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Helcococcus kunzii Isolated from a Sow with Purulent Urocystitis[▽]

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***Helcococcus kunzii* has never been reported in veterinary medicine. The isolation of *H. kunzii* from a sow with purulent urocystitis is described, suggesting this organism's potential pathogenic role in swine.**

CASE REPORT

In order to study bacterial flora associated with urinary tract infections (UTI) in sows, urine samples and urinary tracts from 72 multiparous culled sows were randomly collected from a local slaughterhouse in northern Italy. A 4-year-old sow (F1 Large White × Landrace), one of the 72 animals, was culled because of decreased farrowing rate. Antemortem physical examination was otherwise unremarkable. Urine samples were aseptically collected for urinalysis (physical and biochemical parameters, sediment, and bacterial culture) by means of centesis. The urinary bladder mucosa was diffusely thickened with reddish and grayish areas of discoloration. There were no gross lesions in the urethra, kidneys, or other organs at postmortem examination. Tissue specimens from the urinary bladder, urethra, and kidneys were collected and sent to the laboratory for microscopic examination.

Urine appearance was orange-yellow and cloudy, pH was >9, and the specific gravity was 1,027. Biochemical urinalysis (Multistix 10 SG-Siemens and Clinitek 500 urine chemistry analyzer [Bayer]) revealed blood (2+), protein (3+), and nitrites and ketones (traces). Microscopic analysis showed hematuria (50 red blood cells/high-power field), pyuria (20 white blood cells/high-power field), numerous epithelial transitional cells, magnesium ammonium phosphate crystals, and intracellular and extracellular bacteria (1).

For the bacteriological determinations, urine specimens were plated onto Columbia agar containing 5% sheep blood and onto MacConkey agar incubated at 37°C in air and onto two separate 5% sheep blood agar plates incubated anaerobically and at 37°C in 5% CO_2-supplemented air, respectively. After incubation for 24 h in aerobic, anaerobic, and 5% CO_2 atmospheres, a pure, heavy growth of pinpoint, slightly gray, nonhemolytic colonies was observed on the Columbia agar but not on the MacConkey agar. Gram staining of the pinpoint colonies revealed Gram-positive cocci arranged in pairs and clusters. These colonies were catalase and oxidase negative. The enzyme profile and biochemical characteristics of the Gram-positive cocci (colorimetric Vitek 2 GP card identification system; bioMérieux) tested positive for leucine arylamidase, alanine arylamidase, β-galactosidase, and β-galactopyranosidase. *Helcococcus kunzii* was identified with a probability of 99%.

Tissue specimens of the urinary bladder, urethra, and kidneys were fixed in 10% buffered formalin and processed for routine paraffin embedding. Sections 3 μm thick were stained with hematoxylin and eosin (HE). Histological examination of the urinary bladder showed diffuse, severe neutrophilic infiltration, scant lymphoplasmacellular infiltration, multifocal hyperplasia of goblet cells, and necrosis, in addition to numerous intralesional bacterial colonies. The urethra displayed a focal severe neutrophilic and lymphoplasmacellular infiltration. A mild interstitial fibrosis of the renal medulla was also observed.

First described in 1993, *Helcococcus kunzii* is a new genus and species of catalase-negative, facultatively anaerobic, slow-growing, nonsporulating, Gram-positive cocci. Since then, similar organisms such as *Helcococcus ovis* (5, 12), *Helcococcus pyogenes* (9), and *Helcococcus sueciensis* (6) have also been reported. *H. kunzii* was originally isolated in mixed culture from human wounds and a breast abscess (2) and as the sole isolate from an infected sebaceous cyst (10). More recently, the presence of *H. kunzii* has been demonstrated in patients who were not significantly immunocompromised, suggesting that it could be a more virulent opportunistic pathogen (3, 8, 11, 13) than previously thought (7).

To the best of the authors' knowledge, *H. kunzii* has never been isolated from a veterinary patient. In the present report, urinalysis was suggestive of a UTI, later confirmed by bacterial culture and histopathological findings. The sole isolation of *H. kunzii* and its association with the urinary tract lesions found in this sow point to its potential primary pathogenic role. The exact mechanisms that triggered the severe purulent subacute urocystitis in this sow are unknown; however, several factors such as heavy skin colonization, increased pathogen virulence, and a stressful event with a subsequent decrease in the body's compensatory response could all have played an important role. Since *H. kunzii* shares many phenotypic characteristics with other Gram-positive cocci such as *Aerococcus viridans* (4), some commercial systems may fail to identify it. The API 20 Strep profile of *H. kunzii* corresponds to a "doubtful" *Aerococcus viridans*, whereas the Vitek 2 colorimetric system can provide discriminating identification of *H. kunzii* by analysis of 43

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biochemical characters, thus offering a good alternative to 16S rRNA sequencing when not available in the laboratory (8).

In conclusion, although more studies are necessary to accurately determine the role of *H. kunzii* in UTI in swine, and perhaps other animals as well, our findings are unique to date and important, because they indicate for the first time a possible pathogenic role of *H. kunzii* in pigs.

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