Research of Urinary Tract Infections in Family Medicine Physicians’ Offices – Empiric Antimicrobial Therapy of Urinary Tract Infections – Croatian Experience

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ABSTRACT

In the period between October 1st and November 30th, 2006, we investigated a total of 3188 episodes of UTI (802 among males; 2386 among females) recorded in 108 family medicine offices in 20 cities in Croatia. The most common UTIs in women were acute uncomplicated cystitis (62%), complicated UTIs – cystitis and pyelonephritis (14%), urethritis (9%), acute uncomplicated pyelonephritis (6%), recurrent cystitis (5%), asymptomatic bacteriuria (3%) and recurrent pyelonephritis. The most common UTIs in men were complicated UTIs – cystitis and pyelonephritis (48%), urethritis (25%), prostatitis (24%) and asymptomatic bacteriuria (3%). Etiological diagnosis was made in 999 (31%) UTI episodes before antimicrobial therapy was given. The most frequently isolated causative pathogens were Escherichia coli (77%), Enterococcus faecalis (9%), Proteus mirabilis (5%), Klebsiella spp (3%), Streptococcus agalactiae (3%) and Enterobacter (1%). Antimicrobial drug was administered in 2939 (92.19%) UTI episodes, in 1940 (66.01%) as empirical therapy, and in 999 (34%) as targeted antimicrobial therapy. The most commonly administered drug in empirical therapy for acute uncomplicated cystitis, recurrent cystitis and urethritis in women was cephalaxin, for acute uncomplicated pyelonephritis and complicated UTIs in women co-amoxiclav, and for UTIs in males ciprofloxacin. The results of this research of 3188 UTI episodes in family medicine physicians’ offices provide a confirmatory answer to question whether empirical antimicrobial therapy of UTI prescribed by Croatian family practitioners is in accordance with the national guidelines.

Key words: urinary tract infections, epidemiology, etiology, clinical presentation, treatment, family medicine practitioners

Introduction

Urinary tract infections (UTI) comprise a heterogeneous group of clinical syndromes and diseases. Except for location they differ in epidemiology, etiology, severity of disturbed general condition and general symptoms of infection, expressed local symptoms, frequency of recurrence and relapse, presence of complicating factors, necessary antimicrobial therapy, outcome and prognosis. UTI are among the most common bacterial infections in humans and one of the most common reasons for prescribing antimicrobial drugs¹.

Research of UTIs in family medicine practitioners’ offices are rare, therefore the aim of this prospective research was to investigate the epidemiology, etiology, clinical presentation, complicating factors of UTIs treated by
family physicians and present the treatment of choice for empirical antimicrobial therapy of UTI used in family medicine offices in Croatia.

**Patients and Methods**

In the period from October 1st, 2006 until November 30th, 2006, a total of 108 family medicine offices in the following cities in Croatia – Buzet, Drniš, Gospić, Karlovac, Kaštel Sucurac, Križ, Labin, Novska, Ogulin, Ploče, Posedarje, Pula, Rijeka, Split, Umag, Viškovo, Vrsar, Zagreb, Zaprešić – participated in a prospective research of 3188 episodes of urinary tract infections (eUTI). Each particular episode was attributed to one patient; therefore the number of eUTI corresponded to the total number of patients.

**Diagnostic criteria of clinical syndromes**

Urethritis – clinical syndrome characterized by urethral inflammation and the following symptoms: dysuria, polakisuria, mucopurulent or purulent discharge, or urethral pruritus.

Acute uncomplicated cystitis – sporadic episode of cystitis in premenopausal, non pregnant women with clinical symptoms of dysuria, urgency, frequency, suprapubic pain, no fever, symptoms lasting less than 7 days, no urinary symptoms 4 weeks prior current episode. Urine culture should not be performed in young women. The diagnosis should be based on characteristic symptoms and leukocyturia (positive leukocyte esterase test or >10 WBC/mm³ ± positive nitrite test).

Acute uncomplicated pyelonephritis – sporadic episode of acute inflammation of kidney in women with significant bacteriuria with ≥10⁴ cfu/mL uropathogens in midstream urine (MSU) and leukocyturia. Clinical symptoms are fever (>38°C), chills, flank pain, other diagnosis excluded, no history of clinical evidence of urological abnormalities (ultrasonography, radiography).

Complicated UTI – including cystitis and pyelonephritis are UTI with any combination of symptoms from cystitis or pyelonephritis and one or more factors associated with a complicated UTI. Laboratory criteria are leukocyturia and significant bacteriuria ≥10⁵ cfu/mL uropathogens in women, ≥10⁴ cfu/mL in men, and ≥10³ cfu/mL in pregnant women.

Factors that suggest a potential complicated UTI are: male sex, pregnancy, hospital acquired infection, the presence of an indwelling catheter, stent or splint or the use of intermittent bladder catheterization, vesicoureteric reflux or other functional or anatomical abnormalities of the urinary tract, renal insufficiency, recent urinary tract intervention (in the last 15 days), recent antibiotic use (in the last 2–3 months), symptoms for >7 days at presentation, diabetes mellitus, immunosuppression or immunocompromised diseases.

Asymptomatic bacteriuria – is a significant bacteriuria and leukocyturia in a patient with no urinary symptoms. Significant bacteriuria for asymptomatic bacteriuria in females is ≥10⁵ cfu/mL of the same bacterial strain in two consecutive MSU cultures ≥24 hours apart; in males ≥10⁶ cfu/mL in a single MSU culture.

Recurrent UTI – are at least three episodes of uncomplicated infection documented by culture in the last 12 months or two episodes in the last 6 months, only in women with no structural/functional abnormalities. Laboratory criteria are leukocyturia and significant bacteriuria of ≥10³ cfu/mL for uncomplicated cystitis or ≥10⁴ cfu/mL for uncomplicated pyelonephritis.

Prostatitis – clinical entity manifested with urethral and urinary bladder symptoms (dysuria, polakisuria, urgency, nocturia, weaker and intermittent urine flow, urethral discharge), prostatic symptoms (pressure and pain in perineal and groin areas, discomfort in the low back and abdomen, tension in suprapubic, penile and scrotal areas, epididymis, anorectal sensitivity), sexual disturbances (difficult and painful erection, loss of libido), other symptoms (myalgia, headache, a low grade fever).

**Methods**

The following data were obtained for each patient: demographic data, medical history, clinical status including digitorectal prostatic examination when necessary and medical documentation analysis. Data was collected according to a specially designed questionnaire at the time of the patient’s arrival to family medicine office and were later on updated. This questionnaire proved suitable for another pilot research². Before study initiation, family physicians were explained the aim of research, questionnaire and definitions necessary for filling it out.

**Statistics**

Data analysis was performed by using Microsoft Excel/SAS, descriptive statistics and Mann-Whitney test.

**Results**

A total of 802 (25%) episodes were recorded among males and 2386 (75%) among females. Median age was...
52.8±18.8 years, ranging from 10.2 to 99.4 years. There was no statistically significant difference recorded between age in males and females with UTI (Figure 1).

The most common UTIs in women were acute uncomplicated cystitis (62%), complicated UTIs – cystitis and pyelonephritis (14%), urethritis (9%), acute uncomplicated pyelonephritis (6%), recurrent cystitis (5%), asymptomatic bacteriuria (3%) and recurrent pyelonephritis (1%).

The most common UTIs in men were complicated UTIs – cystitis and pyelonephritis (48%), urethritis (25%), prostatitis (24%) and asymptomatic bacteriuria (3%) (Table 1).

Complicating factors of UTI are shown in Table 2.

An average number of complicating factors, except male sex, per eUTI in men with either cystitis or pyelonephritis was 1.95; in men with prostatitis, except for male sex 1.49; and in women with either cystitis or pyelonephritis 1.49.

Acute uncomplicated cystitis in women occurred in all age groups, more frequently in women over 40 years of age, with altogether 65% of episodes of acute uncomplicated cystitis recorded in the age group 40–79 years.

Episodes of complicated UTIs in women were equally distributed in all age groups from 18–79 years. In men, the presence of complicating factors was more frequently recorded in those older than 40 years of age.

Urethritis was common in age group 18–79 years in both sexes and most common in age group 40–69 years (male 56%, female 54%).

Altogether 68% of prostatitis episodes were recorded in the age group 50–79.

Acute uncomplicated pyelonephritis was frequent among women aged 50–79 years (57%).

<table>
<thead>
<tr>
<th>TABLE 1</th>
<th>DISTRIBUTION OF URINARY TRACT INFECTION EPISODES ACCORDING TO DIAGNOSIS AND SEX OF PATIENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnosis</td>
<td>Patients</td>
</tr>
<tr>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>-----------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Acute uncomplicated cystitis</td>
<td>–</td>
</tr>
<tr>
<td>Recurrent cystitis</td>
<td>–</td>
</tr>
<tr>
<td>Acute uncomplicated pyelonephritis</td>
<td>–</td>
</tr>
<tr>
<td>Recurrent pyelonephritis</td>
<td>–</td>
</tr>
<tr>
<td>Complicated UTI</td>
<td>385 (48)</td>
</tr>
<tr>
<td>Urethritis</td>
<td>201 (25.06)</td>
</tr>
<tr>
<td>Prostatitis</td>
<td>192 (23.94)</td>
</tr>
<tr>
<td>Asymptomatic bacteriuria</td>
<td>24 (2.99)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TABLE 2</th>
<th>COMPLICATING FACTORS OF URINARY TRACT INFECTIONS RECORDED IN FAMILY MEDICINE PHYSICIANS OFFICES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complicating factor</td>
<td>Episodes of complicating UTI (n=829)</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Symptoms &gt; 7 days</td>
<td>239</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>152</td>
</tr>
<tr>
<td>Urolithiasis</td>
<td>101</td>
</tr>
<tr>
<td>Antibiotic therapy in the past 3 months</td>
<td>83</td>
</tr>
<tr>
<td>History of pyelonephritis</td>
<td>34</td>
</tr>
<tr>
<td>Functional or anatomical abnormality of the urinary tract</td>
<td>33</td>
</tr>
<tr>
<td>Immunosuppression</td>
<td>52</td>
</tr>
<tr>
<td>Pregnancy</td>
<td>–</td>
</tr>
<tr>
<td>Urinary catheter</td>
<td>34</td>
</tr>
<tr>
<td>Surgical procedure on urogenital tract</td>
<td>17</td>
</tr>
<tr>
<td>Incontinence</td>
<td>–</td>
</tr>
<tr>
<td>Hospital acquired UTI</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>752</td>
</tr>
</tbody>
</table>
Altogether 54% of recurrent cystitis episodes were recorded among age group 60–79 years.

Etiological diagnosis was made in 999 (31%) UTI episodes before antimicrobial therapy were given (Table 3). The most frequently isolated causative pathogens were *Escherichia coli* (77%), *Enterococcus faecalis* (9%), *Proteus mirabilis* (5%), *Klebsiella* spp (3%), *Streptococcus agalactiae* (3%) and *Enterobacter* (1%).

Out of 3188 analyzed eUTI, at the time of research, antimicrobial therapy was administered in 2939 (92.19%) episodes. Empirical antimicrobial therapy was applied in 1940 (66.01%) eUTI, and target antimicrobial therapy in 999 (33.99%) (Table 4).

The most commonly administered drug in empirical therapy for acute uncomplicated cystitis, recurrent cystitis and urethritis in women was cephalaxin, for acute uncomplicated pyelonephritis and complicated UTIs in women co-amoxiclav, and for UTIs in males ciprofloxacin (Table 5). Altogether 151 (14.98%) female patient with acute uncomplicated cystitis received nitrofurantoin, and 36 (30.51%) men with urethritis doxycycline.

**Discussion**

The results of this research of 3188 UTI episodes in family medicine physicians’ offices have shown that in practice, empirical antimicrobial therapy has to be used very often for the treatment of UTIs. The aim of UTI treatment is the disappearance of clinical symptoms and eradication of infection in order to prevent relapse. All symptomatic UTI and asymptomatic bacteriuria in certain individuals need to be treated. Antimicrobial spectrum of administered drug has to cover a range of detected or expected causative pathogens and as least as possible disturb normal human flora. Least toxic and at the same time the cheapest medication should be administered in adequate dosage and for a sufficient long period of time in order to eradicate infection. Empirical antimicrobial therapy was applied in 1940 (66.01%) eUTI, and target antimicrobial therapy in 999 (33.99%) (Table 4).

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**TABLE 3**

<table>
<thead>
<tr>
<th>Confirmed microorganism</th>
<th>Acute uncomplicated cystitis</th>
<th>Complicated UTI</th>
<th>Urethritis</th>
<th>Prostatitis</th>
<th>Acute uncomplicated pyelonephritis</th>
<th>Recurrent cystitis</th>
<th>Asymptomatic bacteriuria</th>
<th>Recurrent pyelonephritis</th>
<th>Total</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Escherichia coli</em></td>
<td>265</td>
<td>240</td>
<td>72</td>
<td>22</td>
<td>32</td>
<td>70</td>
<td>53</td>
<td>14</td>
<td>768</td>
<td>76.88</td>
<td></td>
</tr>
<tr>
<td><em>Enterococcus faecalis</em></td>
<td>11</td>
<td>50</td>
<td>5</td>
<td>7</td>
<td>-</td>
<td>2</td>
<td>17</td>
<td>-</td>
<td>92</td>
<td>9.21</td>
<td></td>
</tr>
<tr>
<td><em>Proteus mirabilis</em></td>
<td>16</td>
<td>9</td>
<td>5</td>
<td>11</td>
<td>2</td>
<td>-</td>
<td>5</td>
<td>2</td>
<td>50</td>
<td>5.0</td>
<td></td>
</tr>
<tr>
<td><em>Klebsiella</em> spp</td>
<td>7</td>
<td>12</td>
<td>-</td>
<td>2</td>
<td>2</td>
<td>-</td>
<td>8</td>
<td>2</td>
<td>33</td>
<td>3.30</td>
<td></td>
</tr>
<tr>
<td><em>Streptococcus agalactiae</em></td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>9</td>
<td>-</td>
<td>26</td>
<td>2.6</td>
<td></td>
</tr>
<tr>
<td><em>Enterobacter</em></td>
<td>4</td>
<td>5</td>
<td>2</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>12</td>
<td>1.2</td>
<td></td>
</tr>
<tr>
<td><em>Staphylococcus saprophyticus</em></td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>5</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td><em>Pseudomonas aeruginosa</em></td>
<td>1</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>0.4</td>
<td></td>
</tr>
<tr>
<td><em>Staphylococcus aureus</em></td>
<td>1</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>0.4</td>
<td></td>
</tr>
<tr>
<td><em>Serratia marcescens</em></td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>3</td>
<td>0.3</td>
<td></td>
</tr>
<tr>
<td><em>Ureaplasma urealyticum</em></td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>0.2</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>315</td>
<td>326</td>
<td>92</td>
<td>44</td>
<td>36</td>
<td>74</td>
<td>94</td>
<td>18</td>
<td>999</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Total episodes UTI</td>
<td>1479</td>
<td>722</td>
<td>419</td>
<td>192</td>
<td>134</td>
<td>125</td>
<td>94</td>
<td>23</td>
<td>3188</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TABLE 4**

<table>
<thead>
<tr>
<th>UTI episodes</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analyzed</td>
<td>3188</td>
</tr>
<tr>
<td>Treated</td>
<td>2939 (92.19%)</td>
</tr>
<tr>
<td>Not treated at the time of research</td>
<td>249 (7.81%)</td>
</tr>
<tr>
<td>Etiologically confirmed (targeted therapy)</td>
<td>999 (33.99% of the total number of treated)</td>
</tr>
<tr>
<td>Empirical therapy</td>
<td>1940 (66.01% of the total number of treated)</td>
</tr>
</tbody>
</table>
crobial therapy is determined on the basis of local data on the most common pathogens causing most frequent clinical syndromes and their susceptibility to most commonly administered antimicrobial drugs.

Whenever possible, before starting antimicrobial therapy, midstream urine for urine culture should be collected. First morning sample or urine sample after four hours of non urination should be collected. Urine should be cultured within two hours from collection, if not, than urine sample should be stored at +4°C up to 24 hours.

Empirical therapy should be modified according to antibiogram as soon as urine culture results are available – antibiotic therapy should be switched to antibiotic with the narrowest spectrum and most effective against the causative pathogen.

Since 1997, the resistance of bacterial pathogens to antibiotics, in the most common clinical syndromes, has been regularly monitored in Croatia. In the last five years, we recorded no significant changes in the susceptibility of *E. coli* to the most commonly administered antimicrobial drugs (Table 6).

Local antibiotic resistance data were obtained from the Committee for Antibiotic Resistance Surveillance of the Croatian Academy of Medical Sciences3–7.

Croatian national guidelines for antimicrobial treatment and prophylaxis of UTI were published in 20048. With the help of the Croatian Ministry for Health and Social Welfare, the Dutch Government and international consultants, they were updated and via Internet and a two-month-piloting period, widely presented to general practitioners and specialists in urology, gynecology, infec-

### TABLE 5

**EMPIRICAL ANTIMICROBIAL THERAPY OF 1490 UTI EPISODES RECORDED IN FAMILY MEDICINE PHYSICIANS’ OFFICES**

<table>
<thead>
<tr>
<th>UTI episodes</th>
<th>Patients / Empirical therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cephalexin</td>
</tr>
<tr>
<td>------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td></td>
<td>n %</td>
</tr>
<tr>
<td>Acute uncomplicated cystitis</td>
<td>818 79.57</td>
</tr>
<tr>
<td>Acute uncomplicated pyelonephritis</td>
<td>2 1.6</td>
</tr>
<tr>
<td>Recurrent cystitis</td>
<td>51 85</td>
</tr>
<tr>
<td>Recurrent pyelonephritis</td>
<td>3 15</td>
</tr>
<tr>
<td>Complicated UTI</td>
<td></td>
</tr>
<tr>
<td>males</td>
<td>15 8.29</td>
</tr>
<tr>
<td>females</td>
<td>45 22.17</td>
</tr>
<tr>
<td>Urethritis</td>
<td></td>
</tr>
<tr>
<td>males</td>
<td>18 15.25</td>
</tr>
<tr>
<td>females</td>
<td>48 60</td>
</tr>
<tr>
<td>Prostatitis</td>
<td>10 8</td>
</tr>
<tr>
<td>Total</td>
<td>1110</td>
</tr>
</tbody>
</table>

### TABLE 6

**THE RESISTANCE OF *E. COLI* TO THE MOST COMMON ANTIBIOTICS IN CROATIA IN THE PERIOD FROM 2002–2006**

<table>
<thead>
<tr>
<th>Antibiotic</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrofurantoin</td>
<td>4 (1)</td>
<td>3 (1)</td>
<td>3 (1)</td>
<td>3 (1)</td>
<td>2 (1)</td>
</tr>
<tr>
<td>Trimethoprim-sulfamethoxazole</td>
<td>25 (0)</td>
<td>22 (0)</td>
<td>25 (0)</td>
<td>24 (1)</td>
<td>24 (0)</td>
</tr>
<tr>
<td>Amoxicillin</td>
<td>47 (1)</td>
<td>47 (1)</td>
<td>44 (1)</td>
<td>49 (1)</td>
<td>52 (1)</td>
</tr>
<tr>
<td>Cephalexin</td>
<td>11 (5)</td>
<td>9 (4)</td>
<td>9 (6)</td>
<td>11 (8)</td>
<td>8 (5)</td>
</tr>
<tr>
<td>Co-amoxiclav</td>
<td>8 (4)</td>
<td>6 (4)</td>
<td>5 (3)</td>
<td>5 (4)</td>
<td>4 (4)</td>
</tr>
<tr>
<td>Cefuroxim</td>
<td>5 (1)</td>
<td>3 (1)</td>
<td>3 (1)</td>
<td>3 (2)</td>
<td>2 (2)</td>
</tr>
<tr>
<td>Ceftibuten</td>
<td>3 (0)</td>
<td>2 (0)</td>
<td>2 (0)</td>
<td>1 (0)</td>
<td>2 (0)</td>
</tr>
<tr>
<td>Ceftriazone</td>
<td>3 (0)</td>
<td>2 (0)</td>
<td>2 (0)</td>
<td>1 (0)</td>
<td>2 (0)</td>
</tr>
<tr>
<td>Gentamicin</td>
<td>7 (1)</td>
<td>5 (0)</td>
<td>5 (0)</td>
<td>6 (0)</td>
<td>6 (0)</td>
</tr>
<tr>
<td>Norfloxacin</td>
<td>8 (0)</td>
<td>8 (0)</td>
<td>7 (0)</td>
<td>10 (0)</td>
<td>10 (1)</td>
</tr>
<tr>
<td>Ciprofloxacin</td>
<td>7 (0)</td>
<td>8 (0)</td>
<td>7 (0)</td>
<td>10 (0)</td>
<td>10 (1)</td>
</tr>
</tbody>
</table>

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CROATIAN RECOMMENDATIONS FOR EMPIRICAL ANTIMICROBIAL THERAPY OF UTI IN FAMILY MEDICINE PHYSICIANS' OFFICES

<table>
<thead>
<tr>
<th>Category of UTI</th>
<th>First choice</th>
<th>Alternative choice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute uncomplicated cystitis</td>
<td>nitrofurantoin/ 7 days</td>
<td>co-amoxiclav/ 7 days</td>
</tr>
<tr>
<td>Acute uncomplicated pyelonephritis</td>
<td>co-amoxiclav/ 10–14 days</td>
<td>II and II generation cephalosporins/ 10–14 days</td>
</tr>
<tr>
<td>Complicated UTI</td>
<td>co-amoxiclav/ 10–14 days</td>
<td>II and II generation cephalosporins/ 10–14 days</td>
</tr>
<tr>
<td>UTI in males with systemic symptoms</td>
<td>ciprofloxacin/ 14 days</td>
<td>II and II generation cephalosporins/ 14 days</td>
</tr>
<tr>
<td>UTI in males with systemic symptoms and symptoms of prostatitis</td>
<td>ciprofloxacin/ 4 weeks</td>
<td>II and II generation cephalosporins/ 4 weeks</td>
</tr>
<tr>
<td>Asymptomatic bacteriuria</td>
<td>no empiric therapy – treatment according to antibiogram for 3–7 days</td>
<td></td>
</tr>
<tr>
<td>Recurrent UTI</td>
<td>the same as sporadic episodes except that previous isolates and their sensitivity patterns should be taken into account</td>
<td></td>
</tr>
</tbody>
</table>

*doses are stated for an average adult body weight and normal kidney function

Acknowledgements

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ISTRAŽIVANJE INFEKCIJA MOKRAĆNOG SUSTAVA U ORDINACIJAMA LIJEČNIKA OBITELJSKE MEDICINE – EMPRIJSKA ANTIMIKROBNA TERAPIJA INFEKCIJA MOKRAĆNOG SUSTAVA – HRVATSKA ISKUSTVA

SAŽETAK

U razdoblju od 1. listopada do 30. studenog 2006. godine istražili smo ukupno 3188 epizoda infekcija mokraćnog sustava (IMS) (802 u muškaraca; 2386 u žena) zabilježenih u 108 ordinacija liječnika obiteljske medicine u 20 gradova u Hrvatskoj. Najčešće IMS u žena bile su: akutni nekomplicirani cistitis (62%), komplicirane IMS – cistitis i pijelonefritis (14%), uretritis (9%), akutni nekomplicirani pijelonefritis (6%), rekurentni cistitis (5%), asimptomatska bakteriurija (3%) i rekurentni pijelonefritis. Najčešće IMS u muškaraca su bile komplicirane IMS – cistitis i pijelonefritis (48%), uretritis (25%), prostatitis (24%) i asimptomatska bakteriurija (3%). Etiološka dijagnoza postavljena je u 999 (31%) epizoda IMS prije započete antimikrobne terapije. Najčešći izolirani uzročnici bili su Escherichia coli (77%), Enterococcus faecalis (9%), Proteus mirabilis (5%), Klebsiella spp (3%), Streptococcus agalactiae (3%) i Enterobacter (1%). Antimikrobna terapija primijenjena je u 2939 (92.19%) epizoda IMS, u 1940 (66.01%) kao empirijska, a u 999 (34%) kao ciljana antimikrobna terapija. Najčešće primjenjivani lijek u empirijskoj terapiji akutnog nekompliciranog cistitisa, rekurentnog cistitisa i uretritisa u žena bio je cefaleksin, za liječenje akutnog nekompliciranog pijelonefritisa i komplicirane IMS u žena koamoksiklav, a za IMS u muškaraca ciprofloksacin. Rezultati ovog istraživanja 3188 epizoda IMS u ordinacijama liječnika obiteljske medicine daju potvrđen odgovor na pitanje o podudarnosti propisane empirijske antimikrobne terapije IMS s nacionalnim preporukama.