

Rare Presentation of Salmonella Causing Infective Endocarditis and Mycotic Aortic Aneurysm

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Abstract Salmonella infection in humans can present in different ways: enteric fever (typhoid or paratyphoid), acute gastroenteritis, bacteremia and local infection. Salmonella can cause vascular infection leading to mycotic aortic aneurysm. In case of vascular infection early recognition, debridement of infected tissue, endovascular repair and antibiotic use is corner stone of management. We report a case of 68 year old male who has abdominal aortic pseudoaneurysm with aortic valve infective endocarditis due to salmonella. Patient was successfully treated with tissue debridement, endovascular repair with stent placement and antibiotic use. Mycotic aortic aneurysm of abdominal aorta with aortic valve infective endocarditis due to salmonella has rarely been reported.

Keywords: salmonella, aneurysm, infective endocarditis

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1. Introduction

The genus Salmonella has more than 2000 serological subtypes. The fatality of salmonella is enhanced by its ability to invade, replicate and survive within the host cells by inducing its own phagocytosis [1]. another unique characteristic of salmonella is its ability to evade the lysosomal system and survive inside the reticuloendothelial system (RES) [2]. Salmonella bacteremia can develop as a result of invasion of the RES with extra intestinal spread

to the lung, skin, urinary tract, heart and meninges. Most cases of salmonellosis are limited to gastroenteritis. Bacteremia occurs in 3% to 8% cases. Bacteremia can lead to cardiovascular infections, including pericarditis and endocarditis in 1% to 5% of patients [3]. Salmonella endocarditis is more common in patients who are immunosuppressed with underlying structural heart disease such as prosthetic valves (15%), congenital heart disease (5%), and less frequently other valve abnormalities.

2. Case Presentation



Figure 1. Arrow pointing toward mycotic aortic aneurysm

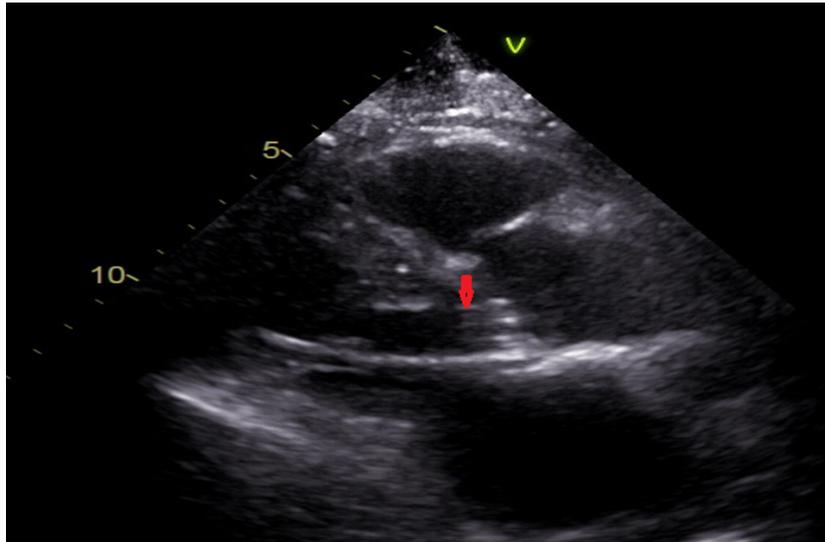


Figure 2. Showing vegetation of aortic valve

A 68 year-old-male patient with a past medical history significant for diabetes mellitus, coronary artery disease, squamous cell Lung carcinoma status post neoadjuvant chemotherapy and radiation therapy who presented to PCP office with a chief complaint of right lower abdominal pain for last two weeks. Pain has radiation across abdomen and lower back. PCP ordered CT abdomen and pelvis which showed non ruptured 3.5 cm pseudo aneurysm of the distal abdominal aorta (Figure 1). Patient was sent directly to the emergency department. In ER, patient has low blood pressure, WBC 12.7 and ESR 37. Patient was started empirically on vancomycin and Piperacillin/tazobactam. Blood cultures were collected and showed gram-negative rods that came out to be salmonella serogroup B.

Transthoracic echo revealed aortic valve vegetation (Figure 2), for which no surgery was recommended due to small size. Aortic valve vegetation was confirmed on transesophageal echocardiography. Due to proximity of the mycotic pseudoaneurysm of infra-renal aorta with 4th portion of the duodenum, enteroscopy was performed to exclude the presence of fistulous tract between aneurysm and duodenum. Enteroscopy did not show any fistula. Patient has endovascular repair of pseudo aneurysm with graft. Repeat blood culture did not show any growth. Patient was treated with prolonged course of ceftriaxone and safely discharged home.

3. Discussion

In 1885, Osler described first bacterial aneurysm [4]. According to current literature review most common cause of Mycotic bacterial aneurysm is staphylococcus aureus followed by salmonella. [5] Salmonella mainly infect gastrointestinal tract but can lead to bacteremia. Salmonella has great affinity for blood vessels particularly affected by atherosclerosis. [6] Atherosclerosis can lead to destruction and necrosis of vascular wall and salmonella can attach to it easily. Abdominal mycotic aortic aneurysm can present with abdominal pain and pulsatile mass.

Untreated abdominal aortic aneurysm can lead to rapid increase in size with rupture, hemorrhage, bacterial embolism and vascular occlusion caused by

embolization. Kam et al. [7] reported that more than 53% of Salmonella-infected aneurysm ruptured.

Diagnosis is based on history physical examination and imaging studies. Imaging studies includes plain radiograph of abdomen that can obliterate shadow of psoas muscle. Ultrasound has limited role due to overlying intestinal shadow. CT scan is better because it is noninvasive and helpful with preoperative assessment as well. WBC, ESR and CRP will be elevated and can help in disease monitoring. In case of bacteremia echo needs to be done to rule out infective endocarditis.

Treatment for mycotic aneurysm includes antibiotics and surgery. In medicine prolonged courses of antibiotics from 6-8 weeks is needed but preoperative use of antibiotics is still controversial. Surgery includes open repair, endovascular repair with graft stent placement and anatomical bypass.

4. Conclusion

Mycotic aneurysms of the aorta is serious and life threatening situation. It increases in size rapidly that can lead to rupture. Management involves early detection, resection of infected tissue, vascular reconstruction with antibiotic use. Echocardiography should be done to rule out infective endocarditis. Although it is rare, physician should be aware possibility of this condition since early diagnosis and appropriate treatment can result in improve survival.

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References

- [1] Salmonella Pathogenicity Island 2 Mediates Protection of Intracellular Salmonella from Reactive Nitrogen Intermediates,

- Journal of Experimental Medicine 195(9):1155-66. June 2002 with 48 Reads.
- [2] Persistent bacterial infections: the interface of the pathogen and the host immune system. Monack DM1, Mueller A, Falkow S, PMID: 15372085.
- [3] Ortiz, D., Siegal, E. M., Kramer, C., Khandheria, B. K., & Brauer, E. (2014). Nontyphoidal cardiac salmonellosis: two case reports and a review of the literature. *Texas Heart Institute journal*, 41(4), 401-6.
- [4] Teixeira PG, Thompson E, Wartman S, Woo K. Infective endocarditis associated superior mesenteric artery pseudoaneurysm. *Ann Vasc Surg*. 2014; 28: 1561-1563.
- [5] Pirvu A, Bouchet C, Garibotti FM, Hauptert S, Sessa C. Mycotic aneurysm of the internal carotid artery. *Ann Vasc Surg*. 2013; 27: 826-830.
- [6] Guo, Y., Bai, Y., Yang, C., Wang, P., & Gu, L. (2018). Mycotic aneurysm due to Salmonella species: clinical experiences and review of the literature. *Brazilian journal of medical and biological research = Revista brasileira de pesquisas medicas e biologicas*, 51(9), e6864.
- [7] Kam MH, Toh LK, Tan SG, Wong D, Chia KH. A case report of endovascular stenting in Salmonella mycotic aneurysm: a successful procedure in an immunocompromised patient. *Ann Acad Med Singapore*. 2007; 36:1028-103.



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