

Polyarthrititis due to Coagulase Negative Staphylococci and its Clinical Management in a Young Kid

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Abstract

A male, two months old kid was presented with swelling of multiple joints and lameness. Staphylococcus epidermidis, a Coagulase negative Staphylococcus (CoNS) could be identified as causative agent by isolation on selective media. Antibigram was performed using selective antibiotic discs and the case responded positively to the treatment with oxytetracycline and doxycycline along with supportive therapy.

Keywords: Antibiotic Sensitivity, Coagulase Negative Staphylococci (CoNS), Kid, Polyarthrititis, Tetracyclines

Introduction

Coagulase negative staphylococci (CoNS) are generally found on the skin or environment, however their economic significance is unclear as they are not much pathogenic leading to production losses. However, a high prevalence of these infections is reported in many herds (Pugh *et al.*, 2020). Among more than 40 species of *Staphylococcus* identified, *S. aureus*, *S. epidermidis* and *S. saprophyticus* are reported to be clinically significant (Namvar *et al.*, 2014). *S. epidermidis* causes infections via broken skin, especially in immunocompromised patients and antibiotic resistance by staphylococci has become a global issue affecting humans, animals, and natural environments (Schoenfelder *et al.*, 2010). This present paper reports polyarthritis in a young kid due to coagulase negative staphylococci and its successful medical management.

Case History and Observations

A two months old male non-descript kid was presented with swelling of knee and hock joints of right limbs (Fig. 1) with difficulty in walking. No systemic involvement was revealed on clinical investigation. Synovial fluid was collected using sterile needle from the joints for isolation of the bacteria and identification by Gram's staining technique, and serum sample for coagulase test as described by Quinn *et al.* (1994). Antibiotic susceptibility of the bacterial isolate was established as described by Bauer *et al.* (1966).



Figure 1: Polyarthritis (knee and hock joints) in an young kid

Results and Discussion

The coagulase negative staphylococci (CoNS) could be isolated on mannitol salt agar as white round and raised colonies (Fig. 2) and identified by Gram's staining technique as gram positive cocci in clusters (Fig. 3). The isolate was coagulase negative and gamma haemolytic with white colonies when isolated on blood agar (Fig. 4) (Becker *et al.*, 2014 and Quinn *et al.*, 1994).



Fig. 2: White raised colonies of *S. epidermidis* on mannitol salt agar

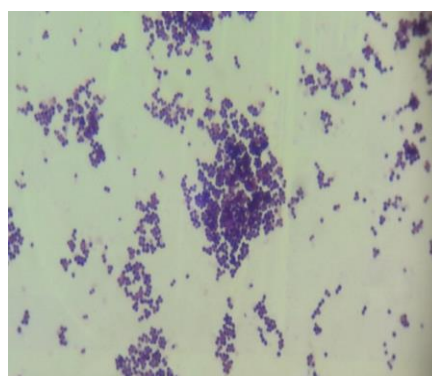


Fig. 3: Gram positive cocci of *S. epidermidis* in clusters from the isolate



Fig. 4: Gamma haemolytic colonies of *S. epidermidis* on sblood agar

No other bacterial organisms could be isolated on specific media. These findings suggested that the CoNS like *S. epidermidis* could be associated with polyarthritis of mild degree without any signs of toxemia, as there is no systemic illness. The *S. epidermidis* is being increasingly reported in cardiovascular, joints and blood stream infections (Namvar *et al.*, 2014). The *S. epidermidis* could cause medium pathogenicity and their presence in clinical specimen may represent true infection or only colonization (Becker *et al.*, 2014). Previously, *S. epidermidis* was reported as one of the main CoNS in goats affected with mastitis (Leitner *et al.*, 2004 and Koop *et al.*, 2012). Whereas, Nazaal *et al.* (2005) reported the isolates of *S. aureus*, *Hemophilus* spp., and *Pseudomonas* spp. in synovial fluid of goats affected with arthritis. However, other bacteria involved in joint infections are, *Streptococci*, *Corynebacterium* spp., *Actinomyces* spp., and *Erysipelothrix rhusiopathiae*, as well as are gram-negative coliforms.

The isolate was found to be sensitive to oxytetracycline (30 mcg) and resistant to Penicillin G (1 unit), amoxicillin (10mcg), cloxacillin (30mcg), ceftriaxone (10mcg), ceftriaxone/ sulbactam (30/15 mcg), cefataxime (5mcg), ciprofloxacin (10mcg) and gentamicin (30mcg). Whereas, Nazaal *et al.* (2005) reported resistance to cloxacillin, tetracycline, cephalixin, and penicillin by *S. aureus* and Eladli *et al.* (2019) observed resistance to tetracycline, clindamicin and fusidic acid by *S. epidermidis*. Antibiotic-resistant *S. epidermidis* is reported to be an opportunistic pathogen commonly isolated from patients as well as healthy individuals (Eladli *et al.*, 2019). The case was treated initially with an antibiotic oxytetracycline @ 10mg /kg bwt, I/M and an anti-inflammatory drug meloxicam @ 0.5 mg/kg bwt, IM for 3 days, followed by oral administration of doxycycline @ 10 mg/kg bwt SID for 7 days. The kid had recovered successfully from the joint swelling and could walk normally after 10 days post treatment.

In summary, coagulase negative staphylococci have become clinically significant and reemerging in animals and humans. Since multiple resistance to antibiotics by Staphylococci is an obstacle in the successful treatment, selection of antibiotics based on sensitivity is of paramount importance. In this case, the kid affected with arthritis due to CoNS showed good response to the treatment with tetracyclines.

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Conflict of Interests

There is no conflict of interest.

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