolysis secondary to a week-long bike race during the previous week. Labs were significant for leukocytosis, specifically neutrophils, and elevated transaminases. He received 3 days of empiric prednisone with no improvement in arthralgias. Clindamycin and Penicillin G were started with surgical irrigation of bilateral knees and ankles. Subsequently, blood and surgical cultures were positive for Group C Streptococcus. The patient was transferred to our facility for further management.

Due to isolation of Group C strep, he was transitioned to penicillin G monotherapy. Repeat blood cultures remained negative. The transthoracic echocardiogram performed at the outside facility was reviewed and concerning for vegetation of the mitral valve with duration of antibiotics extended for endocarditis. His hospital course was subsequently complicated by upper GI bleed due to gastric and duodenal ulcers, likely secondary to initial steroid therapy and NSAID use for symptomatic relief of arthralgias. On hospital day 10, rheumatology was consulted for continued right knee effusion and erythema. Synovial fluid
analysis demonstrated inflammation with CPPD crystals, but due to recent GI bleed he was not a candidate for NSAID or steroid therapy. He also reported worsening back pain and MR spine revealed L5-S1 discitis/osteomyelitis with suggestion of small epidural phlegmon (images below). The patient was transitioned to ceftriaxone prior to placement in sub-acute rehab and ultimately completed eight weeks of antibiotic therapy (Images 1-3).

In short, this case study raises several important points. First, as mentioned, invasive GCS usually affects older and immunocompromised patients, as well as has been known to be zoonotically transmitted. Given the patient’s prior work as a veterinarian, transmission most likely occurred zoonotically. Second, his clinical course highlights several of the unfortunate sequelae of invasive

GCS, including myalgias, arthralgias, including septic arthralgias, bacteremia, endocarditis, and discitis/osteomyelitis. Ultimately, this rare, but increasing prevalent, invasive disease is important to keep in the differential.

Funding
None.

Consent
Consent has been obtained.

Author contribution
Dr. Tuomela: Editing of the manuscript
Dr. Sanchez: Case report concept, design and structure, editing of manuscript
Bryan Miles: Chart review, drafting of manuscript

Declaration of Competing Interest
None.

References
[1] Broyles LN, Van Beneden C, Beall B, et al. Population-based study of invasive disease due to beta-hemolytic streptococci of groups other than A and B. Clin Infect Dis 2009;48:706.
[2] Schwartz IS, Keeney Y, Gilmour MW, et al. Changing trends in β-hemolytic streptococcal bacteremia in Manitoba, Canada: 2007-2012. Int J Infect Dis 2014;28:211.
[3] Oppegaard O, Mylvaganam H, Kittang BR. Beta-haemolytic group A, C and G streptococcal infections in Western Norway: a 15-year retrospective survey. Clin Microbiol Infect 2015;21:171.
[4] Pelkonen S, Lindahl SB, Suomala P, et al. Transmission of Streptococcus equi subspecies zooepidemicus infection from horses to humans. Emerg Infect Dis 2013;19:1041.
[5] Rajasekhar A, Clancy CJ. Meningitis due to group C Streptococcus: a case report and review of the literature. Scand J Infect Dis 2010;42:571.
[6] Bordes-Benítez A, Sánchez-Óñoro M, Suárez-Bordón P, et al. Outbreak of Streptococcus equi subspp. Zooepidemicus infections on the island of Gran Canaria associated with the consumption of inadequately pasteurized cheese. Eur J Clin Microbiol Infect Dis 2006;25:242.
[7] Barnham M, Thornton TJ, Lange K. Nephritis caused by Streptococcus zooepidemicus (Lancefield group C). Lancet 1983;1:945.
[8] Francis AJ, Nimmo GR, Efstratiou A, et al. Investigation of milk-borne Streptococcus zoopneumoniae infection associated with glomerulonephritis in Australia. J Infect 1993;27:317.

[9] Kuusi M, Lahti E, Virolainen A, et al. An outbreak of Streptococcus equi subspecies zoopneumoniae associated with consumption of fresh goat cheese. BMC Infect Dis 2006;6:36.

[10] Brandt CM, Spellerberg B. Human infections due to Streptococcus dysgalactiae subspecies equisimilis. Clin Infect Dis 2009;49:766.

[11] Loubinoux J, Plainvert C, Collobert G, et al. Adult invasive and noninvasive infections due to Streptococcus dysgalactiae subsp. Equisimilis in France from 2006 to 2010. J Clin Microbiol 2013;51:2724.

[12] Verdonk C, Botto JN, Worcel I. Group G streptococcal bacteremia in the post-partum period. A case report. J Gynecol Obstet Biol Reprod (Paris) 2014;43:263.

[13] Jöhnk ML, Ingels HA, Sørensen AL, Lamberts L. Group G streptococci as a rare cause of nosocomial post-partum infection. Ugeskr Laeger 2013;175:740.