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Urinary Tract Infections in Pregnant Women. New Opportunities Anti-Relapse Therapy

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Abstract

Infectious processes of the urinary tract are a group of diseases often encountered in clinical practice. In particular this applies to pregnant women in early pregnancy who develop functional changes in the urinary tract. The most common pathological condition during pregnancy is asymptomatic bacteriuria.

For antibacterial drugs, prescribed on the late stages with no consideration of causative agents' sensitivity, or inadequate therapeutic doses ascending infection leading to the development of gestational pyelonephritis and other complications of pregnancy may develop. For best preventive treatment the use of antibiotic therapy, prophylactics like cranberry extract containing proanthocyanidin A or other demonstrably effective herbal based drugs, is recommended. As for the medical check-up for this group of patients, it goes without saying that it is obligatory.

Keywords: urinary tract infection, pregnancy, asymptomatic bacteriuria, gestational pyelonephritis, cranberry extract, proanthocyanidin.

Introduction

Urinary tract infections (UTIs) are widelycommon pathological condition(primarily this problem concerns pregnant women)women), often diagnosed by obstetricians-gynecologistslogs.

Physiological pregnancy is characterized by differentto a certain degree, functional changes in the MEP are disturbeddecrease in tone and contractile activity of the muscles of small partsnecks, pelvis, ureters, their expansion.

These changeschanges occur in early pregnancy (6–8 weeks), reach a maximum at 18–20 weeks andincrease the risk of developing infectious diseases van profit center. If in early pregnancy the mainthe cause of dilatation of the pelvis and ureters ishormonal factor, further joins andmechanical factor, which can lead to the formation pyeloectasia, the occurrence of vesicoureteralreflux,creating conditions for the development of ascendinggeneral infectious and inflammatory process [1–3].

The most common pathological condition duringpregnancy is asymptomatic bacteriuria, whichoccurs in 2–8% of women (the peak incidence isruns on the 9th–17th week), as a rule, is detected whenscheduled examination [4]. At the same time, urinary infectionof the exit pathways is evidenced by the detection in the middle portionurine more than 6-8 leukocytes in the field of view.

Pathogens

Themaincausativeagentofinfectiousprocessesurinary system is *Escherichia coli* -60–90% (according to A. Moges et al., 2002). Besides,in the urine of patients, Klebsiella, entero-coccus, *Staphylococcus aureus* and other microorganisms[5, 6].

Diagnostics

For the diagnosis of asymptomatic bacteriuriain addition to a general urinalysis, it is recommended to conducttwo consecutive studies of this materialculture method with urine collection by a catheter.

She is-the presence of the disease is evidenced by the detection of more105 CFU in 1 ml of urine, whileidentification of microorganisms, definition of feeling resistance of microbial flora to antibiotics and antibacterialreal drugs. In clinical practice, treatmentoften start with a single detection of 105 CFU / ml andmore than 1 ml of urine [7], especially when it is neutralities

Therapeutic possibilities

Treatment includes a course of antimicrobial,anti-inflammatory, phyto-, physiotherapy. From anti-bacterial preparations can be used penicil-lines (amoxicillin / clavulanate at a dose of 500 mg 2 times a dayday for 3-7 days) and cephalosporins (cefixime400 mg once a day - 5-7 days, ceftriaxone 1000 mg 1 time per day for 3-5 days). It should be remembered that theuse of nitrofuran preparations in pregnant womenlimited due to the risk of developing anemia in ma-loss and fetus [8].

Fosfomycin is considered safe for use intime of pregnancy with the drug [9] and, according to A.Estebanezet al. (2009), is as effective as ampicillin/ clavulanate, but easier to administer (3000 mg)once in the treatment of asymptomatic bacteriuria andcystitis) [10]. But given that fosfomycin cannotpenetrate deeply into the urothelium, its applicationlimited and shown only in the initial stages of process and early initiation of treatment

Antibacterial therapy for asymptomaticheavy bacteriuria leads to a significant decreasefrequency of gestational pyelonephritis [11]. Iftherapy was not carried out, or antibacterial drugsrats were prescribed without taking into account the sensitivity of the pathogen,or used in insufficient therapeutic doses,30–40% of pregnant women may develop an ascending infectionleading to the development of gestational pyelonephritis.

At the same time, about 53% of cases of acute pyelonephritis occurin the second trimester, 26% in the third [12].

The course of acute pyelonephritis is characterized by an increasetemperature up to 38°C, dysuric manifestations pain in the lumbar region, weakness.

Treatment of acute gestational pyelonephritis shouldcarried out in a hospital setting.

When intoxicated,caused by the inflammatory process, is shown des-intoxication, desensitizing, antispasmodicsky therapy. Antibacterial therapy should be prescribedtake into account the sensitivity of microorganisms

More effective is intravenousadministration of antimicrobials.

For the treatment ofcan be assigned a combination of ampicillin + gentamiqin, as well as cefazolin + ceftriaxone, which haveapproximately equivalent efficiency in relation tomicroorganisms that cause pyelonephritis [13].

As in the treatment of asymptomatic bacteriuria, fortreatment of pyelonephritis is currently preferredis the appointment of β-lactams, since the resistantE. coli resistance to these drugs, according to A. Artero (2013),the lowest [14].

At the same time, E.Sabharval (2012) madeled the opposite conclusion: the resistance of E. coli andother microorganisms to ampicillin - 90%, amoxicillin / clavulanate (Augmentin) - 78%, ceftriaxone -35% [15].

In this regard, in the conditions of increasing resistance of uropathicgenes to most antibacterial drugsthe role of third-generation cephalosporins in the treatment of non-complicated urinary tract infection.

Distinguish-a characteristic feature of this group of antibiotics is the highwhat activity against microorganisms of the familyEnterobacteriaceae, β-lactamase resistance,long half-life, which allows the appointmentstart these drugs 1-2 times a day [16, 17].

American scientists conducted a comparativenew multicenter study of the effectiveness of cephlosporin III generation cefixime and amoxicillin with

participation of 565 adult patients suffering from uncomplicated uncommon urinary tract infections.

Clinical

The effectiveness of cefixime was 90%, amoxicillina - 83%, eradication of uropathogens was observed in 92%patients treated with cefixime, and in 84% of patientstaking amoxicillin [18].

Nevertheless, in the researchvaniyahA.Alemu et al. (2012) multiple drugvein resistance of microorganisms was revealed in95% of urine samples collected from pregnant women with infectiousMVPs [19].

An increase in the resistance of microorganisms is notedfound in the results of many studies [20], more and moreantibiotics become ineffective, sosearch for new approaches to the treatment of infectiousprocesses.

During an exacerbation of the process in the intervals betweenantibiotic therapy themselves, as well as for prophylaxisof exacerbation of chronic inflammatory processesurinary system should be recommended forchange of herbal diuretics, antiseptics and anti-inflammatory drugs.

Active components of medicinal plants, usedused to treat diseases of the urinary tract and kidneys (goldcentaury, lovage, rosemary, madder,stalk bicarp, reed saxifrage, herbsbearberry, sage, wild rose, St. John's wort, horsetail field-vogo, etc.), contribute to the removal of harmful substances from the body.

substances, have antibacterial, anti-inflammatory, antiallergic, diureticaction.

Since ancient times, for the treatment of diseases of the kidneys, urinary tract zyrya, cranberries were also used [21].

The berries of this plantcontain organic acids (including salicylate), fructose, vitamins C, A, K, E and group B, flavonoids, an-tocyanidins, catechins and triterpinoids. Anthocyaninsdins and proanthocyanidins, which are part of the plant,are natural antibiotics [22].

Their mechanismaction is to inhibit bacterial adhesion,including E. coli, on urothelial cells, which facilitates the removalmicroorganisms from the urinary tract. anti-adhesivethe effect of proanthocyanidins is dose-dependent and significant,which has been confirmed by numerous experiments.and clinical studies [23, 24].

ExceptIn addition, the substances that are contained in cranberry juice, changing composition of urine, do not allow pathogens to develop in itbacteria.

For an antibacterial effectrecommended 2-3-fold intake of cranberry natural juice daily[25], but this treatment mayno adverse events, the most frequent of whichwhich are belching, nausea, heartburn, rapidstools, headaches, elevated blood glucose andskin reactions, so the use of cranberry extract incapsules instead of using the whole fruit lasttime is considered more promising [26, 27].

Zhuravit is a fruit extractlarge-fruited cranberries (Vacciniummacrocarpon), containingcontaining in 1 capsule 220 mg of the active substance, which corresponds to5500 mg of fresh cranberries. In addition to antibacterialrial, cranberry extract (Zhuravit) has a pronouncedsignificant antioxidant effect, which was confirmedin the studies of D.Wojnicz et al. (2012), and recommendedVano use the drug for the prevention and treatmenturinary tract infections, including chronic and recurrentprocesses [28].

In a previous comparative study onstudy of the effectiveness of cranberry extract and trimethoprim-priming in women with recurrent urinary tract infections

M.McMurdo (2009) shows the same efficiencybut with fewer side effects in womenwho took cranberry extract for treatment [29],which once again confirms the feasibility and safetythe use of herbal preparations.

Recommended doses of Zhuravit - 1 capsule 3 times a dayfor 3 days, then 1 capsule 1 time per day, long-the duration of treatment is 2-4 weeks. This mode of reception is convenient and notburdensome for patients and promotesadherence to therapy. Cranberry extract (Zhuravit)cauldron for the following diseases of the urinary tract:cystitis, asymptomaticheavy bacteriuria, pyelonephritis, as an additionalmeans of treatment in complex therapy, and for pro-lactation of the development of an ascending infection or othercomplications.

Conclusion

Given the high incidence of UTIs induring pregnancy, it is extremely important to prevention of this pathology. Some clinicians considermelt justified the appointment of preventive coursesowls of antibiotic therapy (1-3 days), other contested.

Consider the feasibility of such an approach, taking into account the correlation risk and benefit of this therapy for the mother and fetus.

Moreover, frequent, short-term prescription of antibacterialtherapeutic drugs contributes to the development of resistantmicroorganisms, the occurrence of allergies,immunity, development of dysbacteriosis, etc.

Exactly.Therefore, in order to prevent exacerbation of chronicpyelonephritis, cystitis, widespread use is recommendedherbal preparations.

Practical Recommendations

Thus, an essential place in the complex of professionallactic measures aimed at preventingprevention of recurrence of urinary tract infections, takes the use of temporary phytopreparations, including those based oncranberry ducts. It is also mandatory to complypersonal hygiene, regimen, diet with the exception of acute, Lena food, physiotherapy exercises.

Each woman-during the entire pregnancy should be understrict supervision of an obstetrician-gynecologist, especiallyespecially at critical times (22–28 weeks),

when most oftenmanifested pyelonephritis of pregnant women. Patients giving kidney disease, require dispensaryobservation at the therapist of the antenatal clinic, systematicmedical examination, which contributes to the early detection reduction of asymptomatic bacteriuria, prevention of complicationsand timely initiation of treatment. Women who haveof which infectious diseases were detected during pregnancyand inflammatory diseases of the urinary tract, proteinuria, hematoma, pyuria, increased blood pressure, edema, andwho also had late toxicosis during the previousduring pregnancies, a thorough examination and observation during all subsequent pregnancies withmandatory therapeutic and prophylacticsky events.

Wider dissemination and implementation in routinecurrent clinical practice of complementary and alternativetherapy is an effective method of reducing the diseaseincidence of inflammatory diseases of the urinary tract during pregnancy.

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References

1. Shekhtman M.M. Guide to extragenital pathology inpregnant. Ed. 3rd. Moscow: Triada, 2005.
2. Urology. National leadership. Ed. N.A. Lopatkina.M.: GEOTAR-Media, 2009.
3. Nikonov A.P. Astsaturova O.R., Shulutko P.A., Kaptilny V.A. In-urinary tract infections and pregnancy. Gynecology. 2007;9(1):38–40.
4. Tseng CC, Huang JJ, Ko WC et al. Decreased predominance of pap G classII allele in Escherichia coli strains isolated from adults with acutepyelonephritis and urinary tract abnormalities. J Urol 2001; 166:1643–6.
5. Sabharwal ER. Antibiotic susceptibility patterns of uropathogens in obstetric patients. N Am J Med Sci 2012; 4(7): 316–9; doi: 10.4103/1947-2714.98591.
6. Rizvi M, Khan F, Shukla I et al. Rising prevalence of antimicrobial resistance in urinary tract infections during pregnancy: necessity for exploringnewer treatment options. J Lab Physicians 2011; 3(2): 98–103; doi:10.4103/0974-2727.86842.
7. Nicolle LE, Bradley S, Colgan R et al. Infectious Diseases Society of America guidelines for the diagnosis and treatment of asymptomatic bacteriuriain adults. Clin Infect Dis 2005; 40:643.
8. Ben David S, Einarson T, Ben David Y et al. The safety of nitrofurantoin during the first trimester of pregnancy: meta-analysis. Fundam Clinic Pharmacol1995; 9:503.
9. Stein G.E. Single-dose treatment of acute cystitis with fosfomycintromethamine. Ann Pharmacother 1998; 32:215.
10. Estebanez A et al. Fosfomycin in a single dose versus a 7-day course of amoxicillin-clavulanate for the treatment of asymptomatic bacteriuriaduring pregnancy. Eur J ClinMicrobiol Infect Dis 2009; 28(12): 1457–64;doi: 10.1007/s10096-009-0805-6. Epub 2009.
11. Smaill F, Vazquez JC. Antibiotics for asymptomatic bacteriuria in pregnancy. Fosfomycin in a single dose versus a 7-day course of amoxicillin clavulanatefor the treatment of asymptomatic bacteriuria during pregnancy. Cochrane Database Syst Rev 2007; CD000490.

12. Archabald KL, Friedman A, Raker CA, Anderson BL. Impact of trimester on morbidity of acute pyelonephritis in pregnancy. Am J Obstet Gynecol2009; 201:406.e1.

13. 13. Wing DA, Hendershott CM, Debuque L, Millar LK. A randomized trial of three antibiotic regimens for the treatment of pyelonephritis in pregnancy. ObstetGynecol 1998; 92:249.

14. Artero A, Alberola J, Eiros JM et al. Pyelonephritis in pregnancy. How adequateis empirical treatment? Rev EspQuimioter 2013; 26(1):30–3.

15. Sabharwal ER. Antibiotic susceptibility patterns of uropathogens in obstetric patients. N Am Med Sci 2012; 4(7): 316–9.

16. PushkarD.Yu., Zaitsev A.V. A modern view on the use offixima in the treatment of urinary tract infections. breast cancer. Surgery-gia. Urology. 2010; 18(29): 1809–12.

17. Ailamazyan E.K. The use of cefixime in uncomplicated pi-lonephritis of pregnant women (guidelines for obstetricditch-gynecologists). Gynecology. 2006; 3:28–31.

18. PushkarD.Yu., Zaitsev A.V. A modern view on the use of fixima in the treatment of urinary tract infections. breast cancer. Surgery-gia. Urology. 2010; 29.

19. Alemu A, Moges F, Shiferaw Y et al. Bacterial profile and drug susceptibility pattern of urinary tract infection in pregnant women at University ofGondar Teaching Hospital, Northwest Ethiopia. BMC Res Notes 2012; 5:197; doi: 10.1186/1756-0500-5-197.

20. Rizvi M et al Rising prevalence of antimicrobal resistance in urinarytract infections during pregnancy: necessity for exploring newer treatmentoptions. J Lab Physicians 2011; 3(2): 98–103.

21. Guay DR. Cranberry and urinary tract infections. Drugs 2009; 69(7): 775–807.

22. Cimolai N, Cimolai T. The cranberry and the urinary tract. Eur J ClinMicrobiol Infect Dis 2007; 26(11): 767–76.

23. Gupta K, Chou MY, Howell A et al. Cranberry products inhibit adherence of p-fimbriated Escherichia coli to primary cultured bladder and vaginalepithelial cells. J Urol 2007; 177(6): 2357–60.

24. 24. Afshar K, Stothers L, Scott H, MacNeily AE. Cranberry juice for prevention of pediatric urinary tract infection: a randomized controlled trial. J Urol2012; 188 (4 suppl.): 1584–7; doi: 10.1016/j.juro.2012.02.031. Epub 2012.

25. Wing DA, Rumney PJ, Preslicka CW, Chung JH. Daily cranberry juice for the prevention of asymptomatic bacteriuria in pregnancy: a randomized, controlledpilot studies. J Urol 2008; 180(4): 1367–72; doi: 10.1016/j.juro.2008.06.016. Epub 2008.

26. Dugoua JJ, Seely D, Perri D et al. Safety and efficacy of cranberry (vaccinium macrocarpon) during pregnancy and lactation. Can J Clinic Pharmacol2008; 15(1): e80–6.

27. Hisano M, Bruschini H, Nicodemo AC, Srougi M. Cranberries and lower urinary tract infection prevention. Clinics (Sao Paulo) 2012; 67(6): 661–8.

28. Wojnicz D, Sycz Z, Walkowski S et al. Study on the influence of cranberry extract Żuravit S•O•S(R) on the properties of uropathogenic*Escherichiacoli* strains, their ability to form biofilm and its antioxidant properties. Phytomedicine 2012; 19(6): 506–14; doi: 10.1016/j.phymed.2011.12.013.Epub 2012.

29. McMurdo ME, Argo I, Phillips G et al. Cranberry or trimethoprim for theprevention of recurrent urinary tract infections? A randomized controlledtrialinolder women. J AntimicrobChemother 2009; 63:389–95.