



ORIGINAL ARTICLE

Community-associated urinary infections requiring hospitalization: Risk factors, microbiological characteristics and patterns of antibiotic resistance[☆]



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KEYWORDS

Community acquired infections;
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Hospitalization;
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Abstract

Objective: Although patients with urinary tract infections (UTIs) are usually managed as outpatients, a percentage of them requires hospitalization. To review risk factors and microbiological characteristics of community-associated UTIs (CAUTIs) requiring hospitalization has been our objective.

Materials and methods: A prospective observational study was carried out from November 2011 to December 2013. Incidence, microbiological characteristics and antibiotic resistance patterns in patients with CAUTIs that required hospitalization were analyzed. Risk factors (including diabetes mellitus, urolithiasis, urinary catheterization) and resistance rates of each pathogen were also analyzed.

Results: Four hundred and fifty-seven patients were hospitalized in our department with CAUTI. The mean age was 56.2 ± 19.85 years. Of them, 52.1% patients were women, 19.7% had urinary indwelling catheter and 11.4% have had a previous UTI. The most frequently isolated pathogens were *Escherichia coli* (60.6%), followed by *Klebsiella* (9.2%), *Enterococcus* (8.4%) and *Pseudomonas* (7.2%). *Enterobacteriaceae* other than *E. coli* were more prevalent in male and older patients. On the other side the most frequently isolated pathogen in patients with a previous UTI and a urinary catheter was *Enterococcus*. The resistance rate of *E. coli* against ampicillin/amoxicillin + β lactamase inhibitor was 23.5%, against third-generation cephalosporins 16.6%, against fluoroquinolones 31.3% and 16.7% against aminoglycosides. 11.4% *E. coli* strains

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PALABRAS CLAVE

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were producers of extended-spectrum beta-lactamases (ESBL). Finally, the resistance rates of *Enterococcus* and *Pseudomonas* against quinolones were of 50.0% and 61.5%, respectively.

Conclusions: CAUTIs that require hospitalization are most frequent in older age, male gender, and presence of urinary catheter, with urolithiasis and with previous episodes of UTI. These factors are also related to isolation of pathogens other than *E. coli* and higher resistance rates.

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Infecciones urinarias adquiridas en la comunidad que requieren hospitalización: factores de riesgo, características microbiológicas y resistencia a antibióticos

Resumen

Objetivo: Las infecciones del tracto urinario (ITU) suelen manejarse ambulatoriamente. Sin embargo, un pequeño porcentaje requiere ingreso hospitalario. Nuestro objetivo fue analizar los factores de riesgo y características microbiológicas de las infecciones urinarias adquiridas en la comunidad (ITU-AC) que requieren hospitalización.

Material y métodos: Realizamos un estudio prospectivo desde noviembre de 2011 a diciembre de 2013 evaluando la incidencia, factores de riesgo, patrones microbiológicos y tasas de resistencia en los pacientes con ITU-AC que requieren ingreso.

Resultados: Cuatrocientos cincuenta y siete pacientes ingresaron en nuestro servicio con diagnóstico de ITU-AC. La edad media fue $56,2 \pm 19,85$ años, el 52,1% eran mujeres, el 19,7% portaban catéter urinario y el 11,4% habían presentado ITU en los meses previos. Los microorganismos más frecuentemente aislados fueron *Escherichia coli* (60,6%), *Klebsiella* (9,2%), *Enterococcus* (8,4%) y *Pseudomonas* (7,2%). *Enterobacteriaceae* diferentes a *E. coli* fueron más frecuentes en pacientes de mayor edad. *Enterococcus* fueron más frecuentemente aislados en pacientes que habían tenido ITU previa y en aquellos portadores de catéter urinario. *E. coli* mostró unas resistencias del 23,5% para amoxicilina/ácido clavulánico, 16,6% para cefalosporinas de tercera generación, 31,3% para quinolonas y 16,7% para aminoglucósidos. Del total de *E. coli* 11,4% fueron productores de betalactamasas de espectro extendido (BLEE). Los *Enterococcus* y *Pseudomonas* mostraron resistencias a quinolonas del 50,0% y 61,5% respectivamente. **Conclusiones:** ITU-AC que requieren hospitalización se presentan más frecuentemente en varones de mayor edad, portadores de catéter urinario, litiasis urinaria y con episodios previos de ITU. Estos factores también se asocian con infecciones producidas por gérmenes diferentes a *E. coli* y altas tasas de resistencia.

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Introduction

Urinary tract infections (UTI) are a major cause of morbidity in the general population, being the second most common reason for medical care. In the world, 150 million UTIs are diagnosed annually and 20–40% of women over 18 will suffer at least one throughout their life.¹ UTIs are generally managed on an outpatient basis, but a small percentage requires hospitalization. On the other hand, it is necessary to initiate empirical antibiotic therapy before having the microbiological results. Although antibiotic resistance was a problem affecting primarily nosocomial infections, it has also become a concern in the treatment of community-acquired UTIs (CA-UTI).² Furthermore, we must bear in mind the increase of multiresistant enterobacteriaceae producing extended-spectrum beta-lactamases (ESBLs).¹ For all these reasons, knowledge of the microbiological characteristics, resistance patterns, and risk factors will make it possible to optimize the management of infections minimizing the increase in antibiotic resistance.³

Our objective was to evaluate the risk factors, microbiological characteristics, and patterns of antibiotic resistance of CA-UTIs requiring hospital admission to our department of urology.

Materials and methods

We performed a prospective study from November 2011 to December 2013 analyzing the CA-UTIs requiring hospitalization. At our center, those patients attending the emergency department and are diagnosed with UTI non-subsidary for home management are valued by urology, and if admission is required, this is carried out in the urology department. Patients younger than 16 who are treated by pediatrics and renal transplant patients admitted in nephrology were excluded from the study. Our center is a tertiary university hospital with 1380 beds providing healthcare to a population of over half a million people in a major metropolitan area in Spain.

We reviewed the number of patients diagnosed with CA-UTI requiring hospitalization. We evaluated the

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