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The guidelines on antibiotic application in gynaecological oncology

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ABSTRACT

Standardised and effective antibiotic therapy regimes in gynaecology need to be based on the protocols prescribed by acknowledged specialists. Antibiotic therapy can have either prophylactic or therapeutic purposes. Antibiotics of the narrowest possible spectrum are recommended, as well as their shortest while most effective application. The choice is firstly determined by the effectiveness and secondly by the price. Preventive use of antibiotics and the doses in gynaecological surgery depend on the type of surgery. If antibiotic therapy is prophylactic, first generation cephalosporin should always be used. Irrational antibiotic therapy, especially when using third generation cephalosporin, can result in strains of resistant hospital bacteria.

KEY WORDS: *Practice Guidelines; Antibiotics; Antibiotic Prophylaxis; Gynecology Drug Therapy*

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INTRODUCTION

Nowadays standardized and effective antibiotic therapy regime is the ultimate goal of every organized health system. Protocols for using antibiotics prescribed by acknowledged specialists in all medical disciplines, especially in surgical ones, need to be recognised and applied by all the physicians, regardless of their employment in state-run or private hospitals, because they all need to have the same goal: the best possible solution for the patient. In addition, the cost/benefit relation has to be borne in mind. Not every physician can decide to depart from such an antibiotic therapy regimen. The person to do so should be the most qualified one in the health institution. This prevents any breach of the protocol, as well as irrational prescribing of antibiotics, ignorance, and misuse of antibiotic therapy. It also stimulates order and responsibility.

Modes of application

Antibiotic application can be:

1. Prophylactic: primary (the prevention of initial infection by short-term antibiotic treatment without any signs of preoperative infection); secondary (the prevention of recurrent or persistent infection, for instance, an infection of the urinary tract, respiratory ways and latent herpes simplex infection); and eradication (the elimination of Staphylococcus aureus from the nasal cavity and the throat of the medical personnel).

2.Therapeutic. The use of antibiotics in dirty or contaminated areas is not classified as prophylaxis but as treatment of suspected infection.

Many studies have shown the development of resistant breeds of bacteria when administering antibiotics in prophylaxis, especially if their application is inadequate (2).

Due to the above mentioned, it is recommended to use antibiotics with the narrowest spectrum, as well as their shortest possible application (1). In pharmacoeconomy (the science which, unfortunately, is not studied in our country) there is a phrase "A cost minimization approach". According to this, the recommendation for antibiotic therapy is determined firstly by its effectiveness and secondly by its price.

The ideal drug for anti-infection surgical prophylaxis should reach following goals (1, 3):

- To prevent postoperative wound infection
- To prevent postoperative morbidity and mortality caused by infection
- To reduce the length and cost of hospitalisation
- Not to create unwanted effects
- To have no undesirable impacts on bacterial flora of patients and also no undesirable impacts for hospitals.

In order to achieve these goals, the antibiotic should be:

- Effective against bacteria that most often contaminate the wound,
- Given in the adequate dose and at the right time to ensure the adequate concentration when performing the incision and for the period of any potential contamination,
- Safe,
- Given in the shortest effective period so as to reduce unwanted effects, the development of resistance and the price.

The perioperative use of antibiotics alone is not enough to prevent infection. General anti-infection measures are never to be neglected:

- The shortest possible preoperative hospitalisation,
- Scrupulous preoperative preparation outside hospitals whenever possible,
- Shaving and immediate disinfection of the skin prior to the surgery,
- Antiseptic and non-traumatic surgical technique,
- The precise haemostasis,
- The use of modern surgical materials and electrocautery probe to avoid the use of surgical thread,
- The drainage,
- The removal of all the liquid after abdomen rinsing,
- The time of the surgery beyond three hours increases the risk of infection,
- The disinfection of hands after examination of each patient,
- The scrupulous disinfection of the anaesthetic apparatus,
- The presence of the indispensable personnel only in the operating theatre.

In order for these measures to be effective there has to be the willingness and discipline of all medical personnel to conduct them.

The individual status of each patient and the germ virulence play a crucial role in the development of infection. According to the findings of the research conducted on animals, the body's defence against infection starts only three hours after the beginning of an operation.

Recommendations for preventive use of antibiotics in various types of operations (4- 7):

Abdominal hysterectomy: It is compulsory if prior to the surgery there has been a curettage (in the past 7 days) a conization (in the past 14 days) or if a patient has an IUD. 1 g of first generation cephalosporin (Cephazolin-"Galecef", Cephotetan or Cephoxitin) is given in one or maximum three doses. The administration of the drug begins either intramuscularly 1 hour prior to or intravenously 20-30 minutes prior to the surgery.

Simple surgical interventions (adnexectomy, cystectomy, salpingectomy): A single preoperative dose of antibiotics is sufficient.

Laparoscopy: Most authors believe that there is no necessity for the preventive use of antibiotics. This should be conceived conditionally and thus antibiotic prophylaxis should be administered in major and lengthy operations.

In the literature, there are no controlled studies in applying antibiotic prophylaxis in oncological surgeries (8).

According to German Association of Gynaecologists (3), it is recommended to administer 3x2 g of cephalosporin in radical hysterectomy with lymphadenectomy. Taking into consideration different work conditions in this country, it is re/commended to continue this therapy with administering 2x2 tablets of Bactrim or some other uroantiseptic for as long as the patient has a urinary catheter.

Vaginal hysterectomy: One or maximum three doses of antibiotics are recommended. The dose of 2 g of cephalosporin with anaerobic activity (Cephotaxime or Cephazolin) has shown the best results. Alternatively, Amikacin of 500 g can be applied. Short-term antibiotic therapy does not change the bacteria flora of the vagina. Preoperative vaginal treatment does not affect the bacterial flora but reduces the concentration of bacteria. The removal of tamponade from the vagina should be performed in the first postoperative day and the removal of a Foley catheter in the third postoperative day. On the same day, vaginal treatment using 3% hydrogen and Rivanol is given. Prophylactic antibiotic treatment does not reduce the frequency of urinary infections or the infection of the respiratory ways.

Infertility surgical treatment: The most frequent recommended regimen is a single dose or 3x2 g cephalosporin or cephotaxime given perioperatively. There is a possibility of the crystallisation of antibiotics and related forming of adhesions and thus neither corticosteroid nor dextran application in the abdomen is recommended by the majority of authors.

Parallel studies have shown that there is no difference in prophylaxis of postoperative infection when using first, second or third generation cephalosporin (2,8). Numerous studies have proved that the uncontrolled use of third generation cephalosporin is the main cause of the development of the strains of resistant hospital bacteria (2,8,9). The antibiotic used in prophylaxis should be changed every second or third month in order not to allow the above-mentioned development. The Anti-infection Commission together with an epidemiologist and a clinic's pharmacologist should supervise the bacteria presence in the hospital and accordingly prescribe antibiotics.

Therapeutic use of antibiotics: It is prescribed according to the cause. In the case of mild clinical picture a physician can begin with monotherapy. In the case of more serious clinical picture, there is an objective gynaecological diagnosis and lab findings indicate severe infection of the inner genitalia, combination therapy using 3 antibiotic drugs (cephalosporin or synthetic penicillin, aminoglycoside and metronizadole) should be introduced. Apply both general measures and local disinfection of the vagina. A possible surgery ought to be taken into consideration as well. Upon the arrival of the findings of the vaginal swab, prescribe an appropriate antibiotic therapy in an adequate dose.

Antibiotic therapy in vulvovaginitis and cerivictis: Classification of vaginal discharge according to Jiraczek (6 groups of vagina secretes) should not be used in the practice anymore. To treat the exact cause of the disease vaginal smears for bacteriological examination should be taken. Anamnesis and clinical picture are essential. The principle is the same as in preoperative antibiotic or any other targeted therapy: the narrowest possible antibiotic spectrum, the shorter and more effective treatment. When treating such inflammation it is compulsory to apply local and general anti-infection measures. The examination and treatment of the partner is obligatory. Preventive measures, lifestyle and behaviour can considerably prevent infection. The vagina cannot be sterilised.

When choosing therapy the price of drugs is usually not taken into consideration in the majority of cases in this country. Apart from the effectiveness, the price of a drug is the most relevant factor for its application there is the list of antibiotics most frequently used in our hospitals (Table 1).

Table 1. The most frequently prescribed antibiotics in gynaecology in surgical prophylaxis and infection treatment in our country

Generic and product name	Manufacturer and country	Dose	Price in dinars
Ampicillin (Pentrexyl)	Bristol Mayers Squibb (Switzerland)	1000 mg	108.00
Metronidazole (Orvagil)	Galenika (SCG)	500 mg (100 mg)	160.00
Aminoglycosides			
(Gentamycin)	Panfarma (SCG)	120 mg	19.50
(Amikacin)	Galenika (SCG)	500 mg	162.11
Vancomycin (Vankocin)	Eli Lilly (Switzerland)	1000 mg	1667.78
Ciprophloxacin (Marocen)	Hemofarm (SCG)	100 mg	174.42
Cephazolin (Galecef)	Galenika (SCG)	1000 mg	182.52
Cephuroxim (Nilacef)	Hemofarm (SCG)	1500 mg	347.76
Cephotaxime (Tolicar)	Jugoremedija (SCG)	1000 mg	225.72
Cephtazidim (Forcas)	Hemofarm (SCG)	1000 mg	379.62
Cephtriaxone (Longaceph)	Galenika (SCG)	1000 mg	359.10
(Azaran)	Panfarma (SCG)	1000 mg	359.10
Clindamycin (Klindamycin)	Hemofarm (SCG)	150 mg	192.00
Imipenem (Tienam)	Merck Sharp (Switzerland)	500 mg	1240.84

* The prices are given in local currency (dinar) and were valid at the beginning of April 2005

CONCLUSION

Although the recommendations cannot take into consideration all the problems, physicians cannot be allowed to prescribe antibiotic therapy, as they like. We suggest that our country should also create the guidelines for antibiotic therapy similar to those in other countries. These guidelines ought to be of obligatory character for all the hospitals, both state-run and private. We also believe that the concept of antibiotic application and the philosophy of the use of antibiotics should de taught at Medical Schools and Faculties of Pharmacy. If so, the students will be familiar with the basic modern attitudes towards antibiotic therapy once they start to practice medicine.

There is always a thought of a great surgeon Woodruff: "Antibiotics can make a third-rate surgeon a second-rate one, but they can never make a second-rate surgeon a first-class one".

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