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**Case Report**

# Bilateral gluteal abscess caused by *Kluyvera cryocrescens*: a case report

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## ABSTRACT

*Kluyvera* is a relatively new genus, belonging to family Enterobacteriaceae. This organism colonizes mainly respiratory and gastrointestinal tract. It has also been reported from various environmental sources. Due to a rise in immune-compromised states and ease of identification using automated methods rare organisms are now being reported with their role as potential opportunistic pathogens. Meticulous detailed identification and reporting of pathogens like *Klyuvera* to differentiate it from other members of Enterobacteriaceae can lead to solving the pathogenic importance of such organisms. We report a case of bilateral gluteal abscess due to *Kluyvera cryocrescens* in an obese diabetic adult male.

**Keywords:** Gluteal abscess, *Kluyvera cryocrescens*, Obese diabetic adult male

## INTRODUCTION

Initially described by Kluyver and van Niel in 1936 and documented further by Asai et al in 1956, the bacterial genus *Kluyvera* was not defined completely until molecular characterization by Farmer et al in 1981.[1-4]

The genus currently consists of 4 species, *Kluyvera ascorbata, Kluyvera cryocrescens, Kluyvera georgiana* (formerly species group 3), and *Kluyvera cochleae.* Each of these species has been recovered from human clinical specimens except *K cochleae*, which has been isolated from snails and slugs.[5]

*Kluyvera* spp. are Gram negative bacilli that had been initially thought to be benign saprophytes. This genus predominantly colonizes the respiratory, gastrointestinal, and urinary tracts. Water, sewage, soil, milk, hospital sinks, and cows have been reported as environmental sources, suggesting that *Kluyvera* spp. are widely distributed. The biochemical profile is similar to that of other Enterobacteriaceae. A member of the Enterobacteriaceae, although initially described in 1936, the genus *Kluyvera* was not well characterized until 1981 by Farmer et al. Previous to 1981, the organism has also been referred to as CDC enteric group 8 and as API group 1. *Kluyvera* is a small, flagellated, motile gram-negative bacillus that clearly belongs to the family Enterobacteriaceae. The organism is distinguished from other related genera by its ability to use citrate and malonate, decarboxylate lysine, and ornithine and to produce large quantities of a-ketoglutaric acid during the fermentation of glucose. *Kluyvera* grows well in ordinary culture media, and its colonies resemble those of *Escherichia*. No specific virulence factor has been identified, but like other Enterobacteriaceae, the organism has a lipopolysaccharide complex and surface antigens that may confer virulence. *Kluyvera* is part of the normal flora of the human digestive tract, but it is usually associated with low bacterial counts. This might explain

why its isolation in clinical infections is rare. It is unknown whether *Kluyvera* infections are predominantly endogenous or environmentally acquired or whether both routes are equally important.[2]

The identification of *Kluyvera* to the genus level in the clinical laboratory is not particularly problematic with the automated identification systems now in widespread use. Conventional biochemical tests also will readily identify *Kluyvera*. Confirmatory species identification of *Kluyvera* requires the demonstration of ascorbate utilization, glucose fermentation at 5°C, irgasan susceptibility testing, or gas liquid chromatography.[6]

*Kluyvera* may have a more pathogenic nature than previously believed. The organism is capable of causing severe infections even in immunocompetent individuals; fatalities attributed to *Kluyvera* have occurred; the organism has been isolated in pure cultures of blood and other normally sterile specimens from patients who have clinically significant infections; it is capable of invading multiple organs and has a tendency to form abscesses; and clinical improvement is seen after specific treatment is instituted.[7-15]

The overall clinical significance of the organisms, however, is uncertain. Here, we report *Kluyvera cryocrescens* soft tissue infection in a diabetic adult.

## CASE REPORT

A 35-year-old obese male was admitted to the surgical department with the chief complaints of pain and swelling in both buttocks and perianal region for past 5 days. These complaints were also associated with fever and vomiting. The patient was a known diabetic with poor control. He was diagnosed with bilateral gluteal abscess.

The haematological parameters showed that he was mildly anaemic (Hb 12.8gm/dl), total leukocyte count was found to be 17330/cumm, differential counts revealed neutrophilia (87%). Biochemical parameters revealed raised blood glucose levels (fasting: 130mg/dl and post prandial: 210mg/dl) and the glycosylated haemoglobin (HbA1c) was 7.5% (poor control). He was found to be negative for antibodies against HIV and hepatitis C and surface antigen of hepatitis B virus.

The abscesses were drained under aseptic conditions in operation theater. The pus drained from both the abscesses was collected in the universal sterile container and sent for aerobic culture and sensitivity. On arrival in the microbiology lab the Gram stain performed on the specimen showed Gram negative bacilli in a background of pus cells. The pus samples were inoculated on Blood agar (BA), MacConkey agar (MA) and Brain heart infusion (BHI) broth. Blood agar and MacConkey agar plates were incubated at 37°C for 16-18 hours. The identical pure growth of lactose fermenting colonies were observed from both the pus samples, preliminary tests on the colonies expressed catalase positive, oxidase negative, Gram negative motile bacilli. Final identification of the isolate and its antimicrobial susceptibility testing was done by automated method (Vitek2 Compact system, bioMèrieux). The organism was identified as *Kluyvera cryocrescens*, sensitive to amikacin (MIC<=2), amoxicillin/clavulanic acid (MIC<=2), cefepime (MIC<=1), cefoperazone/sulbactum (MIC<=8), ceftriaxone (MIC<=1), ciprofloxacin(MIC 0.5), colistin (MIC<=0.5), ertapenem (MIC<=0.5), gentamicin (MIC<=1), imipenem (MIC<=0.25), meropenem (MIC<=0.25), piperacillin/tazobactum (MIC<=4), tigecycline (MIC<=0.5) and trimethoprim/sulfamethoxazole (MIC<=20).

Patient was empirically started on inj augmentin and inj amikacin (preoperatively) along with injectable hypoglycemic to bring blood sugar under control. On follow up it was found that the patient was afebrile and pus from the lesion also subsided after 3 days post incision and drainage. Patient was discharged from the hospital with oral augmentin for a week.

## DISCUSSION

*Kluyvera* is described infrequently in association with clinically significant infections. In the early 1980s, the organism was regarded mostly as a benign saprophyte that colonized predominantly the respiratory, gastrointestinal, or urinary tract.[2] Kluyvera has been reported from soft-tissue infections.[14-18]

Identification of *Kluyvera* in the course of typical microbiology laboratory routines may be problematic, because its biochemical identification patterns are similar to those of other, related genera, which may result in underestimation of the true incidence of these infections. In the current report the patient was diabetic and obese. The source of *Klyuvera* as the pathogen of gluteal abscess could be the gastrointestinal tract. Since the organism was sensitive to most of the antibiotics and patient being immune suppressed this theory holds valid as well as gives it an opportunistic pathogen status.

## CONCLUSION

Increased awareness and a meticulous evaluation of the organism's growth and susceptibility patterns may aid in identification. A prompt identification of *Kluyvera* species in clinical infections is important, because adequate antimicrobial treatment usually results in recovery. Awareness about existence of the pathogenic potential of lesser known organisms will help in designing treatment options.

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