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Streptococcus gallolyticus a rare entity: Case report pointing out its importance and its association with colorectal cancer and infective endocarditis

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Abstract
This case report describe 75 years old male admitted to the hospital with complaints of high grade fever, pain in abdomen, joint pain. Patient was self-medicating himself from past 5 years with pain killers twice a day for joint pain. Blood sample was send for culture and sensitivity before administration of antibiotics, per abdominal examination showed marked guarding and rigidity, CXR showed B/L patchy pneumonitis and pleural effusion on left side. On chest auscultation murmurs were heard. 2D echo revealed mitral valve vegetation. Patient was diagnosed for perforation peritonitis as per all parameters and emergency exploratory laparotomy was performed, on opening peritoneum yellow fluid was seen in the peritoneal cavity and on exploration circular perforation was seen along pylorus of stomach, fluid was collected from peritoneal cavity and send for microbiological evaluation. On culture smear both blood and peritoneal fluid showed growth of gram positive cocci were seen and identified as *Streptococcus gallolyticus subspecies gallolyticus* using Vitek-2 compact. Patient was treated with penicillin and ceftriaxone and was discharge on 15 days. On follow up colonoscopy was done which showed early colonic lesions in the recto-sigmoid area. The present study points out importance of *Streptococcus gallolyticus subspecies gallolyticus* co-relation with infective endocarditis and colorectal cancer and highlights importance of colonoscopy for early detection of CRC.

Keywords: *Streptococcus gallolyticus subspecies gallolyticus*, infective endocarditis, CRC- colorectal cancer

Introduction: Case Report

This case report describes a 75 years old male admitted to the hospital with complaints of high grade fever, severe pain in abdomen since 2 days, joint pain since 5 years. Patient has been taking pain killer without any medical advice from past five years. On per abdominal examination marked guarding and rigidity was seen. Chest X-ray showed B/L patchy pneumonitis with pleural effusion on left side. On chest auscultation murmurs were heard. 2D echo showed mitral valve vegetation. As the pain was progressively increasing various investigations were done and diagnosis of perforation peritonitis was made for which emergency exploratory laparotomy was done. Immediately on opening peritoneum yellow colour fluid was seen in the peritoneal cavity, which was collected and send for culture and sensitivity. On examination circular perforation was identified along pylorus of stomach, omental patch was placed over perforation after taking edge biopsy. Blood was collected before administration of any antibiotics and send for culture and sensitivity along with the pus obtained during emergency exploratory laparotomy for microbiological evaluation. Growth obtained on culture media were subjected for automated identification on Vitek-2 compact and identified as *Streptococcus gallolyticus subspecies gallolyticus (Sgg).* As the growth on both samples were same patient was treated with penicillin, ceftriaxone. Patient was discharged after 15 days later on follow up colonoscopy biopsy was taken, which revealed early colonic lesions in the recto-sigmoid area, this case report classically shows co-relation of bacteria to different clinical condition and this association to conditions like endocarditis and colorectal cancer has been reported by various workers. Also this case highlights the importance of performing colonoscopy when Sgg bacteremia is seen so that early detection of CRC can be made and treatment can be initiated to prevent progression to early colonic lesions to CRC.

Discussion

Streptococcus gallolyticus belongs to Group D streptococci which is large group of phenotypically diverse bacteria known as S. bovis/S. equinus complex (SBSEC), which consist of safe guarded bacteria used in food fermentation, commensal bacteria of gut of herbivores and opportunistic pathogens in both humans and animals [1]. The currently admitted classification based on multi locus sequence typing (MLST) data defines seven sub species these are *streptococcus gallolyticus sub specially gallolyticus (Sgg) Streptococcus gallolyticus subsp macedonicus (Sgn), Streptococcus gallolyticus subspecies pasteurians (Sgp), streptococcus infantarius sub specially infantorius (Sii), Streptococcus lutetiensis, Streptococcus alactolyticus* and *Streptococcus equins* [2].

Sgg is an opportunistic pathogen causing septicemia and endocarditis in elderly people. Several studies have demonstrated strong association between invasive infection with Sgg and colon neoplasia in humans [3]. Rural residency and animal contact have shown to increase the detection rate of Sgg in humans further supporting zoonotic potential of this bacterium. Virulence factor of Sgg includes capsular polysaccharide which protects from hosts immune response and pilli associated with bacterial attachment and colonization of the host tissue [4]. Based on the genomic studies three pilus operons are present namely (pil 1, pil 2, pil 3) [5]. These pilli mediate binding of Sgg to collagen type I

and type Ⅳ and in attachment of bacteria to heart valves most commonly mitral valve leading to infective endocarditis. Collagen type I is major structural component of human heart. Collagen type Ⅳ is found in basal lamina layer underneath epithelial tissue also it is important to note that colonic tumors display higher levels of collagens of type Ⅳ variety as compared to normal tissues which may explain higher colonization of tumor sites by Sgg [6].

Colorectal carcinoma (CRC) development is multifactorial ranging from genetic mutation, alteration of micro biota of gut, host genetics, life style, environmental factors, family history and prolonged intake of NSAIDS, Sgg induced pro-tumoral effects by induction of chronic inflammation, bacterial transformation of host metabolites into carcinogens and expression of bacterial factor like toxins with oncogenic properties and barrier failure [7].

Conclusion

Sgg is an important cause of endocarditis and CRC. Several studies have confirmed this association. This case study reflects that in case of Sgg bacteremia there is need of colonoscopy as there is strong association between Sgg and CRC. Early detection of colonic lesions will help in prognosis of the patient.

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