Original article

Prospective evaluation of the management of urinary tract infections in 134 French nursing homes[☆]

Évaluation prospective de la prise en charge des infections urinaires dans 134 établissements pour personnes âgées dépendantes

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Abstract

Objective. – Prospective assessment of the management of urinary tract infections (UTI) in the nursing homes of the Hauts-de-France region.

Patients and methods. – A 50-question form had to be filled in for up to five consecutive residents treated for UTI in each nursing home. If necessary, diagnoses were reclassified according to the 2014 French Infectious Diseases Society guidelines. Analyses were presented per supposed (reported) and reclassified diagnoses.

Results. – Of 397 contacted facilities, 134 participated and informed 444 UTI episodes. Reported diagnostic criteria were burning urination (32%), malodorous urine (29%), confusion (28%), and turbid urine (19%). Twenty-one percent of diagnoses were based on erroneous criteria. Less than 50% of residents had a urine dipstick test performed and 94% a urine culture. The main pathogen was *Escherichia coli*. Reported indications were uncomplicated cystitis (32%), unspecified UTI (26%), complicated cystitis (9%), while no reason was given in 25% of cases. Only 10% of diagnoses were consistent with the guidelines: complicated cystitis (49%), asymptomatic bacteriuria (21%), acute pyelonephritis (21%), male UTI (9%). Almost 85% of prescriptions were active on the isolated bacteria. The empirical antibiotic therapy was consistent with the diagnosis in 16% of cases (30% for reclassified diagnoses). The two most prescribed antibiotic classes were fluoroquinolones (22.1%) and oral third-generation cephalosporins (19.1%). Only two of 157 possible de-escalations were performed. Duration of treatment was adequate for 19% of UTIs (9.6% of reclassified cases).

Conclusion. – Our study revealed multiple deficiencies in diagnosis, antibiotic choice, treatment duration, and reevaluation.
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Keywords: Urinary tract infections; Nursing homes; Elderly; Antibiotics

Résumé

Objectif. – Évaluation prospective de la prise en charge des infections urinaires (IU) dans les établissements d'hébergement pour personnes âgées dépendantes des Hauts-de-France.

Patients et méthodes. – Questionnaire (50 questions) pour cinq cas consécutifs d'IU maximum par établissement. Les diagnostics rapportés ont, si besoin, été corrigés selon les recommandations de la SPILF. Les résultats sont exprimés par rapport aux diagnostics supposés (rapportés) ou reclassifiés.

Résultats. – Sur 397 structures sollicitées, 134 ont participé et saisi 444 épisodes d'IU. Les symptômes étaient brûlures mictionnelles (32 %), urines malodorantes (29 %), confusion (28 %), urines troubles (19 %) ; 21 % des diagnostics d'IU reposaient sur des critères erronés. Moins de 50 % des résidents ont eu une bandelette urinaire et 94 % un ECBU. Le principal pathogène était *Escherichia coli*. Les motifs de prescription étaient cystite simple (32 %), IU sans précision (26 %), cystite compliquée (9 %), sans motif noté (25 %). Seuls 10 % des diagnostics étaient conformes aux recommandations : cystite compliquée (49 %), bactériurie asymptomatique (21 %), pyélonéphrite aiguë (21 %), IU masculine (9 %). La 1re ligne était adaptée au diagnostic dans 16 % des cas (30 % pour les diagnostics reclassés). Les antibiotiques les plus prescrits étaient fluoroquinolones (22,1 %) et C3G orales (19,1 %). Sur 157 désescalades possibles, deux ont été faites. La durée était conforme pour 19 % des IU (9,6 % des cas reclassés).

Conclusion. – L'étude montre plusieurs lacunes sur les critères diagnostiques, le choix, la durée et la réévaluation des antibiotiques.

1. Introduction

Antibiotic resistance is a worldwide threat [1]. It is already responsible for therapeutic dead ends in infections caused by multidrug-resistant bacteria. The threat is enhanced by the scarcity of new antibiotics. France has one of the highest rates of antibiotic consumption in Europe [2]. Elderly patients, particularly those in nursing homes, have a high infection prevalence [3] and are prescribed many inappropriate antibiotics [4,5], mainly for urinary tract infections (UTI) [3–5].

On the initiative of the regional health authorities (French acronym ARS) and the regional center for infection control (French acronym ARLIN), we conducted a study in 2015 to assess the quality of antibiotic prescriptions for acute UTI in the nursing homes of the Hauts-de-France region.

2. Methods

We performed a prospective observational study from June 6 to December 12, 2015. The nursing homes were recruited via an email sent by the ARS to the coordinating physicians of each nursing home.

Inclusion criteria were age ≥ 75 years, being resident of a nursing home in the Hauts-de-France region, and having received a UTI diagnosis during the study period.

A 50-question form had to be filled in for each consecutive resident treated for a UTI during the study period, with a maximum of five patients per nursing home. Simplified susceptibility data was recorded (susceptible, intermediate, or resistant, not tested, for 17 drugs).

Each form had to be filled in on a secure online platform. Any missing data was considered negative answers.

When symptoms were informed as "other", a free text box required precisions. Items evocative of behavior disorders were pooled with "confusion" for analysis purposes.

Drugs for which no box was checked were considered "not tested".

We performed a two-way analysis. First, treatments were analyzed as per physician-reported diagnoses. This will be addressed as "supposed diagnosis" in later parts of the article. This represents what the prescribers think they are treating. The same treatments were then analyzed as per what the diagnoses should have been, had the prescribers used the 2014 UTI guidelines from the French Infectious Diseases Society (French acronym SPILF) [6]. This will be addressed as "reclassified diagnosis". This represents what the prescribers are really treating.

Each case file was reviewed with an infectious disease specialist to determine if the reported diagnosis was consistent with the SPILF guidelines. If necessary, the diagnosis was reclassified based on the available clinical and microbiological data:

- in the population aged over 75 years, a diagnosis of uncomplicated cystitis is not possible as cystitis in women are considered, by definition, as "at risk of complication", and in men as "male urinary tract infection";
- mention of fever with a reported cystitis diagnosis led to a reclassified diagnosis of pyelonephritis in women and "male urinary tract infection" in men;
- positive urine cultures without any clinical sign or symptom were reclassified as asymptomatic bacteriuria.

For clarity purposes, the current term "cystitis at risk of complication" is expressed as "complicated cystitis" throughout the article.

The main objective of the study was to evaluate the adequacy of antibiotic prescription for acute UTI as per the current French recommendations.

Results are expressed as means ± standard deviation (median) for quantitative variables and as numbers and percentages for categorical variables.

3. Results

We contacted 397 nursing homes and 134 (33.8%) participated in the study and included 444 treated UTI episodes. Patients were mostly women (87.4%), highly dependent [67.1% of GIR 1 or 2 groups (dependence level)] with a mean of 87.3 ± 6.0 years.