



VOIDING DYSFUNCTION/FEMALE UROLOGY  
ORIGINAL ARTICLE

# The efficacy of different doses of solifenacin in elderly patients after treating a urinary tract infection



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## KEYWORDS

Overactive bladder;  
Elderly men;  
Solifenacin;  
Urinary tract infection

## ABBREVIATIONS

OAB, overactive bladder;  
OAB-AT, OAB Awareness Tool (questionnaire);  
IE, incontinence

**Abstract Objective:** To determine the efficacy and safety of solifenacin for correcting the residual symptoms of an overactive bladder (OAB) in patients who were treated for a urinary tract infection (UTI).

**Patients and methods:** Using random sampling, 524 patients aged > 60 years were selected (347 women, 66.2%, and 177 men, 33.8%). They denied the presence of any symptoms of detrusor overactivity in their medical history, but had a diagnosis of a UTI. At least 1 month after the end of treatment and a laboratory confirmation of the absence of infection, each patient completed an OAB-Awareness Tool questionnaire (OAB signs, total score 8 points), and a noninvasive examination of urinary function (uroflowmetry).

Each day patients in group A took solifenacin 10 mg and those in group B took 5 mg, with patients in group C being given a placebo.

**Results:** During the study 58.8% of patients had symptoms of an OAB at 1 month after the end of the treatment for a UTI, and normal laboratory markers.

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episodes;  
UE, urgency episodes;  
LUT, lower urinary  
tract

During treatment with the standard and higher dose of solifenacin, within 8 weeks most variables of the condition of the lower urinary tract reached a normal state or improved.

**Conclusion:** Patients aged > 60 years who had been treated for a UTI have a high risk of developing symptoms of an OAB. Solifenacin in standard doses is an efficient and safe means of managing overactive detrusor symptoms after a UTI.

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## Introduction

UTIs in elderly men and women are common and the prevalence depends on numerous factors. The frequency of UTI depends on the place of residence, climate, age, the presence of urodynamic disorders, compliance with treatments for overactive bladder (OAB) symptoms, the immunological status, and many other factors [1–3]. The absence of a common approach ('gold standard') to the diagnostics and treatment of UTI complicates the well-timed detection and appropriate therapy of this disease. As a rule, existing principles of UTI management duplicate the recommendations for treating younger groups and, according to several studies, allow an excessive use of antibiotics [2–4]. Nevertheless, most specialists consider the availability of laboratory findings such as pyuria and a positive urine culture (>105 colony-forming units/mL) with no more than two uropathogens, and such clinical symptoms as fever, acute dysuria, urgency, increase in urinary frequency, pain or hypersensitivity in the area of bladder [4,5], to be sufficient to establish a diagnosis of UTI. Some of these symptoms are also the signs of an OAB [6,7]. Many researchers assume that, at least in some cases, OAB and UTI are interdependent processes and UTIs can be one of the reasons for the development of an OAB. Rodrigues et al. [8] reported involuntary detrusor contraction in 86.3% of patients with a UTI. Moore et al. [9] noted that despite the presence of different views on the mechanisms of formation of an OAB in cases of UTI, many researchers do not deny the cause-and-effect relationship between these conditions. It is common knowledge that OAB symptoms, especially frequency and imperative desire to urinate, cause involuntary urination that compromises the quality of life of elderly people, both men and women [10,11].

Numerous studies have assessed solifenacin as a first-line drug for treating an OAB in elderly people [12,13]. Solifenacin is competitive inhibitor of M<sub>3</sub> antimuscarinic receptors that comprise ≥22% of all bladder cholinoreceptors, and play a key role in maintaining its normal physiological function [14]. Solifenacin is 3.6 times as selective for bladder receptors than for those in salivary glands. The indisputable advantages of this

drug include the absence of addiction and a lasting result during long periods of use [15–17].

All these properties give a high efficacy and tolerability of solifenacin in elderly men and women, while taking this drug in increased dosages generally does not increase the number of adverse effects [18–21].

Previously we reported success in controlling the symptoms of OAB using standard and increased dosages of solifenacin and trospium in elderly persons [22–24]. Given these conditions, in the present study we assessed the efficacy and safety of solifenacin for treating residual symptoms of OAB in patients who had been treated for a UTI.

## Patients and methods

This was a placebo-controlled longitudinal study in patients aged > 60 years who sought medical attention in the Urological Department of the 3rd Municipal Hospital (Vladivostok, Russian Federation) from 1 March to 31 December 2012. For this study, 524 patients (347 women, 66.2%, 177 men, 33.8%) who had been diagnosed with a UTI were selected using blinded random sampling. All of them denied the presence of signs of an OAB in their medical history. The study design is shown in Fig. 1. At least 1 month after the end of treatment, and laboratory confirmation of the absence of UTI (positive urine culture, ≤105 colony-forming units/mL, a physiologically normal number of white and red blood cells in urine, and normal urine density) each patient completed the OAB-Awareness Tool (AT) questionnaire (OAB signs, total 8 points) [25,26], and had a noninvasive examination of urinary function (uroflowmetry) [27–29]. These results were taken as the baseline and determined the percentage of patients with signs of OAB, and the severity of symptoms. All patients with OAB symptoms were randomly divided into three groups: A (107 patients, mean age 67.2 years), B (99, 65.9 years) and C (102, 65.1 years). Each day the patients in group A took solifenacin 10 mg, and those in group B 5 mg, with group C taking a placebo. The patients were assessed over 2 months, using urinary diaries, and a final assessment with the OAB-AT questionnaire and

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