

Identification Of Bacteria In The Urine Of Women With Urinary Tract Infections (Uti) At Primaya Hospital Makassar

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Abstract.

Urinary Tract Infection (UTI) is caused by a group of gram-negative bacteria such as *Escherichia coli*, *Proteus mirabilis*, *Klebsiella pneumonia*, *Citobacter*, *Enterobacter*, *Pseudomonasaeruginosa*. In addition, gram-positive bacteria can also cause UTI's such as *Staphylococcus epidermidis* and *Streptococcus faecalis*. UTI's are more common in women because the urethra is shorter so contaminants can enter the urinary tract more easily. The type of research by using 10 urine samples on urine samples through urine culture examination. The type of urine used was urine while. This research aimed to determine what types of bacteria were found in the urine of women with Urinary Tract Infections (UTI) at Primaya Hospital Makassar. The results of the research from 10 urine samples of women with Urinary Tract Infections at Primaya Hospital Makassar, namely 3 samples found *Escherichia coli* bacteria, 6 samples were found *Enterobacter agglomerans* bacteria, and 1 samples was found *Klebsiella sp*. The most common type of bacteria was found in *Enterobacter agglomerans*.

Keywords: Urinary Tract Infection (UTI), Bacteria

I. INTRODUCTION

Infections is a disease that are often found around the world, one of them is Urinary Tract Infection (UTI). UTI is an inflammatory process due to the proliferation of microorganisms in the urinary tract that can damage the walls of the urinary tract itself, where under normal circumstances there are no bacteria, viruses, or other microorganisms [1]. UTI is disease that is often found in communities and hospitals. Urinary tract infection can affect patients of any age from newborns to the elderly [2]. Urinary Tract Infection (UTI) is the second infectious disease that often infect the body after respiratory tract infections and 8.3 million cases are reported annually. In addition, this infection is also more commonly experienced by women than men [3]. In general, UTI is divided into two, namely the lower and upper UTI. A lower UTI is the most common infection, because the entry of bacteria through the urethra and infection can occur through inflammation, one of which is in the bladder. An upper UTI is an infection that results impaired kidney function, swelling of the nephron, and renal abscess [4]. Urinary tract infection is caused by different types of microbes, such as bacteria, viruses, and fungi. The most common cause of UTI is *Escherichia coli* bacteria. But besides *Escherichia coli*, there are other groups of bacteria that cause UTI such as *Enterobacter sp*, *Proteus mirabilis*, *Providencia stuartii*, *Morganella morganii*, *Klebsiella pneumoniae*, *Pseudomonas aeruginosa*, *Staphylococcus epidermidis*, *Streptococcus faecalis*, and other bacteria [5].

Besides bacteria, fungi can also be the most frequently cause of UTI such as *Candida albicans* and other species of *candida*. Some other fungi such as *Aspergillus* or *Cryptococcus* can also cause UTI's [6]. UTI more frequently common in women than men. This is because the location of the female urethra is short so that contaminant bacteria (*Escherichia coli*) easily go to the bladder. In addition, the location of the female urinary tract adjacent to the rectal so that germs have access to the urinary tract, while in men the location of the urethra is longer and there is also prostate fluid that serves as a bactericidal that is as a protector against infection by bacteria [7]. Symptoms that are often found in urinary tract infections are pain and heat when urinating (*dysuria*), *polakisuria*, desperate to urinate, difficulty in urinating which accompanied by spasms of the waist muscles, pain accompanied by the desire to empty the bladder even though it has been empty, the tendency to urinate more frequently at night and difficulty when starting to urinate [8]. Bacteria such as *Escherichia coli* can enter the urinary tract through several ways including

ascending, hematogenous, lymphogenous, and even direct transmission from surrounding organs that have experienced infection [9]. One of the factors that cause the entry of bacteria into the urinary tract is personal hygiene. The so-called personal hygiene is the process of rinsing vital organs when urinating which can affect urinary tract infections, because if we do a good process it will reduce the possibility of bacteria entering the urinary tract from the rectum. Water can also have an influence on urinary tract infections, because some of the bacteria that cause UTI's live in water. In addition, the host and the role of the immune system are also important [10]. Based on the description above, the researcher is interested in conducting research on the identification of bacteria in the urine of women with urinary tract infections.

II. METHODS

This research is use laboratory observation research with a descriptive approach to identify the types of bacteria found in urine samples of women with urinary tract infection. Data analysis proceed by describing the types of bacteria found in urine samples of urinary tract infections. Then, the data presented in the form of key identification table of bacteria used. The sampling process was carried out by directing the respondent to properly accommodate the urine into a sterile pot that had been identified, then the urine sample was centrifuged for 5 minutes at a speed of 10,000 rpm until a precipitate was obtained, after that BHIB was inserted in each tube containing urine sediment and homogenized. Then incubated at 37°C for 24 hours. The presence of turbidity was observed and the samples were isolated on *MacConkey Agar (MCA)* and *Nutrient Agar (NA)* media at 37°C for 24 hours. After that, the bacterial colonies that grew were observed and continued on gram staining and biochemical tests.

III. RESULTS AND DISCUSSIONS

Based on the results of research conducted at the Microbiology Laboratory, Faculty of Medicine, Hasanuddin University, Makassar on October 14-18, 2021, by identifying 10 samples of bacteria in the urine of women with UTI, the following results were obtained:

Code	Result	Bacteria
1	Positive	<i>Escherichia coli</i>
2	Positive	<i>Escherichia coli</i>
3	Positive	<i>Enterobacter agglomerans</i>
4	Positive	<i>Klebsiella sp</i>
5	Positive	<i>Enterobacter agglomerans</i>
6	Positive	<i>Enterobacter agglomerans</i>
7	Positive	<i>Enterobacter agglomerans</i>
8	Positive	<i>Enterobacter agglomerans</i>
9	Positive	<i>Enterobacter agglomerans</i>
10	Positive	<i>Escherichia coli</i>

Table 1. Results of Bacterial Identification in Urine of Women with UTI

Based on the results of the study, the types of *Escherichia coli* bacteria were found in sample codes 1, 2, and 10. This is in line with research conducted by a researcher who explained that *Escherichia coli* bacteria were found in urine samples of UTI patients at Bhayangkara Kediri Hospital. This bacterium is a gram-negative rod-shaped colony characterized by round, small size, red color, flat edges, convex surface, and can ferment glucose, lactose, mannitol and sucrose on MCA media [9]. *Escherichia coli* bacteria habitat in the digestive tract, and can enter the urinary tract by ascending. It means the bacteria move from the anus to the urinary tract. So this is the most common cause why someone suffering UTI. Furthermore, *Enterobacter agglomerans* bacteria were found in sample codes 3, 5, 6, 7, 8, and 9. spores and belongs to the family *Enterobacteriaceae*. These bacteria belong to the gram-negative, rod-shaped, non-spore-forming bacteria group and belong to the *Enterobacteriaceae* family. They are able to ferment lactose and glucose and show positive results in the citrate test [10]. This bacterium was identified as a germ that causes nosocomial infections. These bacteria can be found in urine because the water used has been contaminated so that when using water to clean vital organs, it makes it easier for bacteria to access the urinary tract. And in sample code 4, bacteria *Klebsiella sp* was found.

This is in line with research conducted by a researcher that besides *Escherichia coli* bacteria, *Klebsiella sp* bacteria were also found. It is one of the cause of urinary tract infections. These results were obtained from observations on MCA media. It has large round colonies, pink in color, convex surface, flat edges. And the results of the biochemical test showed that the positive (+) VP test was indicated by the presence of a red ring/color on the media, positive (+) citrate was indicated by a color change from green to blue in the media [9]. Based on the results of the study, the overall urine sample of women with UTI showed that *Enterobacter agglomerans* was more frequently found than *Escherichia coli* bacteria. This is because most of the respondents probably used contaminated water. Generally most of the bacteria habitat are in water. So that when using previously contaminated water for bathing or cleaning vital organs, it makes it easier for bacteria to enter the urinary tract. Meanwhile, *Escherichia coli* bacteria live in the digestive tract. These bacteria can act as pathogenic bacteria if they are in a habitat that is not in accordance with their natural habitat and in large numbers, one of them in the urinary tract.

IV. CONCLUSIONS AND SUGGESTION

Based on the results of research conducted at the Laboratory of Microbiology, Faculty of Medicine, Hasanuddin University Makassar, it can be concluded that *Escherichia coli*, *Enterobacter agglomerans*, and *Klebsiella sp* bacteria were found in the urine of women with UTI.

V. TRIBUTE NOTE

The author is grateful to Mrs. Hartati and Mrs. Sulfiani as supervisors I and II who patiently took the time to provide guidance, direction, and input to the author.

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