**ABSTRACT**

Introduction: Coagulase negative Staphylococci (CoNS) are frequently isolated from blood cultures. New members of this cluster are consistently added to the catalogue of human pathogens. *Staphylococcus cohnii* is one of the rarer agents of bacteraemia. This is the first case report of bacteraemia by *Staphylococcus cohnii subsp. urealyticus* from India. Case report: A 63 year old female diabetic patient was admitted to the hospital with pyrexia and pressure ulcer on the left leg. Initial workups did not divulge any focus of infection. After 4 days of admission, the blood culture was positive and *Staphylococcus cohnii subsp. urealyticus* was isolated. The organism was susceptible to most antibiotics and the patient convalesced. Discussion: *Staphylococcus cohnii* is reported sporadically all over the world as an agent of blood stream infection. Development of resistance to antimicrobials, including linezolid has been reported. Such cases must be presented frequently to underscore the enormity of CoNS as pathogens to thwart their refutation as mere contaminants.
KEYWORDS: *Staphylococcus cohnii subsp. urealyticus*, Coagulase negative Staphylococcus, Bacteraemia, Case report, Diabetic.

MAIN TEXT

INTRODUCTION

Significance of Coagulase negative Staphylococcus (CoNS) as agents of blood stream infection (BSI) has long been ascertained but ironically still remains contested. CoNS are a continually expanding assemblage and are a component of the normal flora of human and animals.[1] Incidences of BSI due to *Staphylococcus cohnii subsp. urealyticus* have been sporadically accounted around the globe.[2,3,4] In this report, we bring forth a clinical case of BSI by *Staphylococcus cohnii subsp. urealyticus* in a diabetic patient. This is the first case study of BSI by this agent reported from the Indian subcontinent to the best of our knowledge.

THE CASE

A 63 years old female patient (KS) was admitted to the hospital on 29.12.15 with high fever and myalgia. She was suffering from diabetes mellitus under anti-diabetic treatment. She had a pressure ulcer on her left leg which was presently healing without any discharge. She was initially administered ceftriaxone and antipyretics. The ulcer was treated with topical dressing and antibiotics. Gradually the patient deteriorated and developed high temperature with poor general condition. All routine laboratory parameters were investigated.

On 29.12.15, her haemogram revealed leucocytosis (20,000/cu mm) with increased neutrophils (92%) and elevated ESR (110mm/hr.). Blood was sent for culture in duplicate. It was cultured aerobically in BacT/Alert 3D blood culture bottles. Urine culture was negative for growth. Chest roentgenogram was normal. Nevertheless, the patient did not improve clinically. Her total count escalated further to 46,000/cumm with 96% neutrophils on 3.1.16. The HbA1c level was elevated (8.2%) and sodium, potassium levels dropped below normal. ESR rose to 114 mm/hr and her CRP was 7.09 mg/dL.

On 4.1.16, BacT/Alert 3D machine conveyed a positive result and subculture was performed on nutrient agar, 5% sheep blood agar (SBA) and MacConkey’s agar media. After overnight incubation at 37°C, abundant, pure, isolated colonies were obtained on all three culture plates. Colonies on nutrient agar were 1-2 mm diameter, round, cream coloured, smooth, without any pigment. Smaller and lactose fermenting colonies grew on MacConkey’s agar.
On SBA colonies were non haemolytic. Gram stained smears from colonies revealed Gram positive cocci arranged in small clumps, pairs and singles. Catalase test was positive and both slide and tube coagulase test was negative. Identification was done in Vitek 2 Compact system which showed the growth of *Staphylococcus cohnii subsp. urealyticus*. Same organism was isolated from both the bottles. The organism was susceptible to oxacillin, gentamicin, levofloxacin, ciprofloxacin, clindamycin, linezolid, vancomycin, teicoplanin, tetracycline, trimethoprim/sulfamethoxazole and rifampicin. Resistance to benzyl penicillin and erythromycin was observed. However, no primary foci for the bacteraemia could be elucidated.

The reports were delivered to the hospital along with the antibiogram. The patient recuperated clinically and her laboratory parameters normalised after treatment with piperacillin/tazobactam. The total count came down to 7500/cumm with 78% neutrophils on 16.1.16. ESR and CRP also lowered. The sodium and potassium levels improved and her blood sugar level was also controlled.

Thus it can be inferred that the patient developed bacteraemia due to *S. cohnii subsp. urealyticus* probably from the pressure ulcer as no other source of infection could be discovered.

**DISCUSSION**

CoNS are frequently isolated from blood cultures but are often disregarded as contaminants. In recent years, markedly in immune compromised patients and nosocomial setting, CoNS are increasingly gaining importance as agents of bloodstream infections (BSI). Stringent asepsis during collection, repeated isolation and correct identification can filter out possible contaminants. Despite the high incidence of BSI, true bacteraemia attributed to CoNS is an infrequent occurrence (4 - 12%; 5). Recently, All India Institute of Medical Sciences conducted a 30 months study on 469 staphylococcal bacteraemia cases, where 47% (221/469) isolates were found to be CoNS. In this study, the authors also advocated that a single blood culture positive for CoNS should be considered significant.[6] Another survey in a paediatric neonatal care unit states that ~ 25% (62/246) of BSI were caused by CoNS.[7]

*S. cohnii* is a coagulase negative Staphylococcus and a normal skin commensal like a host of other CoNS. Three major subspecies of *Staphylococcus cohnii*, namely *S. cohnii subsp. cohnii*, from humans, *S. cohnii subsp. urealyticus*, from humans and other primates and *S.
S. cohnii subsp. 3, are described.\cite{8,9} S. cohnii subsp. urealyticus can be distinguished from S. cohnii subsp. cohnii on the basis of its physical properties (greater colony size, yellow pigmentation); biochemical reactions (positive urease, P-glucuronidase activity, delayed alkaline phosphatase activity, lactose fermentation) and fatty acid profile.\cite{9} It has been suggested that the species also differ in their niche of infection: subsp cohnii being more common in nosocomial setting and subsp. urealyticus in the community.\cite{10} Both the species have been isolated from a number of sites of infection in recent years including blood, renal stone, scrotal wound, septic arthritis and urine.\cite{2,3,4,11}

Previously, Soldera et al. reported a similar clinical case from Brazil, where an infected pressure ulcer was the source of bacteraemia by S. cohnii subsp. urealyticus.\cite{4} A study on clinically significant CoNS conducted in India, reported only a single case of S. cohnii BSI among 85 cases of bacteraemia. However, sub species identification was not carried out in this study.\cite{12} Again, a Brazilian survey on blood samples positive for CoNS in a nosocomial setting illustrated that the prevalence of Staphylococcus cohnii was 5.9% with 28.6% susceptibility to oxacillin and 100% susceptibility to vancomycin and teicoplanin.\cite{13} Resistance to commonly used antibiotics is not uncommon.\cite{10} A Greek hospital recorded an outbreak by Staphylococcus cohnii subsp. urealyticus in the intensive care unit, with septicaemia in four patients, which were also linezolid resistant; this was due to selection pressure through linezolid use in case of vancomycin-resistant Enterococcus faecium.\cite{14} In the milieu of increasing incidence of S cohnii infections and resistance acquisition, Hu et al. characterised this organism by genome sequencing.\cite{15}

Hence, this report supplements the prevalence of S. cohnii subsp. urealyticus as an infectious agent and that, it must not be slighted. If ignored, such circumstances will be catastrophic for the patients, particularly in individuals with depressed immunological status. The laboratory must alert the physician along with an antibiogram on obtaining even a single blood culture positive for this organism.

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REFERENCES
