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*Case report* ■

# Synovitis And Periarticular Bursitis Of The Coxofemoral Joint Caused By Kocuria Kristinae: A Case Report

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**SUMMARY**

**Gram-positive coccus Kocuria kristinae, a part of the human skin and oral cavity normal microbial flora, is not considered to be a primary pathogenic microorganism, and infections due to this bacterium are very rare. In this report, we describe an unusual case of K. kristinae infection causing synovitis and periarticular bursitis of the left coxofemoral joint in a seven-year-old boy. Kocuria spp. was isolated from the left hip joint synovial fluid by modern VITEK 2 compact automated system, used with GP identification card and corresponding database. The increasing number of reported correlations of K. kristinae isolates from different biological specimens and existing distinctive infections points to potential pathogenicity and clinical importance of this bacterial species.**

***Key words:*** **Kocuria kristinae, synovitis, bursitis, infection**

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## INTRODUCTION

Kocuria is reclassified and clearly separated genus, segregated from the genus of Micrococcus several years ago, based on the results of a phylogenetic and chemotaxonomic analysis (1). The genus was named in honor to Miroslav Kocur, a microbiologist from Slovakia, who dedicated a lot of his work to studying Micrococcus luteus (2,3). Kocuria usually can be isolated from the human skin and oral cavity, but its normal habitats include soil, rhizoplane and fresh water (4). Currently, there are thirteen known species of Kocuria. K. kristinae (formerly known as Micrococcus kristinae), one of the members of Kocuria spp. is gram-positive, aerobic, non - encapsulated, non - endospore - forming, non-halophilic coccus occuring in tetrads (1). Although, like other Kocuria species, K. kristinae was not considered to be a primary pathogen, during recent years there have been well-documented reports of catheter-related bacteriemia due to this species in a patent with ovarian cancer (5) and acute cholecystitis with K. kristinae isolated from bile (6). In this article, we report a case of seven - year - old boy with synovitis and periarticular bursitis of the left coxofemoral joint and K. kristinae isolated from synovial fluid of the inflamed joint.

## CASE REPORT

A seven-year-old boy was presented with a strong pain in the region of the left hip for three days, followed with fever, and admitted to hospital. During the first clinical examination, resistance to left hip flexion and abduction was also found. Blood tests showed elevation of inflammatory markers such as C-reactive protein-CRP (44.5 mg/L), fibrinogen (5.264 g/L) and sedimentation rate (first hour - 83 mm), while white blood cells (WBC) count was normal. Aspiration of the left coxofemoral joint was also done, but the culture of synovial fluid was without result. The antibiotic combination of cephazolin and clindamycin was administered to the patient. A clinical and laboratory improvement including withdrawal of distinctive pain and resolution of fever ensued in the next few days. The blood cultures were negative. However, ten days after admission to hospital, the child became febrile again, with body temperature reaching 40.3 degrees of Celsius. New blood tests revealed increase of inflammatory indicators (CRP was 15 mg/L, fibrinogen level - 5.0 g/L, sedimentation rate-first hour - 92 mm), accompanied with leukocytosis (WBC count was 18.3 x $10^9$/L, with dominance of granulocytes - 86.3%). A stool culture and a new blood culture were done, but the results were negative. Immunologic analysis of blood samples excluded patient's immunodeficiency. Chest X-ray did not show any inflammatory changes in the lungs. In the meantime, the child started to feel pain in the region of the left hip again, with tendency to avoid movements. Ultrasonography and magnetic resonance imaging of the left coxofemoral joint revealed accumulation of fluid in the joint capsule and periarticular bursa (Figure 1), without any visible changes of bone and muscular structures.

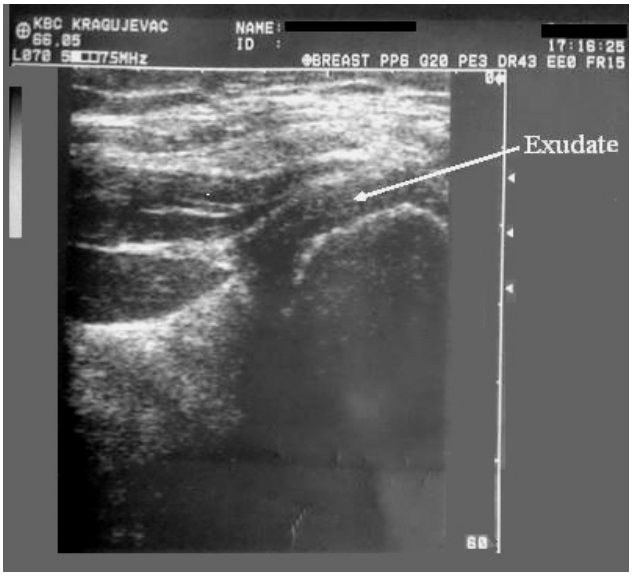


***Figure 1**. Ultrasonography of the affected joint*

The joint was aspirated again and the aspirate was cultured. An unusual and unexpected gram-positive coccus, Kocuria kristinae, was grown and identified by bioMérieux VITEK 2 compact automated system, using gram-positive (GP) identification card and corresponding database. The patient was treated with vancomycin for 7 days, and with teicoplanin for the next week. All clinical signs and subjective symptoms resolved and full recovery ensued, followed by normalization of blood tests.

## DISCUSSION

Synovial membrane is a soft, tiny layer of tissue that lines the cavities of freely movable joints, tendon sheaths, bursae and makes synovial fluid, which has a lubricating function, provides cushioning and prevents wear and tear of the skin, muscles, tendons and ligaments over bones. Inflammation of synovial membrane is a painful condition with production of excess fluid and caused by irritation from overuse, injury, gout, pseudogout, rheumatoid arthritis or certain infections. The most common pathogenic microorganism that induces this condition is Staphylococcus aureus (7).

Kocuria kristinae is part of the skin and oral cavity flora. Generally, the infection caused by this species is very rare, but it certainly could be recognized by modern highly automated identification systems (8). There are reports of erroneous identification of coagulase-negative staphylococci as Kocuria spp. by the VITEK 2 system due to its phenotypic variability (9). Although the isolate of Kocuria kristinae from our patient was not confirmed by genotyping, we believe that modern VITEK 2 compact

automated system with GP card covered by the corresponding database was quite a reliable tool for Kocuria kristinae identification in our patient (10).

A literature report on 219 strains of Kocuria and Micrococcus showed that majority of strains were sensitive to doxycycline, ceftriaxone, cefuroxime, amikacin, and amoxicillin with clavulanic acid, but resistant to ampicillin and erythromycin (11). Our isolate of K. kristinae was sensitive to ceftazidime, ceftriaxon, cefotaxim, cefpodoxim proxetil, gentamycin, amikacin, netilmicin, norfloxacin, ofloxacin, ciprofloxacin, meropenem, imipenem, ertapenem, ceftazidim with clavulanate and vancomycin, but resistant to amoxicillin. Due to severity of infection, our patient was treated with vancomycin and teicoplanin for 14 days in total, with excellent clinical and laboratory response. The duration of treatment was based on previous experiencies with this pathogen (6).

Increasing number of K. kristinae isolates from different biological specimens and their association with certain infections, in the absence of other microorganisms, points to potential pathognicity and clinical importance of this bacterial species.

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# SINOVITIS I PERIARTIKULARNI BURZITIS KOKSOFEMORALNOG ZGLOBA IZAZVANI KOCURIA KRISTINAE: PRIKAZ SLUČAJA

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## Sažetak

**Gram pozitivna koka Kocuria kristinae, pripadnik normalne mikrobne flore kože i usne duplje, ne smatra se primarno patogenim mikroorganizmom, tako da su infekcije uzrokovane ovom bakterijom veoma retke. U ovom radu smo opisali neuobičajen slučaj infekcije bakterijom K. kristinae, koja je dovela do nastanka sinovitisa i periartikularnog burzitisa levog koksofemoralnog zgloba kod sedmogodišnjeg dečaka. Navedena vrsta Kocuria-e je izolovana iz punktata levog zgloba kuka savremenim Vitek 2 kompakt automatskim sistemom sa GP identifikacionom karticom uz podršku odgovarajuće baze podataka. Povećan broj prijava izolata K. kristinae iz različitih bioloških uzoraka i njihova udruženost sa razvijenim infekcijama u odsustvu drugih mogućih uzročnika, ukazuje na potencijalnu patogenost i klinički značaj ove vrste.**

*Ključne reči:* **Kocuria kristinae, sinovitis, burzitis, infekcija**