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Cystitis in Women: Focus

Gynecology and Women's Health Care

Review Article

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Summary

Urinary tract infections are one of the most common conditions in medical practice, especially in general medicine. Whether it is uncomplicated adolescent cystitis after first sexual intercourse, postmenopausal infection or recurrent cystitis at any age, lower urinary tract infection disrupts the quality of life for many women. Despite the often multifactorial origin, each woman has a very specific reason for developing cystitis and it is necessary to look for the trigger (s) [1]. The reason for consultation is most often simple dysuria (difficulty voiding), but can also present in 2 to 5% of cases in the form of urgency voiding or pollakiuria [2]. The prevalence figures for acute uncomplicated urinary tract infection range from 30 to 50 per thousand in adult women [3]. As the risk of urinary tract infection increases with age, half of women develop symptomatic infection at least once [4], but only half of them will see them [5]. However, apart from the significant physical and psychological disturbances that can cause a urinary tract infection, especially recurrent, it should be known that there is no medical condition which requires so many consultations, bacteriological examinations and antibiotic prescriptions than cystitis [6].

The urinary tract infections constitute one of the most frequent diseases in medical practice, especially in general medicine. Whether it is the simple cystitis of the teenager after sexual intercourse, the infection in the middle-age woman after menopausis or the recurrent cystitis at any age, the infection of the low urinary tract unsettles the quality of life of numerous women. In spite of often multifactorial origin, every woman has a very particular reason to develop a cystitis and it is necessary to search one or several factors. The reason of consultation is most often a simple dysuria (difficulty to empty the bladder properly), but not very also to come in 2 - 5 % of cases in the form of urgency, urge incontinence or frequent micturition. The figures of prevalency of the high-pitched infection not complicated with the urinary tract go from 30 to 50 for one thousand to the grown-up women [3]. The risk of infection of the urinary ways augmenting with age, the half of the women once develops a symptomatic infection at least [4], but only the half of them will see patients [5]. However, except the not negligible physical and psychological disturbances which a urinary, especially recurrent infection can draw away, it is necessary to know that there is not medical disease which requires so much consultations, bacteriological exams and prescriptions of antibiotics than the cystitis.

Definition

It is an inflammation of the bladder wall, of infectious origin, mainly affecting women. The main reason is anatomical. Indeed, the urethra being very short in women (2 cm on average) and located very close to the genitals and digestive organs, it happens that certain bacteria can ascend from the vulva to the bladder, through the urethra, and trigger an acute infection. This explains in particular the fact that a urinary tract infection is very frequently caused by organisms from the faecal flora. These successively colonize the vagina, the urethra and finally the bladder [7]. Other contributing factors are sexual intercourse, the presence of prolapse, urinary stasis, and dryness of the mucous membranes. Hematogenous causes are also possible, but very rare. Simple acute cystitis is distinguished from complicated cystitis encountered in people with risk factors.

Clinical Diagnosis and Urine Test

What are the Signs of Acute Cystitis?

Acute cystitis usually begins abruptly with dysuria (painful need to urinate and difficulty urinating) as well as severe burning when urinating, accompanied by small frequent urination (pollakiuria). Sometimes bladder tenesmus (painful urination following contractions of the bladder and urethra) is added. The urine may be cloudy or smelly. Quite frequently, hematuria can be observed due to bleeding from the bladder lining hyperemic with inflammation. In principle, acute cystitis does not give rise to fever or back pain, which are rather signs suggestive of complications (eg pyelonephritis) and which should be consulted quickly. However, there are no symptoms that can predict a urinary tract infection with certainty [8]. The duration of symptoms can sometimes be indicative: symptoms that persist for more than 5 days are more suggestive of urethritis [9,10]. Painful suprapubic tension may be an additional argument in case of suspected cystitis [11]. Further clinical examination will aim to rule out complicated urinary tract infection (pyelonephritis) or other diagnoses.

How is cystitis diagnosed?

Symptoms of cystitis are typical, and may be sufficient for diagnosis. This is usually ensured by performing a urine test using a test strip, easy to perform in the doctor's office. The cytobacteriological examination of the urine (ECBU), or Uricult®, carried out in the laboratory, makes it possible to precisely identify the bacteria in question and to test the antibiotics which are active on the germ in question. More than nine times out of ten, the pathogen is an intestinal bacteria (Escherichia Coli) [12]. It is so frequent that, for a banal cystitis, one can dispense with the ECBU and start, as soon as the strip has confirmed the diagnosis, an active treatment on the E. coli. The other pathogens found are Staphylococcus saprophyticus, which represents 10 to 15% of cases, and Proteus spp, 5 to 10% of unselected cases [13]. Staphylococcus saprophyticus is a typical pathogen in healthy young women and almost disappears after menopause [14]. Proteus Mirabilis 5% Klebsiella pneumoniae and enterobacter 1-3%, Staphylococcus epidermidis 1-2% Serratia, as well as pseudomonas aeruginosa 0.2% are also involved, but more rarely found in uncomplicated urinary tract infections [15].

Conditions of Withdrawal

Laboratory tests should not be done on spontaneous urine, but on urine correctly collected in the middle of the stream. Thus, the urine sample should be taken in a sterile container, removing the first and last part of the stream. The patient should keep the labia majora apart to avoid contamination by bacteria of the vulva. It is not recommended to wash the urogenital area beforehand [5]. Sometimes it may be necessary to have a bladder catheter or a suprapubic bladder puncture. However, contamination is still possible and the main indicator is the number of epithelial cells visible under a microscope. According to classical Kass criteria [16], we will speak of urinary tract infection above 105 cfu / ml. The term cfu is the abbreviation of the English expression "colony forming units" which designates a group of colonizing bacteria such as are observed in a culture medium. Symptomatic patients show a good correlation between pyuria and bacteriuria, provided that a correct screening method is used to detect leukocytes [17]. However, infection should be distinguished from colonization of the bladder or urethra by bacteria, i.e. asymptomatic bacteriuria [5]. The latter is most often seen in pregnant women and the elderly. The prevalence of asymptomatic bacteriuria is estimated at 13 to 20% [3]. In older women, it can even reach 50%! [18]. Mention will also be made of an entity called "low grade bacteriuria" in which the quantity of bacteria is sometimes between 102 / ml and 104 / ml. This "low count" or "low grade" bacteriuria may be a sign of a previous infection [19]. In symptomatic women, it should be regarded as an infection [17,20].

Differential Diagnosis: Urethral Syndrome

- The urethral syndrome is characterized by the existence of pain most often like burning in the urethra, reproduced on palpation and probing. These pains, which can be very intense, are sometimes aggravated by bladder filling and urination [10,19]. The diagnosis is not easy and most often represents a presumptive diagnosis in a woman presenting with recurrent symptoms of cystitis, while urine cultures are systematically negative [10,21]. Sometimes a history of chlamydial urethritis suggests the diagnosis.
- Examination of urine with sediment usually shows mixed flora, sometimes microscopic hematuria alone or slight leukocyturia. Urinalysis is supplemented by cystoscopy which shows spasticity of the urethra with inflammation, metaplasia of the bladder trigonum without any lesions suspected of malignancy. The urodynamic examination, when performed, may reveal a high pressure urethra with instability of the urethro-vesical junction and pseudo-obstruction during the measurement of instantaneous voiding (urodynamic pressure / flow curve).
- The treatment and care of these patients are sometimes long and tedious, in particular due to the more or less marked presence of a psychosomatic component. Prescribing repeated antibiotics is of no use unless a germ has been identified. In the initial phase, a treatment of 10 to 14 days with vibramycin (100 or 200 mg / d) or a tetracycline can calm the inflammation due to trigonal metaplasia. In the medium or even long term, the basic treatment includes anticholinergics such as Detrusitol®, antispasmodics (Urispas®), alpha-blockers (mechanism of action by dilation of the smooth musculature of the urethra identical to the benign prostatic hypertrophy in men) alone or in combination. It is sometimes necessary to perform iterative dilations of the urethra under local or general anesthesia. A multidisciplinary approach (urologist, psychologist, family doctor, neural and pain therapy) is often very useful in these patients with a fragile psychological profile.
- Apart from urethral syndrome which constitutes a classic differential diagnosis, it should not be forgotten that the symptoms of urinary and vaginal affections are often concomitant [14,20]. One should therefore always consider vaginal symptoms such as changes in the white discharge, irritation and itching. In addition, dysuria having vaginal causes (vaginitis or inflammation around the vulva) is classically described as external constituting a burning sensation in the genital area during urination, while internal dysuria (rather suggesting inflammation of the vagina). Urethra or / and bladder) is described as the burning sensation just before and during urination [4,20].

Therapeutic Options

An uncomplicated urinary tract infection is considered a mild condition. A large proportion of women (30 to 40%) no longer have any symptoms after 3 days without treatment, but bacteriuria may persist. A lower urinary tract infection has no effect on long-term renal function [22]. In addition, there is no evidence that untreated cystitis in a healthy woman increases the risk of acute pyelonephritis [11]. In uncomplicated urinary tract infections, treatment is aimed at eradicating the infection and reducing the associated morbidity due to relapses and re-infections. Thus, various factors intervene in the choice of treatment. The antibiotic should reach sufficient concentrations in the urine and should eliminate the most common bacteria without too much affecting the vaginal and intestinal flora.

In addition, the medicine should have as few side effects as possible. The cost of the drug also plays a significant role. In this context, treatment is based mainly on antibiotics, several classes of which have their effectiveness on the germs in question, the most frequent of which is E. Coli (80% E. Coli). Most often, in acute cystitis, a single dose ("single dose" treatment) or three days ("short" treatment) is sufficient [23,24]. In this regard, fosfomycin trometamol is very interesting. Indeed, several microbiological considerations reaffirm the essential role of this single-dose antibiotic as first-line treatment for the eradication of uncomplicated urinary tract infections: good adequacy of the antibacterial spectrum of the antibiotic, very low rate of resistance to main pathogens of the urinary tract, genetic and physiological weakening of rare resistant clones, and prevention of biofilm formation [15].

Minute treatment = a single dose (antibiotic with prolonged urinary elimination)

MONURIL® (fosfomycin trometamol 3 g): Fosfomycin has been known since 1969. A new oral form - fosfomycin-trometamol - has demonstrated very effective antibacterial activity as well as high bioavailability [25,26,27]. Indeed, two hours after oral administration of 3 g, the plasma concentration of fosfomycin resorbed to about 50% reaches its highest value. It should be noted that in the urine, active therapeutic concentrations are observed up to 48 hours after administration of the product and for E. Coli up to 72 hours even. For very sensitive germs, the values probably remain in the therapeutic zone, even after 3 days. However, in all studies, the percentage of bacteriological success is between 75 and 100% [15]. Its antibacterial action is based on an inhibition of cell wall synthesis. In addition, fosfomycin decreases the ability of bacteria to adhere to urinary tract epithelial cells and therefore also their virulence. The activity spectrum brings together all the germs typical of urinary tract infection. The great advantage of this substance is its single intake and extremely low resistance ratio, which is why fosfomycin-trometamol (Monuril®) is considered the treatment of choice for uncomplicated cystitis in many European countries [27]. Indeed, at present, the rate of resistance to commonly used antimicrobials, such as trimethoprim or ampicillin exceeds 30 to 50% [28,29,30]. In contrast, despite many years of use, fosfomycin-trometamol continues to have an extremely low incidence of resistance (about 1%) among strains of E. Coli [28,31]. According to Schito [15], fosfomycin trometamol is the only antimicrobial for which the incidence of resistance, in any case particularly low, has not increased, while it increased for all the others. It should also be mentioned that in terms of tolerance, fosfomycin is clearly superior to fluoroquinolones, cotrimoxazole and nitrofurantoin. Indeed, the single dose helps prevent forgetting!

Short Treatment: (3 days)

Short-term treatment is just as effective as long-term treatments and provides a therapeutic effect [32]. Usually, it is the 2nd generation quinolones (Noroxine®, norfloxacin: 400 mg x 2 / d or Ciproxine®, ciprofloxacin: 500 mg x 2 / d) which are most often used. The alternative is Bactrim F® (cotrimoxazole): 1 tab x 2 / d or Furadantine® (nitrofurantoin): 1 tab x 2 / d. Cotrimoxazole has already been widely tested because of its low cost on the one hand and its good clinical efficacy on the other hand [33]. The growing resistance to the product is partly explained by excessive use. Nitrofurantoin is one of the drugs (like fosfomycin for that matter) against which resistance has not increased, despite more than 30 years of use [34]. E. Coli and S. saprophyticus are very sensitive to it, Proteus spp is resistant to it [35]. It is only suitable for uncomplicated infections. In addition, several studies show that in practice, Furadantine® must be administered for a minimum of 6 to 7 days at a rate of 2 tabs per day to be effective. Therefore, we cannot really speak of short treatment! It is recommended that quinolones be used only for complicated infections. Indeed, their increasing use for simple infections increases resistance [36].

Long Treatment: (7-10 days) same antibiotics as the short treatment.

Regarding the optimal duration of antibiotic therapy, several studies show that the administration of a single dose of cotrimoxazole or a fluoroquinolone is less effective than a treatment of 3 or 7 days. Obviously, compliance is better for a 3-day treatment which costs less and has fewer side effects. A single dose of fosfomycin (Monuril®) is equivalent to the 3-day regimen with other antibiotics. In addition, single-dose treatment of uncomplicated urinary tract infections has several advantages over long treatments, including better compliance as well as fewer adverse effects [37]. It should be mentioned that most often, this single dose treatment is not based on microbiological examinations. Under these empirical conditions, the notion of strong resistance to classical antibiotics among common uropathogens is well known and represents a frequent problem [22].

Problem generally encountered in the treatment of a urinary tract infection: bacterial resistance

Interestingly, even in uncomplicated UTIs, including cystitis, the most common pathogen, E. Coli, can be organized into biofilms with sessile elements embedded in a large viscous layer. This organization confers on infecting microorganisms a sort of phenotypic antibiotic resistance despite the absence of the genes that normally control the loss of sensitivity [15]. Thus, 40% of E. Coli are resistant to ampicillin, 25% of E. Coli are resistant to the combination "ampicillin + ac. Clavulinique "and 15-20% of E. Coli are resistant to cotrimoxazole. For example, in the case of strains of Escherichia coli resistant to cotrimoxazole, the eradication rate obtained with the drug found inactive in vitro is not satisfactory (<50%) compared to the results obtained when the germ is sensitive (> 90%) [15]. This is why international recommendations recommend not to empirically use a classic antibiotic (cotrimoxazole, quinolones and especially beta-lactams) because of the significant risk of resistance which can amount to 20% [22]. Fosfomycin trometamol which, as already mentioned, has an almost constant and high sensitivity (98.1%) for E. Coli compared to other antibiotics [38] has, moreover, the unique ability to slow down selection as well as the diffusion of resistant clones, particularly in E. Coli [15]. In addition, there is probably also a new property recently demonstrated, the ability of fosfomycin

trometalmol to inhibit the formation of E. Coli biofilms present in the bladder during acute cystitis, and even to promote their destruction, which contributes to prevent recurrence and the installation of a chronic infection [25,26].

Pregnant Women

The case of the pregnant woman is a bit special. Indeed, the infections of the pregnant woman which are all the more annoying that they can be the source of many problems such as anemia, pyelonephritis, renal failure and hypertension without counting the cases of abortions or prematurity, often in the absence of clear symptoms, should be classified as complicated urinary tract infections. Bacteriuria, common during pregnancy, is also associated with a significantly increased risk of prematurity, low birth weight children, preeclampsia, hypertension, anemia and endometritis. Depending on the population, 2 to 11% of pregnant women present with asymptomatic bacteriuria during their first consultation for pregnancy [39]. Without adequate treatment, 20 to 40% of these women will develop acute symptomatic pyelonephritis during their pregnancy [39]. The risks of infection are mainly linked to anatomical and physiological changes in the pregnant uterus (pressure and compression on the urinary tract, but also hormonal changes through the change in the acidity of the vagina promoting bacterial colonization). Approximately 90% of pregnant women will develop cystitis during their pregnancy, especially between the 6th and 24th week [40]. The consequences and complications associated with a urinary tract infection during pregnancy therefore have severe repercussions for both mother and child. Again, the most frequently found pathogen is E. coli [41]. Therefore, pregnant women who present with symptoms of UTI or simply asymptomatic bacteriuria should be systematically screened for and treated [42], and a treatment period of at least 10 days is recommended [43]. The choice of treatment will depend on the results of the antibiogram and the possibility of administration in pregnant women. Preferably, amoxicillin is used provided that sensitivity is established on the basis of the antibiogram, a first generation cephalosporin or nitrofurantoin, except at the end of pregnancy. However, some authors recommend that the systematic use of ampicillin is no longer due to the high risk of resistance [44]. When a broader spectrum antibiotic is needed, the combination of amoxicillin + clavulanic acid or a first generation cephalosporin are valid alternatives [45,46]. Regarding fosfomycin trometamol, it is as effective in a single dose as a treatment over several days in the management of urinary tract infections caused by sensitive germs. Its use during pregnancy is however controversial. In fact, there are no teratogenic effects described in clinical studies or in animals [47]. Therefore, some authors recommend its use during pregnancy [48], while others believe that one should remain relatively careful due to the lack of controlled studies on the possible effects on the fetus [49]. In clinical practice, fosfomycin trometamol is not contraindicated in Switzerland during pregnancy and in some European countries such as Italy, it is even used as a routine treatment in cases of asymptomatic bacteriuria in pregnant women. Fluoroquinolones, on the other hand, are clearly contraindicated during pregnancy [49].

Postmenopausal Women

Acute cystitis also remains a topical problem in women after menopause, due to a lack of estrogen impregnation, which promotes bacterial colonization. In fact, vaginal atrophy secondary to hormonal changes associated with menopause, contribute to urinary incontinence, recurrent urinary tract infections as well as bladder disorders such as hyperactivity or dysuria [50,51]. The most frequently found germ is, as in the young woman, E. Coli. [52]. In addition, mechanical or anatomical factors such as the presence of a cystocele or a post-voiding residue - pathologies frequently found in women of this age - contribute to the onset of cystitis [53]. Although the prescription of a systemic hormone replacement therapy seems a logical attitude in this situation, the data in the literature are currently controversial, in particular because of the risk of developing complications and especially the risk of cancer or cardiovascular pathologies in patients. Some predisposed women. In addition, systemic hormone therapy does not appear to reduce the risk of cystitis [54]. However, estrogen replacement by topical application (cream or ovum) seems to prevent the risk of urinary tract infection [53,55]. The discovery of asymptomatic bacteriuria is common in postmenopausal women, especially after 65 years of age and does not always require treatment. The latter should only be considered in the presence of urinary symptoms or sometimes atypical symptoms: fever, anorexia, confusion, or a malformation of the urinary system. The choice of treatment should be based on the results of the urine culture. The optimal duration of treatment for UTI in older women is not clearly defined. Some randomized controlled studies in a cohort of women aged 65 and over have shown that a 3-day treatment with quinolones was just as effective as a 7-day treatment, while being associated with better compliance as well as ‘at a lower risk of adverse effects and interactions [56,57,58].

Reinfections and Recurrences

Recurrent cystitis is common, especially in genetically predisposed women. It is estimated that 3% of the adult female population experiences at least three uncomplicated urinary tract infections per year [59]. The distinction between recurrence and reinfection is of paramount importance. Recurrences are rare, reinfection very frequent, especially in the presence of predisposing factors. In re-infection, unlike in recurrence, it is often a new strain of E. Coli. Symptoms of simple cystitis go away on their own or after a short course of antibiotics in more than 90% of cases within a few days. If this is not the case, or if the symptoms reappear within 2 weeks already after stopping the antibiotic treatment briefly, it may possibly be a recurrence. If the symptom-free interval exceeds two weeks, it is usually not a true recurrence, but rather a reinfection. However, it must be recognized that the difference in clinical practice between reinfection and recurrence is not always easy. In addition, the impact on treatment is not vital as long as the germs are susceptible to the antibiotics tested.

Conditions for Relapse

The infection can relapse if the treatment was taken incorrectly or if it was inappropriate. Also, avoid self-medication! The

antibiogram attached to the results of the ECBU then gives valuable information on the sensitivity of the germs to various urinary anti-infectives. If cystitis persists after adequate antibiotic treatment, beware of antibiotic resistance or an external cause maintaining the infection. Complementary examinations will then be performed: cystoscopy, voiding cystourethrography to search for pathology of the urethro-vesical junction or reflux, as well as intravenous urography in order to determine the morphology of the urinary tree or to the search for a lithiasis. Not to mention the screening for possible prostatitis or a sexually transmitted disease (STD) in the partner!

To avoid Recurrence or / and Reinfection

It is now a matter of preventing recurrences, or new urinary tract infections (15 days and more) from the previous episode. It is usually a combination of several risk factors that produces cystitis. Sexual relations mainly: the female urethra, which is short and is in almost immediate contact with the bladder, is widely open at the time of coitus, which facilitates the circulation of coli bacteria from the intestine to the urethra. The cystitis of the "honeymoon" is a perfect illustration of this ... Another occasion for the accelerated passage of intestinal germs, transit disorders, especially diarrhea.

If there are at least 3 episodes per year or 2 episodes in 6 months, prophylactic treatment based on the antibiogram may be considered for at least 6 months [60]. Continuous prophylaxis reduces the frequency of relapses by 95%. After stopping prophylaxis, 40-60% of patients will no longer have re-infection. The drugs generally used for prophylaxis are nitrofurantoin (50 to 100 mg in the evening) or co-trimoxazole (80 mg of trimethoprim / 400 mg of sulfamethoxazole, 1 to 2 tablets in the evening). In principle, prophylactic treatment is given every evening or only after intercourse. There is no scientific argument to make a choice between these two schemes. As already mentioned, in postmenopausal patients, local estrogen therapy is often effective in reducing the frequency of cystitis.

Principle and Usefulness of Vaccination

More than a vaccination, it is an immunotherapy based on the use of a bacterial extract of E. Coli (Urovaxom®) administered for 3 months by continuous oral intake (1 tab per day), then with boosters of 30 days every three months for 1 year. In the event of cystitis outside a phase of immunotherapy, a 10-day course of treatment may be combined with antibiotic therapy. This preventive treatment can significantly reduce the frequency, duration and intensity of urinary tract infections, sometimes by up to 40%, as well as the incidence of pyuria or leukocyturia [61].

What about Natural Medicine?

Even though antibiotics remain the benchmark in the treatment and prevention of cystitis, long-term side effects as well as resistance phenomena have prompted the medical profession to take an interest in natural products again. "Vaccinium macrocarpon" (lingonberry fruit and its juice; cranberry or in English Cranberry) have been used for a long time in the treatment and prevention of cystitis [62,63]. Native Americans used cranberries to prevent and treat urinary tract infections, as well as to treat various disorders of the digestive system, liver, kidneys, and blood. It is an evergreen shrub that grows in the peatlands of North America. The recommendations in the prevention of cystitis are to drink 250 ml to 500 ml per day of cranberry cocktail or take, twice a day, the equivalent of 300 mg to 400 mg of solid extract in the form of capsules or of tablets. Fresh or frozen fruit can also be consumed at a rate of 125 ml to 250 ml per day [63]. A drink commonly known as a cranberry "cocktail" is commercially available, which contains 26% to 33% juice, the remainder being water, sugar or fructose. In addition to capsules or tablets composed of dehydrated juice, it is drinks of this type that have been used most often in clinical trials. Regardless of the form, it is generally advised to take the cranberry product just before meals or two hours after eating. It is also important to drink plenty of water, especially if you are taking capsules or tablets made from dehydrated juice. According to most studies [63], it would be more than a placebo since a reduction in cystitis is observed depending on the protocols and doses used between 20% and 60% [63,64]. In addition, a randomized placebo-controlled study including 150 women followed over a 12-month period showed that the juice, as well as the extracts in the form of cranberry tablets, significantly reduced the number of episodes of symptomatic infections [65]. Contrary to what one initially thought, it is not the acidification of the urine by the cranberry juice which is at the origin of this protection. Further research has revealed an original mechanism: these berries contain flavonoids, anthocyanins and proanthocyanidins. These latter compounds would be able to bind to certain bacteria (in particular Escherichia coli responsible for most cystitis), to prevent them from adhering to the cells of the bladder and to cause infection [66,67]. Not having an anchor point, these bacteria are then naturally eliminated by natural means. In light of these results, and given the lack of notable side effects, the medical community seems increasingly open to using cranberry for the prevention of cystitis in those at risk. However, there are a few precautions to mention, including drinking plenty of water when taking capsules or tablets made from dehydrated cranberry juice because of a potential risk of developing kidney stones [68]. Diabetics should give preference to cranberry extract tablets or pure juice, as cranberry cocktails contain either sugar or fructose. Finally, certain drug interactions have been described: cranberry juice potentiates the effect of certain anticoagulants such as warfarin by reducing the effect of the enzyme which degrades the drug in the body. Theoretically, cranberries could accelerate the elimination of drugs metabolized by the kidneys since it increases the flow of urine[69-75].

Conclusion

Uncomplicated UTIs in women are very common and are most often caused by E. coli. The differential diagnosis must rule out urethral syndrome, the possibility of a complicated infection in the presence of risk factors, a gynecological disorder or even a chlamydial infection. In outpatient practice, a nitrite test (urine dipstick) is easy to practice. The first choice antibiotics are fosfomycin trometamol due to its single dose administration and low resistance rate, as well as nitrofurantoin and tri-

methoprim. Fluoroquinolones will be reserved for complicated urinary tract infections. The "minute" treatment (1 day) will be offered a priori. A three-day treatment (short treatment) is an alternative. In women who have more than 2 UTIs in 6 months or at least 4 UTIs per year (recurrent infections), prophylactic drug therapy is recommended. In pregnant women, any bacteriuria, even asymptomatic, must be treated to reduce the risk of complications that could affect the health of the mother and child and the course of the pregnancy. Thus, thanks to a better knowledge of the pathogenesis of the disease as well as an adequate understanding of the mechanisms of bacterial resistance, coupled with more efficient diagnostic and therapeutic means, the management of cystitis in women, whatever their age. , should no longer be inevitable.

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