

## Documents

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**Bacterial quality of urinary tract in patients with alkaptonuria**  
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#### Abstract

**Background:** The aim of the current study was to determine whether there is an association between alkaptonuria (AKU) and urinary tract infection (UTI) by exploring the bacterial quality of the urinary tract, as most of the patients with AKU present with frequent occurrence of urinary tract symptoms such as incomplete emptying of urinary bladder, dysuria and nocturia. **Methods:** Study samples were collected from 22 participants; 9 from patients with AKU, 9 from individuals who were AKU carriers, and 4 people served as control. Confirmation of AKU diagnosis was established by the ferric chloride test and quantitative determination of urinary homogentisic acid (HGA) levels. **Results:** In the ferric chloride test, the urine samples of AKU patients showed a characteristic black ring upon addition of few drops of ferric chloride solution. During urinary HGA determination, patients with AKU had increased levels of urinary HGA as compared to carriers and controls. The following 10 bacterial species were isolated from the urinary tract of AKU patients, carriers and controls: *Sphingomonas paucimobilis*, *Escherichia coli*, *Francisella tularensis*, *Staphylococcus hominis*, *Staphylococcus haemolyticus*, *Leuconostoc mesenteroides*, *Dermacoccus nishinomiyaensis*, *Kytococcus sedentarius*, *Serratia fonticola* and *Granulicatella adiacens*. The presence of *S. paucimobilis* was found in three male patients, and one female each from the carrier and control groups. Almost all study samples were positive for *D. nishinomiyaensis* and *K. sedentarius*. *S. fonticola* and *G. adiacens* were found only in AKU carrier females. **Conclusions:** The results deduced that males show symptoms of arthritis early and more severely than females and by this it appears that there is an association between these symptoms and the percentage of bacterial infection in males that requires more accurate diagnosis and treatment to clarify such relationship. In the current study, males (patients, carriers, and controls) were more likely to have bacterial infections than females (64% vs. 36%). The 16 and 2 bacterial isolates, detected in 7 males and 2 females AKU patients, respectively, revealed that male AKU patients had a 2.3-fold greater rate of bacterial infection than female AKU patients. Therefore, further studies are warranted to investigate if there's any relationship between higher incidence of bacterial infections and development of AKU-related clinical symptoms in the male population. © 2023 Southern Society for Clinical Investigation

#### Author Keywords

Alkaptonuria; Arthritis; Homogentisic acid; Urinary tract infection

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