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AN OVERVIEW OF URINARY TRACT INFECTION DIAGNOSIS AND MANAGEMENT APPROACH IN PRIMARY HEALTH CARE CENTERS: LITERATURE REVIEW

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ABSTRACT.

Background: Urinary Tract Infection (UTI) is one of the most common conditions that usually affects females more than males due to shorter urethra. The most common organism is E.coli. Urinary Tract Infection (UTI) can be symptomatic or asymptomatic. Its diagnosis is made by the culture and sensitivity of the organism to antibiotics. Excessive usage of antibiotics can lead to multidrug-resistant organisms. Objective: The objective of this review is to discuss Urinary Tract Infection, its different presentations, and management plan with the outcome. Method: We searched the PubMed database looking for relevant articles to the topic using Mesh terms, "Urinary Tract Infection". Conclusion: Urinary Tract Infection is a common condition, and the correct choice of antibiotics will not only treat your patient but also will prevent the development of resistance against antibiotics.

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Introduction

Urinary tract infection is an infection of the lower, upper, or both urinary tract it can be associated with a clinical sign (symptomatic) or not associated with any clinical features (asymptomatic) but both have a shred of evidence for the presence of bacteria in urine or bacteriuria and pyuria which is the presence of white blood cells in the urine [1-4]. Since the urinary tract infection is much more common in women this review will discuss the management, prevention and treatment with main consideration of female criteria and guidelines.

Risk Factors:

In risk factors the genetic predisposition always has a role in increasing the susceptibility to get the infection [5]. It is also approved that the sexual intercourse has a major role to play here since during the intercourse the vaginal bacteria has suitable and easy access to the urethra than in normal situation and since the urethra is short it is much easier to reach the bladder and cause the urinary tract infection [6].

In addition to the previous urinary tract infection, it has been approved that if a person gets infected once in past there is a higher risk about four times to get infected another time [7]. Also if there is urinary stasis or high post-void residual urine (PVR) it has been approved that has a role in developing an infection it is very common with obstruction cases especially in

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men like those who have benign prostatic hyperplasia (BPH), lastly in hospitalized population specifically with urethral catheterized patients the bacteria has easy access to the urethra through the catheterized penis [8].

Microbiology:

The most common pathogen that causes urinary tract infection is E.coli in both communities nursing homing resident and community population then streptococcus proteus, streptococcus Klebsiella and enterococcus respectively [9]. since the urinary tract infection is a very common disease, this can lead to overusing of antibiotics drugs in the wrong way and excessive manner and it is found that there is a strong relationship between the increasing cases of urinary tract infection and cases of treatment resistance organisms MDROs (multidrug-resistant organism) [10]. This can be found in huge numbers among the health care settings. also it is started to develop in the population community but it is still in a smaller amount, but this is an alarming sign for antibiotic usage we should use it more wisely and precisely.

It has been postulated that the inoculation is the first and most important step in developing the urinary tract infection, inoculation is the event of ascending of the bacteria from the perineum to the bladder and urethra [11]. In addition to decrease the amount of the peroxide producing lactobacilli which promote the increase of colonization and this enhance and increase the chance of re-infection [12]. Lastly formation of intracellular clusters of MDROs this increase the life expectancy of bacteria and resistant abilities it is also postulated that there is a relationship between the urinary tract infection and the changes that happen in the GAGs (glycosaminoglycan) layers in the urothelium which increase the susceptibility to infections [13].

Diagnosing of urinary tract infection in population community:

The diagnosis that depends on symptoms needs to confirm genitourinary symptoms demonstrated by pyuria (presence of leukocytes) and dysuria even if frequency presents or not, suprapubic pain with hematuria in some cases can be found, more generalized pain like back pain, lower abdominal pain or constipation [14]. In term of confirmation of the diagnose we need to do a urine culture to confirm the type of bacteria and its susceptibility to antibiotics and its sensitivity [1, 8]. Since the urine culture can take some time, some physicians start an empiric treatment course for the bacteria, and this lead to misusing or overusing of antibiotics which also increase the possibility to develop MDROs [1].

Diagnosis in health care settings:

In this type the diagnosing is much more complex than the diagnosing of community population because usually there is a lot of co-morbidities associated with this type and sometimes there are cognitive and mental deficits which make the communication process so hard with the patient [15]. For this reason, there is a lot of misdiagnosing happened in past and this caused MDROs which convince the researchers to put criteria and adhere to it in diagnosing such cases [1]. To diagnose it, at least 3 of those symptoms should be found: fever more than 38C, increased pain with micturition, new flank pain, changes in urine character [16]. There are another criteria which is used to maintain the use of antibiotic through this population and named McGeer and Loeb criteria, says if you want to initiate a course on antibiotic there should be at least one of the following new or worsening in the following symptoms: urgency and frequency of urination, suprapubic pain and costovertebral tenderness, hematuria and urinary incontinence [17].

Management and Treatment:

The new guidelines suggest that there is no treatment recommended for Asymptomatic Bacteriuria (ASB) to decrease the consumption of antibiotics, thus, decrease cases of resistance, however it is only recommended when there is a urological procedure and mucosal bleeding is anticipated that may worsen the condition [18]. For symptomatic urinary tract infection the International Clinical Practice Guidelines proposed by the European Society for Microbiology and Infectious Diseases suggests that, the most suitable drugs are: Nitrofurantoin can be used for days twice daily with 100 mg, in addition to using of TriMethoprim (TMP)/ Sulfamethaxazole with high doses 160-800 mg it is used for 3 days and twice daily [1]. In treating urinary tract infection physicians should use the narrowest spectrum antibiotic that can be used for the condition to decrease the level of microbial resistance (MDROs), so the urine culture and urine analysis are indicated [1]. Some physicians start empiric treatment for bacteria and this has been approved one of the most important causes in developing multidrug-resistant organisms (MDROs) the most drug that related to develop this type of resistance is Quinolones so nowadays it is not as common as it was [1].

Now the guidelines prefer to start hydration with some non-pharmacological therapy while the result of urine culture and urine analysis has been out and it has been approved that there is no difference in the efficacy of starting empiric treatment and starting non-pharmacological therapy until the results of culture and analysis coming out [19].

Special Consideration in Pregnancy:

It is not suitable to apply the same regimens and ways of treating non-pregnant women and pregnant women. In pregnant women even the Asymptomatic Bacteriuria needs intervention because it may develop pyelonephritis due to changing in the urinary system during the pregnancy period [20]. Add to that, severe cases can lead to miscarriage, so the pregnant women

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need to do follow up and screening in the pregnancy period and if there is any sign of urinary tract infection there should be an intervention to prevent the fetal comorbidities [20].

Prevention:

In prevention field of urinary tract infections a lot of non pharmacological and pharmacological interventions has been approved to be effective in preventing the recurrent of urinary tract infection (rUTI).

In non-pharmacological, there is urine alkalizing therapy which tend to increase the urine pH and thus decreasing the recurrent infection it can be done by administration of potassium citrate or another alkalizing agents [21]. Add to that, lactobacillus probiotic has been approved to be one of the very effective prevention therapy it forms a vaginal barrier and prevent colonization of pathogenic organism [22].

In pharmacological therapies, they have conducted a lot of researches about the estrogen systemic and topical and they conclude that the topical estrogen has a very powerful effect in preventing rUTI [23]. The explanation behind that is, while aging and decreasing the estrogen level the lactobacillus decrease in the vagina and the barrier is disrupted and chances to colonization is much higher the topical estrogen has shown a very positive points in this aspect of study in the same time there is no risk increase in breast cancer or endometrial cancer, as the systemic estrogen do so the topical estrogen is more beneficial than the systemic [23].

Conclusion:

UTI is a very common infection between the population community and the health care setting and the most common pathogen is E.Coli, UTI has a specific logarithm to intervention when and how according to the symptoms and clinical manifestation but always the pregnant women has specific criteria to intervention to prevent any possible infection can be delivered to the fetus so usually the intervention is required, in field of intervention there is a lot of non-pharmacological therapy in addition to the pharmacological which can be used to prevent such a condition. However, the door still opens for advanced treatment and prevention for such a common condition.

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