Bacterial resistance is becoming a worldwide public health drama, living as we do at a time when the risk of suffering a severe infection is similar to that in the 1930s. Indeed, over 8000 Europeans die every year due to the inefficacy of current antibiotics. As urologists, we should give this serious reflection as urinary infections comprise a great part of those responsible for this severe epidemic, given that urinary infections are the most common type of hospital-acquired infection, particularly in catheterized patients.\(^1\)

Within our speciality, there exists a proliferation of new drugs, mainly antitumor agents with sometimes spectacular effects. However, concerning antibiotics, we find ourselves in a precarious situation that is, frankly, quite alarming. Firstly, the number of new antibiotics coming onto the market is low in comparison with the situation a few decades ago. To give just one example, between 2003 and 2007 the United States approved just five new antibiotics as compared with the 16 approved between 1983 and 1987. There is, therefore, a gap between the appearance of multiresistant pathogens and the creation of new antibiotics. This has resulted in the current worrying situation as this tendency is unlikely to change in the near future.\(^2\)

Multiresistant pathogens are normally the consequence of repeated exposure to antibiotics. Bacterial resistance is a natural evolutionary process by which microorganisms adapt to the selective pressure of drugs, such that those that survive contain genetic material making them almost indestructible.

The main problem is that potent antibiotics are being used more and more, with no consideration at all for the use of older, cheaper, and more specific agents. In other words, the medical community is making inadequate uncontrolled use of broad-spectrum antibiotics, such as the third generation cephalosporins, fluoroquinolones, and carbapenems, which are the drugs that really give rise to the appearance of multiresistant bacteria like extended spectrum beta lactamase (ESBL) or carbapenemase-producing enterobacteria, which are an important threat for urological patients because they are just invulnerable to almost all available drugs.\(^3\)

The reservoir for these multiresistant bacteria is the intestine and they may cause infections ranging from a simple cystitis to severe urosepsis. This is why the presence of fluoroquinolone-resistant strains of *E. coli* may be a serious problem in the case of transrectal prostate biopsies, especially given the frequency of this procedure and because these bacteria often produce febrile sepsis requiring hospitalization. Thus, these antimicrobial agents should be limited as much as possible, consideration should be given to performing prior bowel cleansing, and evaluation given to using alternative techniques like transperineal biopsy.\(^4,5\)

Strangely, the origin of this important problem does not lie exclusively in hospitals, but rather to a great extent in outpatients; and those responsible are not only us urologists but also other healthcare professionals. Added to this is the problem of self-medication, given that in quite a few countries many antibiotics can be bought over the counter and taken without the need for a medical prescription, constituting a great breeding ground for the appearance of bacterial resistance.

The so-called McGeer criteria recommend the use of antibiotics only in older patients who have at least three of the following symptoms: fever; increased urinary frequency, urgency, urinary burning; suprapubic pain; cloudy or bad-smelling urine; or a worsening mental status. Nonetheless, over 40% of these patients receive antibiotics even though they fail to fulfil these particular criteria. What is worse, it is not just that they are given antibiotics without the need for them, they are given the wrong drug at the wrong dose and for the wrong period of time.\(^6\)

Broad-spectrum antibiotics, like ciprofloxacin or levofloxacin, tend to destroy all the bacteria in the gastrointestinal tract, including the beneficial bacteria that aid with digestion. These antibiotics have been likened to a nuclear bomb that "takes out everything, as opposed to a sniper’s
This, 9 this opens the doors to the feared and virulent *Clostridium difficile*, which pros-
per in the gut when all the competing bacteria have been exterminated. 9

The number of patients who are carriers of multiresis-
tant pathogens varies from country to country depending on how strict the healthcare policies are. The result is that patients are now being placed in quarantine if they come from countries with tolerant healthcare policies and a con-
sequently high incidence of bacterial resistance. 10

An urologist would not normally consider treating a patient for conjunctivitis, or stomatitis, and even less so pericarditis or meningitis. And in these cases even primary care physicians refer their patients to the corresponding specialist. Nonetheless, it seems that anyone can consider themselves able to treat a urinary infection. The lack of understanding of the aetiology, clinical situation, diagnosis, and treatment of urinary infections is to a great extent the origin of the current chaotic situation we now find ourselves in.

But let us consider the most basic and most common sit-
tuation, cystitis. By definition, cystitis is a condition that involves dysuria, increased frequency, and pyuria; i.e. there must be leucocytes in the urine such that if there is no pyuria, one cannot speak about cystitis. These hypothet-
ical urine infections are often diagnosed based on a culture, without examining for any white cells in the urine. Nor is consideration given to the fact that urine samples from women are almost always contaminated by the unavoidable contact of the urine with the perineum or by vaginal secret-
ions. Accordingly, in case of doubt the only way to make the diagnosis is by obtaining the sample via a catheter. Many people are unaware that the limit of normality in a urine culture is one hundred thousand colonies. It is often also for-
gotten that the symptoms of a calculus in the pelvic ureter are indistinguishable from those of cystitis and that in this event antibiotics should not be given.

However, the most severe diagnostic error in these cases occurs in the so-called false cystitis or pelvi-perineal pain syndrome. These patients are usually seen after they have been taking antibiotics needlessly for weeks, months, or even years, with the resulting morbidity, including episodes, sometimes severe, of genital mycosis. From the above, we can see the need to educate the medical community so that they stop giving antibiotics indiscriminately and with no jus-
tification. Better, the use of antibiotics should be drastically limited, leaving them solely in the hands of experts. Further-
more, the clinical guidelines, such as those of the American Urological Association or the European Association of Urol-
ogy, should be adhered to strictly.

Understandably, physicians are obliged to act and not just stand by with folded arms, but the evidence shows that in the case of infections, it is often better to do nothing rather than treat the patient incorrectly. The American Urological Association has an ingenious motto “Our knowledge is his life”, though it could also be phrased in another way: “Our ignorance kills people”.

References

9. Kahlmeter G, Poulsen HO. Antimicrobial susceptibility of *Escherichia coli* from community-acquired urinary tract infec-

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