

Streptococcus agalactiae knee joint septic arthritis in an adult: first case report from Eastern India

Abstract

Septic arthritis is caused most commonly by *Staphylococcus aureus*. *Streptococcus agalactiae* is a rare cause of septic arthritis amongst adult population. However, few cases have been reported in some parts of the world, although no case reports of adult septic arthritis by this agent have been published from India. We report a case in an elderly rheumatoid arthritis patient, from rural West Bengal, who was totally immobilized due to severe aches in multiple joints. She presented in the emergency department of the hospital and was later diagnosed to have septic arthritis of the right knee. Joint Fluid and blood cultures yielded *Streptococcus agalactiae*. She was treated with arthrotomy, drainage and lavage, and antibiotics. At three-month follow-up, the patient is doing absolutely fine and is capable of doing all her chores. Early diagnosis and treatment lead to complete recovery and avoidance of severe complications that are usually associated with Group B septic arthritis cases.

Keywords: GBS, GpB streptococci, *S. agalactiae*, septic arthritis, elderly female, knee joint

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Introduction

The estimated incidence of bacterial septic arthritis ranges between 4 and 10 per lakh population annually. *Staphylococcus aureus* and *Streptococcus* species happen to be the commonest causes globally.¹

Streptococcus agalactiae is traditionally associated with colonization of the intestinal and genital tract. In pregnant females it's the cause of preterm labor, abortion, puerperal sepsis, and neonatal infections such as sepsis and meningitis.

Septic arthritis by *Streptococcus agalactiae* in adults is a rare entity. Of late, cases have been reported from Thailand,² Singapore,³ UK,⁴ Iran⁵ and Spain⁶ Three cases of joint infections in children have been reported from Northern India in a joint study by the Orthopedics departments of PGIMER, Chandigarh and AIIMS, New Delhi.⁷ Predisposing factors include skin or liver disease, Immunosuppressive states such as an autoimmune disorder like Rheumatoid arthritis or SLE, or metabolic syndrome like Diabetes mellitus.⁸ Septic arthritis by *S. agalactiae* is known to cause polyarticular infection, and bacteremia.² Although knee joint is commonest joint involved, rare joint involvement such as the elbow joint, acromioclavicular joint, can occur, leading to severe deformities and morbidity, if not diagnosed timely.²

Case report

A 69-year-old married, Hindu female, from rural West Bengal, (a state in eastern part of India) a known case of Rheumatoid arthritis on irregular treatment consulted a local family physician with complaints of sore throat, fever of five days duration and severe aches all over her body, including shoulder, back and knee joints. She was totally immobile. The physician prescribed oral antibiotics and an injection of prednisolone 30mg stat. The patient however did not start the antibiotics as the fever subsided. But as her body aches left her totally incapacitated, she was brought in an ambulance to Kolkata, the capital city of West Bengal, with good health infrastructure, where she was admitted in the emergency department of the hospital. She

was known hypertensive. On admission, her blood total leucocyte count was 30,000/cumm, neutrophils being 88%. C-Reactive protein was 98.7mg/L, Urea- 86 mg/dl, Creatinine- 1.6 mg/dl, Fasting Blood sugar- 109 mg/dl, Rheumatoid factor- 7.2 IU/ml, Anti-CCP antibody was 6.2 U/ml and ESR- 65mm at the end of 1st hour. In two days, her CRP rose to 99.5 mg/L, Urea to 118 mg/dl and Neutrophils to 92%. Her triple serology was negative. Sodium- 137mEq/L and Potassium- 3.5mEq/L. Chest X ray, TSH and Liver function tests were normal. Urine routine was normal and culture sterile. Automated Blood culture was sent. Initial report after 48 hours was negative.

Her Rheumatoid factor was repeated and found to be positive at 22.6 IU/ml. ANA, cANCA, pANCA were however negative. Echocardiography study was normal except slight left ventricular concentric hypertrophy due to prolonged hypertension. The ventricular activity was however normal with normal cavity size, good systolic function, normal valves and a 62% ejection fraction.

On day 3 of admission, she developed a marked swelling and redness of her right knee. X- Ray of the knee joint revealed Grade 2 osteo-arthritis changes. An aspiration was done and thick purulent fluid aspirated. It was sent for routine and culture examination. A diagnosis of septic arthritis was made. An arthrotomy was planned the very next day and pus drained and lavage done. The gram's stain showed a large number of polymorphic cells, predominantly neutrophils. No bacteria were found. Ziehl-Neelsen staining was negative. Culture yielded growth of *Streptococcus agalactiae* identified by the positive CAMP test and Vitek2 Compact. The blood culture report also came as positive for the same organism. The pathogen was sensitive to Benzylpenicillin, Levofloxacin, Tetracycline, Vancomycin, and Linezolid.

The patient was immediately started on IV Vancomycin 1 gm q12hr along with Ofloxacin 200 mg twice daily. The treatment was continued for two weeks. The patient was discharged with oral preparations of the same antibiotics for another 10 days. Her total leucocyte counts came down to 8500/cumm with 61% neutrophils, and CRP became

normal. The knee pain and swelling reduced remarkably 10 days after discharge. The patient was then started on Prednisolone 1mg/kg body weight in three divided doses, tapered over three weeks, followed by maintenance dose of 10 mg- 1 tab daily after breakfast, along with HCQS 200mg, 1 tab twice daily and Tab Methotrexate, 5mg once a week, to be stopped if TLC <4000/cumm or platelet count <50,000.

On follow-up three months after discharge, the patient is doing fine. She is able to do all her chores independently and is even able to climb stairs without support.

Discussion

S. agalactiae is a part of normal flora of gastrointestinal and genitourinary tract of females with increasing rates of colonization occurring as age advances. Up to 42% in $\geq 60+$ population of healthy individuals are colonized with GBS.⁹ Recently many population-based surveys of bacteremia have pointed out that GBS infections in the non-pregnant adult population are on the rise. Clinical manifestations of GBS infections in adults include pneumonia, skin and soft tissue infections, endocarditis, urinary tract infections, peritonitis, meningitis, and osteoarticular infections. Off late studies have shown that the incidence of septic arthritis is changing worldwide, with GBS emerging as one of the main causes.¹

Septic arthritis is an orthopedic emergency. Complications include sepsis, limb loss, and even a mortality of up to 11%. *S. aureus* accounts for 60% of cases.^{3,7} Risk factors for septic arthritis include skin infection, cutaneous ulceration, prosthetic joint surgery within two years, recent joint surgery, intra-articular injection, Diabetes mellitus, HIV infection, immunosuppressive medication use, osteoarthritis, rheumatoid arthritis, age older than 80, and smoking.⁸ Our patient had grade 2 osteoarthritis of knee joint, and rheumatoid arthritis. Majority patients happen to be females above 60-years of age with knee being the commonest joint to be involved.^{3,6} Our patient had similar demographics.

There has been a report of postpartum septic arthritis in a patient with normal vaginal delivery.⁴ Our patient is a post-menopausal lady. The specific risk factors in GBS septic arthritis are tonsillar carcinoma, dental procedures, hepatitis C infection and lymphoproliferative disorders.⁵ Our patient gave no such history or findings, although she did complain of a sore throat and cough with fever for which she visited the local family physician. Consumption of raw or undercooked fish has been implicated in the Singapore outbreak.⁴ Our patient denied eating raw or undercooked fish, although fish is consumed regularly in Bengali households. There have been outbreaks of cases of GpB *Streptococcal* septic arthritis in Thailand in the year 2008-2010,³ and in Singapore in 2015-2016.⁴ We as a nation in the same tropical belt as these two countries, should be aware of this fact and be prepared to face any such challenge.

GBS septic arthritis patients tend to have polyarticular involvement.³ We were lucky to diagnose the pathology early and treat it immediately. The limb could thus be saved and the infection did not spread to other joints although there was sepsis as is evidenced by positive blood culture. That blood cultures are positive in the majority of GBS septic arthritis cases, is a fact emphasized by previous studies.^{3,5} The CRP also tends to be very high compared to non-GBS septic arthritis.³ Our patient's CRP was 101mg/L at one point in time.

Conclusion

GBS as a cause of septic arthritis is a new entry on the block, a normal flora, becoming a cause of sepsis and joint infections in otherwise healthy individuals. With timely diagnosis and prompt treatment, the joints can be saved, and complications averted easily. We should be aware of the potential of this pathogen to cause outbreaks of septic arthritis. Being a tropical country, with changing climates, and fish consuming population, we need to be fully prepared to diagnose and treat our patients, in the event of an outbreak, or otherwise.

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Conflict of interest

The authors declared that there are no conflicts of interest.

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