Study on the Application of Preventive Antibiotics on Obstetrics and Gynecology

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Abstract: Many clinical treatments in obstetrics and gynecology involve surgical and invasive examination methods, which may affect and destroy the integrity and barrier mechanism of the body, and easily lead to invasion and infection of the bacteria. With the discovery and application of antibiotics, the treatment of preoperative infection and prevention of postoperative infection become the basis for successful surgery, and it is also the guarantee for the continuous development and progress of surgery. Although the use of antibiotics to prevent surgical infections has been widely accepted, many types of drug selection and drug delivery regimens have shown efficacy, but optimal drug selection and protocols are not necessarily recognized and adopted by physicians. The consequences of the abuse of antibiotics, increased bacterial resistance, antibiotic side effects, rising medical costs have gradually attracted people's attention.

1. Introduction

The application of antibiotics in the surgical field is becoming more and more extensive. In order to ensure that no incision infection occurs after surgery, perioperative, especially postoperative antibiotics have become routine, and the number of cases of clinical surgical infection has not decreased. With the increasing use of antibiotics, clinical multi-drug resistant strains are also increasing. Infected bacteria are insensitive to most antibiotics, making treatment of clinical infections very difficult. Obstetrics and gynecology surgery involves more than half of the vagina. The vagina has its own anatomical and physiological characteristics of defense against infection, but it is susceptible to infection by factors such as menstruation, sexual intercourse, pregnancy, and the close relationship between the anus and urethra and the environment suitable for bacterial growth. It is difficult to completely eliminate the pathogenic bacteria in the vagina by routinely scrubbing the vagina and using vaginal suppositories before surgery. The interference of surgery not only destroys the natural defense mechanism. Moreover, the alkaline, serous exudate of the retroperitoneal wound area changes the original intravaginal environment. This change in the nature of the "medium" causes the conditional pathogens in the vagina to turn into pathogenic vaginal dominant strains, resulting in post-operative infections from conventional vaginal bacteria. Intraoperative bleeding, trauma, long operation time, intraoperative amniotic fluid pollution, and delayed production undoubtedly increased the probability of infection. Although there is no obvious positive correlation between the spectrum and clinical effects of prophylactic antibiotics, it can completely enter the microenvironment of vaginal and cervix, change the type, quantity and relationship of vaginal colonies during and after surgery, and significantly reduce or reduce Post-infection and its comorbidities, this is the main basis for the application of prophylactic antibiotics in gynecological surgery.

2. Risk factors for surgical infection in obstetrics and gynecology

90% of the pathogens in the abdominal and pelvic infections of obstetrics and gynecology patients can be isolated in the female lower genital tract. When the pH of the vagina is increased, the growth of Lactobacillus is inhibited, and the growth of Gardnerella is accelerated, thereby changing the vaginal aerobic state and causing anaerobic infection. Therefore, it is suggested that the health status of the patient's vaginal ecology should be evaluated before surgery, and patients

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with bacterial vaginosis should be detected by preoperative screening, and antibiotics should be used to prevent and reduce postoperative infection. In the infection of patients undergoing gynecological surgery, most of them are infections of various bacteria, including mixed infections of aerobic and anaerobic bacteria.

Surgical damage to adjacent organs, such as the intestines, bladder, and ureters, may cause surgical infection. Intraoperative hemostasis, rough operation, improper drainage, hematoma formation and exudate retention are also prone to surgical infection. Sterile concepts and aseptic procedures during surgery are also important parts of controlling surgical infections.

In addition to the above reasons, the risk factors for postoperative infection are multifaceted. There are known and unknown. The patient's own health status, age, nutritional status, and potential infections will affect the patient's postoperative recovery and resistance to infection.

3. Analysis of the status quo of prophylactic antibiotics

Although the widespread use of antibiotics has given both gynaecologists a technical and psychological guarantee, how to effectively apply and optimally select antibiotics during surgery is both for the purpose of preventing surgical infections and for taking into account antibiotic abuse. The consequences are still a serious problem. In our investigation, we found that in the cesarean section and total hysterectomy (including abdominal and vaginal hysterectomy), the selection of drugs and the drug regimen in major hospitals vary greatly, and penicillins and cephalosporins are the mainstays. select. Among pregnant women undergoing cesarean section, 28.7% were only used for one antibiotic during hospitalization, while only 2.3% were used for uterine surgery. Up to eight types can be administered. The one with the least administration time is given one dose of antibiotics, and most of the medications are used until the patient is discharged. The analysis of medical costs can also be seen that the cost difference can only be more than 20 times for antibiotics alone. This is inevitable for medical workers and health policy makers for limited health resources and increasing health needs. s concern. For the treatment of infectious diseases, the principle of medication emphasizes the selection of sensitive and effective antibiotics for pathogens, and the use of adequate foot treatment. However, in preventive medication, the principle of medication is rather vague. Many doctors choose drugs based on their own experience, recommendations from drug manufacturers and merchants, or advice from superior doctors. It has been found from the survey that there are still major problems in the selection, compatibility and medication of preventive antibiotics. There is no distinction between therapeutic and preventive medications, which may cause serious consequences of antibiotic abuse. The requirement for prophylactic antibiotics should be validated by a high-quality randomized controlled trial (RCT) that can achieve effective serum and tissue concentrations for most possible pathogens, is less prone to antibiotic resistance, is inexpensive, and is well tolerated.

4. Prophylactic antibiotic application

Based on the above investigation and clinical practice in obstetrics and gynecology, the question may be asked: 1Can cesarean section or hysterectomy be used without prophylactic antibiotics? 2Can I use an antibiotic alone? 3How long is the medication used? The evidence-based medicine advocates for the above problems is to find the best evidence. The systematic review published by the Cochane Library is currently widely accepted and adopted as a randomized controlled trial (RCT) systematic review. In the Cochrane Library Pregnancy and Childbirth Evaluation Group, there were 2 related systematic reviews, 1 of which was related to the use of prophylactic antibiotics in cesarean section. This review retrieved Cochrane's registered research from the 1960s to 1998. A total of 66 RCTs met the inclusion criteria, comparing postoperative infections in the antibiotics and placebo or non-treatment groups. The stratified comparison was performed according to whether the included subjects were elective cesarean section (whether the membrane was ruptured for more than 6 hours, whether it was in labor), non-selective cesarean section, or both. The observed indicators were fever, wound infection, endometritis, urinary tract infections and other serious

infection complications such as bacteremia, septic shock, infectious thrombophlebitis, necrotizing fasciitis and death from infection. Wait. The results showed that: 1 the treatment group was more effective in preventing infection. Postoperative fever, endometritis, wound infection, urinary tract infection, and other serious infections were significantly reduced, and were statistically significant. 2 Regardless of selective cesarean section, non-selective cesarean section, undetermined type of cesarean section, or all maternal, the relative risk (RR) of antibiotics for endocarditis is very similar, 0.25 (95 %CI 0.11 to 0.55); 0.39 (95% CI 0.33 to 0.46); 0.37 (95% CI 0.32 to 0.42) and 0.37 (95% CI 0.33 to 0.42). Similar results were obtained for the reduction of postoperative fever. For bacteremia and other serious infections, the RR in the non-selective cesarean section was 0.28 (95% CI 0.13 to 0.61); the indeterminate group was 0.54 (95% CI 0.32 to 0.92); for all women The RR is 0.44 (95% CI 0.29 to 0.68). There are no reports of serious side effects. Evaluation conclusion: Prophylactic antibiotics can reduce the incidence of 2/3~3/4 endometritis in selective or non-selective cesarean section, and postoperative fever and urinary tract infection are also significantly decreased. In addition to elective cesarean section, the postoperative wound infection rate decreased, and almost no serious side effects of the drug occurred. Therefore, it is recommended that women with cesarean section apply prophylactic antibiotics. For hospitals with a really low infection rate, consider using no antibiotics for selective cesarean delivery. Another article evaluated different options for the use of prophylactic antibiotics in cesarean delivery. The review included 51 studies, and the results of the review showed that ampicillin and first-generation cephalosporins are good candidates for prophylactic antibiotics for caesarean section, more expensive broad-spectrum penicillin or second- and third-generation cephalosporin antibiotics and combinations. Medication does not show better results. There is also no evidence that a multi-dose regimen is superior to a single-dose regimen, and it also demonstrates the advantages of a single dose in terms of medical costs. Based on the results of these two Cochrane systematic reviews, WHO also recommends to developing countries in the Reproductive Health Library: 1 cesarean section should use preventive antibiotics; 2 use simple, inexpensive antibiotics (ampicillin and first-generation cephalosporins) Antibiotics; allergic patients choose clindamycin); 3 a single dose is recommended. Regarding the antibiotic application of total hysterectomy, no relevant evaluations were found in the Cochrane Library. From Medline, 34 articles on the use of prophylactic antibiotics for total hysterectomy (abdominal or vaginal) were searched (search terms: total hysterectomy, antibiotics, prevention, randomization), of which 23 met the requirements. Most of the literature was published in the 1980s, and only two articles since the 1990s. In the late 1980s, articles comparing single doses and multiple doses began to emerge. A total of 8 trials were given with placebo or no drug, and 6 of them showed that the infection rate of the medication group was significantly lower than that of the control group. The two literatures showed no difference. Most of the drugs are compared with two to three doses, and most of them are third-generation cephalosporin antibiotics compared with the second or first generation. Half of the results showed that a single dose of cefotetan was as effective as multi-dose cefoxitin or cefazolin in preventing postoperative infection; the other half showed that the former was superior to the latter. There were no reports of serious side effects. There were only two studies on drug compatibility: one was clindamycin/ metronidazole compared with placebo, and the other was cefuroxime/ metronidazole versus drug-free, and the results were superior to the control group. By evaluation, the results indicate that prophylactic antibiotics should be applied to total hysterectomy and that a single dose, especially a third-generation cephalosporin antibiotic, can be used. Finding and presenting problems from clinical practice, obtaining the best evidence by finding and evaluating, combining the patient's own value, determining the answer to the problem, and verifying and evaluating the evidence in clinical practice is a step in evidence-based medicine practice; The clinician self-educates and the process of continuous improvement.

5. Conclusion

Clinical obstetricians and gynaecologists should be scientific and rational in the prevention and treatment of antibiotics. The focus of prevention of infection should be shifted from the application

of antibiotics to preventive measures. It is not allowed to use broad-spectrum antibiotics for long-term blind large doses for fear of postoperative wound infection. On the one hand, it can reduce the economic burden of patients, on the other hand, it can reduce drug-resistant strains in hospitals. Make antibiotics better to prevent infection.

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