Review

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Importance to Promote Awareness in Patients with Recurrent Cystitis

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In spite of a high cure rate, cystitis is a common disease in women that often recurs within a year. The uncomfortable symptoms associated with recurrent cystitis affect the quality of life and overall daily life. However, the awareness pertaining to the treatment or prevention of recurrent cystitis has remained the same. Physicians and patients are unaware that recurrent cystitis can lead to several problems, such as socioeconomic burden and antibiotic abuse. Therefore, there is a requirement to enhance awareness of the socio-economic burden of recurrent cystitis, the effects on the quality of life of patients, and the importance of prevention and management after treatment.

Keywords: Cystitis; Recurrence; Awareness

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INTRODUCTION

Urinary tract infection (UTI), a common community affliction, is one of the most common bacterial infections in women. UTI in healthy women is mostly uncomplicated cystitis that is commonly experienced by 10% of women at least once a year and 60% of women once in their lifetime [1]. As such, UTI is the most common cause of antibiotic use in healthy women. In a recent study, approximately 13.1% of antibiotics prescribed in Korea were used to treat UTIs [2]. However, despite the high rate of cure through short-term antibiotic treatment, 30-50% of women suffer a recurrence of UTI within six to 12 months, and UTI tends to recur more as the frequency of infection increases [3-5].

Several guidelines define recurrent UTI as two or more UTIs within six months, or three or more incidents within a year [6]. Recurrent cystitis more than thrice a year has a great impact on the quality of life of patients. The frequent patient complaints of discomfort also result in an increased burden for physicians. To treat recurrent cystitis, physicians often prescribe antibiotics repeatedly rather than resorting to systematic preventive measures. Patients also tend to seek treatment from multiple specialists instead of consulting a urologist to reduce the frequency of recurrent cystitis [7]. This has resulted in various problems, such as increased antibiotic abuse, antibiotic resistance, frequent and unnecessary use of the emergency room by patients, and a consequent increase in medical costs [8,9]. This review is an in-depth discussion on the importance of improving women's awareness of recurrent cystitis and the role of urologists.

MAIN BODY

1. Socioeconomic Burden

Although the economic burden of uncomplicated UTI is not excessive, the high prevalence and frequent recurrence can lead to a high financial burden. The global cost of diagnosis and treatment of UTI is estimated to be billions of dollars per year, with approximately 2 billion USD per

year in the U.S. alone [10]. In particular, excessive use of the emergency room by UTI patients increases the burden on the medical system. In a study conducted in the U.S., of the 10.8 million outpatient visits, 2.3 million UTI patients were emergency room visits, and 80% did not require hospitalization [11]. Such inappropriate use of medical services significantly increases the medical cost, emphasizing the need to educate and improve awareness in patients with recurrent cystitis.

In addition to the direct costs related to the use of medical services, there is a need to also consider social losses associated with the decrease or loss of labor due to diseases. A recent study on the social opportunity costs of recurrent cystitis patients in five European countries (Germany, Switzerland, Poland, Russia, and Italy) showed that, on average, women use 3-4 days of sick leave for the illness [12]. There are practical limits to objectively and financially quantify these intangible costs. However, as discussed later in this review, the deteriorating quality of life due to psychological and mental suffering caused by recurrent UTI converts into these social losses.

2. Effects on Quality of Life

Pain and/or burning during micturition and dysuria, which are symptoms of cystitis, are some of the most common symptoms experienced by young women [13,14]. Recurrent cystitis repeatedly causes these symptoms, affecting the daily life and ultimately decreasing the quality of life of patients [15]. A recent internet-based survey conducted in the U.K. evaluated the effects of cystitis on daily life [16]. They reported that regardless of the severity, symptoms such as urgency affected sleep and caused chronic fatigue, and repeated recurrence of cystitis was associated with anxiety. Additionally, women expressed the need for improving the lack of social interest for restrictions on activities associated with recurrent cystitis, such as childcare and sick days. Although the study did not investigate the decreased quality of life using an objective questionnaire, they reported that recurrent cystitis had diverse effects on overall daily life.

In other studies that used Short Form 36 (SF-36), a questionnaire for evaluating the quality of life, patients with acute cystitis had a significantly lower SF-36 score compared to the healthy group [17,18]. Compared to the SF-36 score at the time of diagnosis, adequate treatment positively impacted the quality of life, as determined by a significantly improved SF-36 score after treatment [18]. In contrast, failure of clinical treatment lowered the quality of life, thereby validating that successful treatment is closely related to a patient's quality of life [19]. This further implies that patients with recurrent cystitis often experiencing treatment failure have a worse quality of life than patients with uncomplicated cystitis. In addition to the success of treatment, it was observed that chronic constipation and caffeine intake also lowered the quality of life in patients with recurrent cystitis [20]. These findings suggest that identifying the underlying diseases and modifying the lifestyle behaviors are as important as the actual treatment for improving the quality of life in recurrent cystitis patients.

The effects of recurrent cystitis on the overall daily life and quality of life inevitably affect the psychological health of patients [15]. In particular, patients with recurrent cystitis experience an increased anxiety index compared to patients without recurrent cystitis [21]. Other recent studies have also reported the effects of recurrent cystitis on depression. Approximately 62% recurrent cystitis patients suffered from some degree of depression [15], and patients experienced persistent psychological problems even after treatment. Contrarily, physical activities were observed to be restricted only for a short term in acute cystitis [12]. These findings indicate that in addition to treatment for cystitis, patients also require psychological support. Moreover, as effective preventive treatment is shown to improve anxiety and depressive symptoms in patients with recurrent cystitis [15], adequate preventive therapies are as important as psychological support [15].

3. Effects on Sexual Function

Currently, there is a lack of studies on sexual function in patients with recurrent cystitis, and its effects on sexual function are overlooked. In contrast, sexual relationships are a key topic of discussion among patients [16]. Sex is a well-known risk factor for UTI in young women [22]. A simple understanding of the association with UTI is a significant negative effect on sex in women, which also increases disgust and fear of sex [16]. Moreover, UTI is often misunderstood as a sexually transmitted disease, which causes a misconception and stigma of the woman being "trampy" or "unhygienic" [23]. Therefore, rather than educating patients to avoid sexual life, it is important to improve the awareness of cystitis by encouraging the

evaluation of cystitis after sex. Patients with a history of cystitis need to be prepared with measures to prevent cystitis. Although studies and evidence are lacking, the assessment and correction of habitual hesitancy after sexual intercourse, and the use of prophylactic antibiotics before and after coitus, need to be recommended [24].

4. Role of Urologists

As previously described, to reduce the frequency of recurrence and number of infections, patients with recurrent cystitis seek help from specialists, as well as alternative treatments and other non-specialists. However, it is important to note that urologists have the expertise to thoroughly evaluate patients who have a high clinical possibility for recurrent cystitis. Therefore, in patients with recurrent cystitis, there is a necessity to improve the awareness that urologists have the expertise in diagnosing and treating UTI rather than simply administering repeated prescriptions of antibiotics.

During consultation with a recurrent cystitis patient, the urologist must first conduct a thorough and detailed history-taking, assessing a broad range of factors [7,25]. Symptoms should be documented in detail, and risk factors for UTI must be evaluated. In addition, previous use of antibiotics, surgical history, and previous UTI treatment history as well as urine culture test must be examined. The relationship between UTI and sexual activity needs to be confirmed through the patient's history, and treatment must be planned accordingly to prevent recurrent cystitis. During the physical examination, risk factors such as pelvic organ prolapse or vaginal atrophy should be identified and treated. The caruncle or urethral cyst must be assessed in patients experiencing severe urethral pain or urodynia. In general, cystoscopy or imaging tests for the upper urinary tract are not routinely recommended by various guidelines. However, these procedures should be performed in patients who experience rapid recurrence (within two weeks) or repeated recurrence by the same bacteria, and are suspected harbor other complex UTIs.

Treatment should be based on the principle of proper antibiotic resistance management. In the last several decades, there has been a steady increase in the antibiotic resistance of urinary tract pathogens. Similarly, Korea has reported an increase in lactamase-producing *Escherichia coli* in cystitis patients [8,26]. For administering the appropriate antibiotics, it is necessary to conduct a urine culture test prior to treatment. Patients presenting with symptoms that cannot delay treatment until results of the urine culture test can be given short-term antibiotic treatment based on the previous urine culture and sensitivity test results. The overall period of antibiotic use must not exceed a week. If symptoms persist after one week of treatment, the pathogen must be identified and eliminated through repeated urine cultures.

Establishing preventive strategies is the most important part of treating patients with recurrent cystitis; however, recent studies indicate that patients are not receiving adequate preventive treatment [12]. In the recent guidelines by the European Urology Association, vaginal application of estrogen, prophylactic antibiotics, and non-antibiotic prophylaxis are recommended for the preventive treatment of recurrent cystitis [27]. As the rate of antibiotic resistance varies in every country, prophylaxis using antibiotics is recommended for following guidelines for recurrent cystitis published in 2017 by the Korean Association of Urogenital Tract Infection and Inflammation [28]. For non-antibiotic prophylaxis, each guideline has different recommendations. However, cranberry products and vaginal estrogen preparations are commonly recommended for use. Conversely, although study findings support the preventive effects of immunotherapy, the lack of awareness has prevented its use. Adequate measures are needed to improve the awareness of immunoactive prophylaxis [29-31].

CONCLUSIONS

Despite the high morbidity, recurrent cystitis has been overlooked due to its low fatality rate. However, frequent symptoms have not only lowered the quality of life for patients, but has also resulted in the improper use and an increased burden on the medical system. This directly relates to a socio-economic burden and is expected to increase without improved awareness. Repeated and inappropriate use of antibiotics further aggravates antibiotic resistance, and physicians must, therefore, focus their attention on the diagnosis, prevention, and management as well as appropriate antibiotic administration in patients with recurrent cystitis. Improved awareness and interest in patients with recurrent cystitis will further enhance the management of recurrent UTI and benefit both patients and

physicians.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

AUTHOR CONTRIBUTIONS

S.T.A. participated in conceptualization and wrote the manuscript. M.M.O. participated in onceptualization coordination and helped to draft the manuscript. All authors read and approved the final manuscript.

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