Antibiotic prophylaxis: reasoned choice and not casual use

Medical and dental practitioners are going through difficult years in which litigation is frequent, because of complications related to treatment vs non treatment decision as well as to each treatment option vs any others possible. This is also true as far as antibiotic prophylaxis is concerned, so litigation may arise due to surgical or distant site infections subsequent to interventions carried out without preventive antibiotic treatment as well as from any kind of adverse reactions against the prescribed antibiotic.

However, law is inclined to ascribe professional guilt to antibiotic treatment failure without evaluating the overtreatment risks whose consequences will occur most likely un-indicated in the future. Therefore, no legal problems arise from the two most important negative effects of the not ruled and excessive use or abuse of antibiotics, that is microbial resistance firstly and allergy secondly. Some observations have to be made in this regard.

People are used to self-prescription and they often do not stick to the physician's and dentist's prescriptions as far as antibiotic type, dosage and timing are concerned. Household medicine chests are full of many, and often expired, drugs among which and above all antibiotics. As soon as a mild inflammatory symptom appears (slight fever, cough) people take antibiotics often without any indications and in a non-effective way. This is a wrong approach in health care due to disinformation, bad habits, disease phobia, lack of time and money for medical and dental consultations, unavailability of medical and dental practitioners, possibility to buy such drugs without specialist's prescription and availability of drugs at home. The latter is often due to the fact that pharmaceutical companies do not manufacture and sell antibiotic packaging for prophylactic use, therefore patients are forced to buy the usual antibiotic packaging, which is for therapeutic use, and contains more tablets than those necessary for prophylactic use. Physicians and dentists are also responsible for this situation since they do not update their specific knowledge on prophylactic antibiotic treatment and thus their approach is due to force of habit, they use an excess of zeal and they usually apply the concept that "melius abundare quam deficere" or "a little bit of antibiotics cannot harm anyone". In the light of the above-mentioned considerations, an effective antibiotic policy is therefore necessary to avoid inappropriate use or abuse of antibiotics.

In recent years an attempt to regulate prophylactic antibiotic use has been made by many international associations of surgeons, cardiologists, orthopaedics and dentists in order to verify the accuracy and the level of evidence of the existing guidelines on antibiotic prophylaxis of distant and surgical site infections. Currently, the scientific world's position is clear as far as distant site infections are concerned, involving mainly the endocardium but also prosthetic joints, indwelling venous catheters and cardiovascular implantable electronic devices, with a dramatic reduction of the number of subjects in which antibiotic prophylaxis is considered to be necessary.

The most important reasons for this reduction are the very low number of surgery-related distant site infections and the lack of evidence concerning antibiotic effectiveness in reducing the risk of occurrence of such an infection. Only about 50% of oral surgery-related endocarditis and only a small percentage of prosthetic joint infections are caused by oral microbial strains and the temporal relationship between dental procedures and the onset of infection is not always verifiable. Most distant site infections also occur when antibiotic prophylaxis is applied and also when the responsible bacterium was sensitive to the antibiotic used. Moreover, the cost for a routine antibiotic prophylaxis is very high if compared to the cost of the antibiotic therapeutic treatment of all the related distant site infections. In the light of these considerations, only subjects with high risk of distant site infections, in which very serious complications can develop in relation to those infections, are eligible for antibiotic prophylaxis. This change led us to consider some different approaches for the patients, particularly for those to whom antibiotic prophylaxis was once prescribed and which is currently no longer indicated. Ac-

tually, they should be informed about the lack of scientific evidence supporting the use of antibiotic prophylaxis in their specific situation and about the problems related to repeated indiscriminate antibiotic treatments, such as allergy, toxicity and above all bacterial resistance that induces the lack of antibiotic effectiveness when, on the other hand, it is actually necessary.

The choice to use or not antibiotics as a preventive measure should therefore derive from a discussion with the patient once he/she is completely informed. However, a problem can emerge from the different indications that the patients can obtain from the physician, the cardiologist, the orthopaedic and the dentist regarding the need of antibiotic prophylaxis. This problem can easily be overcome if a complete written informed consent is obtained from the patient before the dental procedure is performed.

The situation is very different with regard to the antibiotic prophylaxis of surgical site infections since in most oral procedures there are no guidelines or recommendations concerning the use, or not, of antibiotics provided by associations of oral and maxillofacial surgeons worldwide. Two main factors should be always taken into consideration: the surgical infection risk of each procedure, firstly and the patient's immunological status, secondly.

To pursue the "minimum non nocere" aim, only procedures with a high risk of infection and immunocompromised/immunosuppressed patients need antibiotic prophylaxis for surgical site infections. Antibiotic prophylaxis is also necessary for procedures in which surgical infections can dramatically compromise the final outcome, such as in regenerative surgeries. However, it is still unclear whether only one preoperative dose should be administered or if and how many further doses are needed and what drug is better to use according to the kind of surgery performed.

In the light of these uncertainties, it is advisable that the surgeon inform the patient about the real infection risk of the surgical procedure and about the postoperative measures which should be applied to avoid infection. Moreover, the greater the risk of infection, the closer the follow-up sessions should be, especially if antibiotic prophylaxis was not prescribed. The natural course of healing must be explained to the patient so that, for example, she/he will not think that the physiological post-operative swelling is due to an infection and decides to take antibiotics on his/her own without being examined first. Only if real signs or symptoms of infections appear in the post-operative period, antibiotics should be administered as therapy as soon as possible.

In conclusion, since antibiotic prophylaxis of surgical site infection is under the surgeon's responsibility, all local and general as well as environmental and climatic conditions which may increase the infection risk must be adequately considered although it is highly un-recommended to always and indiscriminately prescribe antibiotics, since microbial resistance is around the corner and sooner or later a serious infection will appear also in the presence of specific antibiotics or they will be not effective in the treatment of an infection for which they are usually given as first choice.

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