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Salmonella Bacteremia in Igg4-Related Disease

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ABSTRACT: In humans, infections with nontyphoidal *Salmonella* typically result in self-limited gastroenteritis and are the leading source of foodborne illness. In developed countries, the incidence of culture-confirmed invasive *Salmonella* is extremely rare. We present to you the case of an 83-year-old male with an established diagnosis of IgG4 deficiency, diagnosed with culture-confirmed *Salmonella* bacteraemia.

KEYWORDS: Urinary tract infection, *Salmonella*, Bacteremia, Gram-negative rods, IgG4 deficiency, Immunocompromised

INTRODUCTION

Salmonellae are a genus of motile, facultative intracellular Gram-negative bacilli belonging to the Enterobacteriaceae family [1]. They are one of the commonest causes of foodborne illness, and hence, a major global public health concern. *Salmonella* is transmitted to humans via the fecal–oral route, commonly via contaminated foods of animal origin such as poultry, beef, fish, milk, and eggs. *Salmonella* is subdivided into two, nontyphoidal and typhoidal. They are genetically similar but cause distinct disease states and immune responses in humans. Nontyphoidal serovars usually cause a self-limiting gastrointestinal (GI) disease, while typhoidal serovars cause enteric or typhoid fever which is invasive, systemic, and life-threatening [2].

Nontyphoidal *Salmonella* are the most common cause of bacterial diarrhea. Although the majority of nontyphoidal *Salmonella* infections result in a self-limiting mild-to-moderate gastroenteritis with low fatality, about 1–4% of enteric infections lead to bacteraemia [3]. Causes of serious GI infections may include, but are not limited to, overuse of antimicrobials, radiation, and immunocompromised states [5,6,7]. There is a high incidence of invasive disease in children, the elderly, and immunocompromised individuals, particularly those with human immunodeficiency virus (HIV) infection. In the USA, the mean incidence of culture-confirmed invasive *Salmonella* is rare, roughly 0.9 cases per 100,000 people annually, primarily observed in infants [8]. Despite its rarity, invasive *Salmonella* bacteraemia necessitates hospitalization as it can be severe and fatal.

CASE REPORT

An 83-year-old Caucasian male with IgG4-related disease presented to the emergency department with complaints of nausea, chills, abdominal cramping, fever, fatigue, malaise, burning, and increased urinary frequency for three days. The prior week he reported an episode of hematuria and diarrhea. The fever was intermittent, occurring at 12-hour intervals, and was associated with sweating and chills.

Upon physical examination, his vital signs were notable for a temperature of 99.2 ºF and a heart rate of 110 bpm. Chest examination was clear, and he had normal S1 and S2 without any murmurs. Other systemic examination was normal.

His laboratory evaluated revealed a WBC count of 16,100, Neutrophil% 93.9, Lymphocytes % 3.5, Monocytes% 2.4, Calcium of 8.1 mg/dl, BUN 35 and Creatinine level of 1.44 mg/dl. Urinalysis was notable for positive leukocyte esterase, trace amount of blood and WBC cells around 10-20, confirming a urinary tract infection. Bladder ultrasound revealed wall thickening and mucosal hyperenhancement supporting the presumptive diagnosis of sepsis from a urinary tract infection. He tested negative for HIV, which is usually the causative factor of immunodeficiency that facilitates the manifestation of *Salmonella* bacteremia. Chest X-ray showed emphysema, unchanged from his prior report. Blood and urine cultures were both positive for *Salmonella*.

He was started on amoxicillin-clavulanate 875 mg-125 mg orally twice a day for 14 days and went on to recover well from it.

DISCUSSION

Bacteremia is rare in patients with gastroenteritis, except in infants, elderly and immunocompromised. However, S. Choleraesuis, S. Typhimurium, and S. Heidelberg, among others, can cause lethal bacteremic syndrome lasting more than a week, with prolonged fever, headache, malaise, and chills but rarely diarrhea. Our patient had a few episodes of diarrhea a week before the onset of his symptoms. Sustained bacteremia could be due to an endovascular infection, such as endocarditis or infection of an abdominal aortic aneurysm. Bacteremia is more likely to manifest in immunologically compromised patients (eg, those with HIV/AIDS) and in patients with a hemolytic condition (eg: Sickle cell anemia, Malaria, Oroya fever), who are also at an increased risk to develop a focal infection, like infectious arthritis, osteomyelitis, pneumonia, endarteritis (eg, infected aortic aneurysm), endocarditis, urinary tract infection, cholangitis, and meningitis, amongst others.

IgG4-related disease which is a chronic, immune-mediated disorder that often manifests with multiorgan involvement is treated with corticosteroids. In this particular case, we theorize that this condition predisposed him to *Salmonella* bacteremia from a urinary tract infection.

CONCLUSION

Nontyphoidal *Salmonella* bacteremia is an uncommon presentation which occurs in about 8 percent of patients with laboratory-confirmed *Salmonella* infection. [9] They are rarely fatal, but most commonly occur in people who are very young or old or have a weakened immune system. In our case, it was found that due to his underlying condition of IgG4-related disease, he was in a state of immunocompromise which led to the generation of *Salmonella* bacteremia from a urinary tract infection.

REFERENCES

1) Jajere SM. A review of *Salmonella enterica* with particular focus on the pathogenicity and virulence factors, host specificity and antimicrobial resistance including multidrug resistance. Vet World. 2019;12(4):504–21.
2) Buckle GC. Typhoid fever and paratyphoid fever: systematic review to estimate global morbidity and mortality for 2010. J Global Health. 2012.
3) Buchwald DS. A review of human salmonellosis: II. Duration of excretion following infection with nontyphi *Salmonella*. Rev Infect Dis. 1984;6(3):345–56.
4) Devaraj NK. Antibiotic resistance: a real menace. Oman Med J. 2017;32(6):531.
5) Devaraj NK, Suppiah S, Veettil SK, Ching SM, Lee KW, Menon RK, *et al*. The effects of probiotic supplementation on the incidence of diarrhea in cancer patients receiving radiation therapy: a systematic review with meta-analysis and trial sequential analysis of randomized controlled trials. Nutrients. 2019;11(12):2886.
6) Sook L, Sablihan N, Ismail S, Devaraj N, Mooi C. Factors associated with the level of physical activities among non-academic staffs in the Faculty of Medicine and Health Sciences of a public university in Selangor. Malaysia. 2019;15:47–55.
7) Vugia DJ. Invasive *Salmonella* infections in the United States, FoodNet, 1996–1999: incidence, serotype distribution, and outcome. Clin Infect Dis. 2004;38(s3):S149–56.
8) Barton Behravesh C, Jones TF, Vugia DJ, Long C, Marcus R, Smith K, *et al*. Deaths associated with bacterial pathogens transmitted commonly through food: foodborne diseases active surveillance network (FoodNet), 1996–2005. J Infect Dis. 2011;204(2):263–7
9) CDC, National *Salmonella* Surveillance Data, unpublished, 2013