



Editorial

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The Microbiome and Urology

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Research on the microbiome is currently in the spotlight, and researchers are actively exploring the role of the microbiome in a wide variety of urological diseases. The complex microbial communities colonizing the human body have been recognized as major factors with a very close relationship to the pathogenesis of various diseases [1]. In the past, healthy human urine was originally considered to be a sterile body fluid based on routine urine culture techniques. With the advent of modern DNA sequencing technology, such as 16S ribosomal RNA (rRNA) gene or whole-metagenome sequencing, slowly or fastidiously growing bacteria were detected as unique commensal flora in the urinary tract.

In 2012, Wolfe et al. [2] first proved the existence of a urinary microbiome through 16S rRNA gene sequencing, including conventional urine culture tests, using urine obtained from adult women without urinary tract infections. After the first discovery of the microbiome in the urinary tract, researchers have proposed various hypotheses and reported research findings indicating that the microbiome plays an essential role in various urological diseases, including overactive bladder, urolithiasis, and bladder cancer.

The discovery that the microbiome is related to urological diseases other than infectious diseases is a very interesting finding. We should take a keen interest in the conclusions that research in this field will reach in the future. I would cautiously predict that these studies will have a significant impact on the understanding and/or treatment of various urological diseases. The *International Neurourology Journal* (INJ) has also published some studies and letters related to the microbiome [3,4].

In the present issue of INJ, Kim and Jung [5] highlight a re-

cent study that expands our understanding of the urinary tract microbiota in men with lower urinary tract symptoms. In particular, Kim and Jung [5] review many excellent studies in detail, showing a correlation between benign prostate hyperplasia or chronic prostatitis and the microbiome. This review article will be of great help to the readers of INJ in their research and will strengthen their understanding of the microbiome.

Of course, the biggest question that remains unanswered despite these studies is whether changes in the microbiome are the cause of various diseases or are the result of diseases.

Undoubtedly, the microbiome is linked to urological diseases. The extent of this relationship remains unclear, but the possibilities are endless. Over the next few years, establishing the influence of the microbiome on urological homeostasis will play a key role in our understanding of urological diseases.

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