

SIGNIFICANCE OF THE LENGTH OF THERAPY WITH NORFLOXACIN IN THE MANAGEMENT OF THE LOWER URINARY TRACT INFECTION

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The aim of the paper was to examine the significance of therapy with Norfloxacin as monotherapy in the treatment of the lower urinary tract infection and to examine the effectiveness of this antibiotic nowadays as it has not been used for a long time (it wasn't available on our market).

80 patients with the lower urinary tract infection were examined. Patients were divided in two groups according to the length of therapy and the age of patients. Before and after the therapy some examinations were done: clinical check – up, urine (general urine examination), KSL, SE, urea, creatinin, urine culture, urinary tract EHO.

There was no statistically significant difference in the number of patients with the lower urinary tract infections after 3 and 7 days of the Norfloxacin therapy. Often, the cause of this infection was *Escherichia coli*. There was no statistically significant difference in the number of the patients with the lower urinary tract infection after the therapy with Norfloxacin in respect to age.

There was no difference in the effects of the medicine in the group in which the therapy lasted for 3 days and the group in which the therapy lasted for 7 days. In addition, there was no difference in the effects of medicine in respect of the age of patients. *Acta Medica Medianae* 2008;47(4):5-8.

Key words: infection, Norfloxacin, urinary tract, uroantiseptic, lower urinary tract

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Introduction

In modern clinical practice, there is a dilemma about the length of antibiotic therapy in the treatment of the lower urinary tract infection (1).

In the past, the standard antibiotic treatment lasted 7 to 10 days, but nowadays it is considered that a three-day treatment is equally effective (2). Also, there occur the problems related to the efficiency of antibiotics in regard to the age of patient, as well as resistance of bacteria to antibiotics (3,4).

Norfloxacin is a peroral bacterial uroaseptic from the hinoline group. It is very efficient against most gram – negative bacteria (*E. coli*, *Klebsiella*, *Proteus*, *Providentia*, *Enterobacter*, *Morganella*, *Citrobakter*, *Serratia*, *Pseudomonas*) and some gram – positive bacteria (stafilococcus).

After peroral use, Norfloxacin is quickly, but incompletely absorbed (30–40%). The highest most serum concentration is achieved 60 to 90

minutes after peroral use. The time of half – elimination is 2,5 to 4,5 hours.

Aims

The aim of the study was to examine the efficiency of Norfloxacin tablets as monotherapy in the treatment of the lower urinary tract infection related to the length of the treatment. In addition, a total efficiency of this antibiotic was examined, as medicine was not used on our market for a long time.

Material and methods

The efficiency of Norfloxacin tablets was examined in the patients having the lower urinary tract infection, hospitalized in the Urology Department in Prokuplje. This investigation covered the period from the beginning to the 15th day of disease.

Mean age of the patients was 59 years.

The patients were divided in two groups in regard to the length of the therapy (the first group - 3 days and the second one - 7 days of therapy).

The patients were also divided in regard to the age (the first group up to 45 years and the second 46 years of age, and more). Mean age was 41 years in the first group and 64 years in the second group.

They were advised how to maintain an adequate hygiene – dietic regime, as resorption of this medicine depends on this parameter, too.

For statistical evaluation of the aims of the investigation, the Wilcoxon and Pearson coefficients of linear correlaton were used.

The following procedures were done: clinical examination, general urine examination, KSL, SE, urea, creatinine, examination of the middle stream urine, urinary tract EHO. To eliminate complicated urinary tract infections, in 9 patients the urinary tract Rtg was performed, and in 3 patients intravenous urography.

The finding of positive urine culture, and clinical and laboratory signs of the lower urinary tract infection were significant.

The investigations were performed at the beginning of disease and 3 – 5 days after the completion of therapy.

Norfloxacin tablets of 400 mg were used. The medicine was given orally, 400 mg twice a day during 3 – 7 days.

Results

Graph 1 presents the patients with urinary infection after 3 to 7 days of therapy. After Norfloxacin therapy which lasted for 3 days, there were 5 (12,5%) patients with infection. Of that number, in one patient the number of isolated germs was up to 103/ml of urine, while in two patients the number of isolated germs was over 105/ml of urine. After a 7-day treatment, there were four patients with infection (10%). Of that number, in one patient the number of isolated germs was up to 103/ml of urine and in the range 103-105/ml of urine, while in two patients the number of the isolated germs was over 105/ml of urine.

Based on statistical analysis, it was established that there was no statistically significant difference in the number of patients with the lower urinary tract infection after 3 and 7 days with Norfloxacin therapy ($p < 0.001$).

Graph 2 presents the causes of infection of the lower urinary tract before the therapy with Norfloxacin in respect to the age of patients. In the group of 40 patients with mean age of 41 years, in 21 patients the infection of the lower urinary tract was caused by Escherichia Coli, in 8 patients by Pseudomonas, in 4 patients by Enterobacter, in two by Proteus, and in 5 patients by other causes. In the group of 40 patients, mean age 69 years, in 30 patients the infection was caused by Escherichia Coli, in 3 patients by Pseudomonas, Enterobacter and Proteus; in one patient it was some other cause. (5).

Clinical symptoms of the surinary tract infection after the therapy with Norfloxacin were reported in all the patients with a finding in urine.

Based on statistical analysis it was established that there was no statistically significant

difference in the number of patients with the lower urinary tract infection in the group with mean age of 41 years after the therapy with Norfloxacin in regard to the group with mean age 69 years ($p < 0.001$).

Some more patients with urinary tract infection after Norfloxacin therapy belonged to the group of elderly patients. The explanation probably lies in the fact that the urothelium of the elderly is convenient for developing infection because of the weakness of detrusor contractility and smaller local cell power to resist the micro-organisms adhesion (6,7).

Graph 3 presents shows the causes of the lower urinary tract infection after the therapy with Norfloxacin in respect the age of the patients. There were 48 (60%) female patients and 32 (40%) male patients (8).

Graph 4 presents the most common causes of the lower urinary tract infection. The most frequent cause was Escherichia coli (9). This cause is especially prevalent in female population, probably because they have more adhesive urothelium for this bacterium (10,11).

Discussion

The difference in efficiency between three- and seven-day therapy is not statistically significant. The reason in almost identical results is because the sterilization of urine is reached after the first day of therapy, so there is no essential difference in the length of therapy of 3 and 7 days (12). The most frequent cause was Escherichia coli which reacted well to Norfloxacin.

The highest frequency of urinary tract infection was noticed in the population aged 66- 75 years. The reason is because the process of aging influences the lower urinary tract, causing fibrosis of the bladder wall and ultrastructural changes on detrusor (13), also associated with aging (14).

Higher frequency of infections is also noticed in the female population. The reasons could be found in the characteristic of the lower urinary tract anatomy in women, significantly shorter urethra, nearness of anus, habits of rare urination, etc. (15).

Conclusion

There is no difference in the effects of a medicine in the group in which the therapy lasted 3 days compared to the group with 7-day therapy. Also, there are no differences in the effects of a medicine in regard to the age of patients.

Three-day treatment could be taken as a standard length of management because of significant savings and identical post-therapeutic effects. It is also convenient to use this medicine in the elderly population due to good efficiency, minor side effects, and profile of administration.

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ZNAČAJ DUŽINE EMPIRIJSKE TERAPIJE NORFLOKSACINOM U LEČENJU NEKOMPLIKOVANIH INFEKCIJA DONJEG UROTRAKTA

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U radu je ispitivan značaj dužine terapije Norfloksacin-om kao monoterapije u lečenju infekcija donjeg urinarnog trakta i kolika je efikasnost ovog antibiotika u sadašnjem vremenu jer u dužem vremenskom periodu nije korišćen (bio je nedostupan na našem tržištu).

Ispitivano je 80 bolesnika sa infekcijom donjeg urotrakta. Bolesnici su podeljeni na dve grupe u odnosu na dužinu terapije i godine starosti. Pre i nakon terapije bolesnici su podvrgnuti sledećim ispitivanjima: klinički pregled, urin (opšti nalaz), krvna slika, sedimentacija, urea, kreatinin, urinokultura, EHO urotrakta.

Ne postoji statistički značajna razlika u broju bolesnika sa infekcijom donjeg urotrakta nakon 3 i 7 dana terapije Norfloksacin-om. Najčešći uzročnik infekcije donjeg urotrakta je bila *Escherichia coli*. Ne postoji statistički značajna razlika u broju bolesnika sa infekcijom donjeg urotrakta nakon terapije Norfloksacin-om u odnosu na godine.

Nema razlike u efektima Norfloksacin-a kod grupe kod koje je terapija trajala tri u odnosu na grupu gde je terapija trajala sedam dana. Takođe, nema razlike u efektima Norfloksacin-a bez obzira na starost bolesnika. *Acta Medica Medianae* 2008;47(4):5-8.

Ključne reči: infekcija, norfloksacin, urotrakt, uroantiseptik