



knowledge, Attitude and Practice of Rational usage of antibiotics for Preoperative Prophylaxis Among Surgeons in Shahid Beheshti University of Medical Sciences hospitals in 2014

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ABSTRACT

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Background: Optimal and appropriate antibiotic prescription for preoperative prophylaxis is an essential issue in hospitals. The nobility of the present study was to determine the rate of optimal antibiotic usage for preoperative prophylaxis in Shahid Beheshti University hospitals in 2014.

Materials and Methods: In this observational cross-sectional study, 200 physicians employed in Shahid Beheshti University hospitals who performed surgical procedures were enrolled in the study and the rate of optimal antibiotic utilization for preoperative prophylaxis was evaluated.

Results: It was obtained that 64% of physicians had appropriate attitude and 41% had sufficient practice. The concordance rate according to the guidelines was medium in 52%, high in 29%, and low in 19%

Conclusion: It was ultimately attained that optimal antibiotic for preoperative prophylaxis is used by nearly half of physicians and also two third have appropriate perspective regarding the antibiotic usage.



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INTRODUCTION

Antibiotics are common prescribed for the treatment of many infectious diseases, in order to eradicate pathogens or prevent the transmission of diseases [1]. However, the excess usage of antibiotics would result in microbial resistance [1, 2]. It is important to reduce the prescription and usage of antibiotics in hospitals and health care settings [3, 4]. Approximately, one-third of the admitted patients in hospitals, receive antibiotics which are prescribed incorrectly in half of the cases. Antibiotic resistance among microorganisms, especially *Staphylococcus aureus*, *Enterococcus*, *Enterobacteriaceae*, and *Pneumococcus* is a world-wide problem related to excess antibiotic prescription [3- 5].

Nowadays, for reduction of microbial resistance, it is recommended to use antibiotics in patients according to indications including: established infections with antibiogram or empirical therapy in emergency cases according to the clinical guidelines [6- 8]. Development of some strategies in this era is required; however, initially the current situation in each setting should be determined for a desirable programming [9- 11]. Hence, this study was performed to determine the rate of optimal antibiotic usage for preoperative prophylaxis. The research was performed in 2014 in Shahid Beheshti University Hospitals

MATERIALS and METHODS

In this observational crosssectional study, 200 physicians who were employed in Shahid Beheshti University Hospitals and performed surgical procedures were enrolled in this study. The rate of optimal antibiotic utilization for preoperative prophylaxis was determined. The sampling tool was a researcher made questionnaire including variables and required items.

The analysis was performed after data collection for 200 subjects. The analysis were performed by SPSS software (Version 13.0) using descriptive and comparative interpretation of data. The used statistical methods included the Chi Square test and the significance level was considered less than 0.05.

RESULTS

In this study, mostly general surgery (24%) was analyzed. Also 12%, 11%, 10.5%, 10%, 9.5%, 8.5%, 7.5%, and 7% were gynecologist, cardiologist, orthopedician, otorhinolaryngologist, neurosurgeon, ophthalmologist, urologist, and maxillofacial

surgeon, respectively. Apparently, 82% had academic degree and the remaining were in postgraduate course. The antibiotic was prescribed 30 to 60 minute before the surgery (Table 1). Ninetythree percent of subjects received intraoperative antibiotics again. The administration time was short, appropriate, and long in 39%, 39%, and 22%, respectively. The Mupirocin was prescribed in 9%.

Table 1: Antibiotic administration time across the groups

Time	Frequency	Percent
30-60 Minute before surgery	120	60
0-30 Minute before surgery	50	25
Up to 24 hours before surgery	30	15
Total	200	100

The information was collected by surgeons and also textbooks, electronic database, and internet in 45%, 40%, and 15%, respectively. Only 8% of physicians were incorporated in Antibiotic Resistance Committee of hospitals. The appropriate attitude and desirable performance was observed in 64% and 41%, respectively. The concordance with guidelines was high, medium, and low in 29%, 52%, and 19%, respectively and was significantly ($P=0.043$) differed according to the specialty type (Table 2). However the concordance rate was not differed between those with academic degree and others ($P > 0.05$).

DISCUSSION

The obtained results in this crosssectional survey demonstrated high and medium concordance rate in more than 81% of subjects. It was attained that some specialties, such as orthopedics were accompanied with more consideration of guidelines. Additionally, it could be due to the previous training course and also more contamination rate in orthopedics operations. However the postgraduate physicians were not differed from others for this matter. According to previous studies in Iran, the usage of antibiotics is increasing during recent years [12]. based on the comparing our results with the literature, we observed more desirable interpretation of increasing or decreasing trend in concordance rate with guidelines among physicians.

The most prescribed antibiotic was ceftazidime and also the combination of ampicillina and clavulanic acid according to the study performed by Atti et al in Italy [13]. However, the

Table 2 Concordance with guidelines among different specialties

Specialty	Concordance rate			Total
	Low	Medium	High	
General Surgeon	11(22.9%)	17(35.4%)	20(41.7%)	48
Orthopedics	2(9.5%)	10(47.6%)	9(42.9%)	21
Gynecologist	6(25%)	14(58.3%)	4(16.7%)	24
Cardiologist	2(9.1%)	16(72.7%)	4(18.2%)	22
Otorhinolaryngologis	5(25%)	9(45%)	6(30%)	20
Neurosurgeon	5(29.4%)	7(41.2%)	5(29.4%)	17
Ophthalmologist	4(26.7%)	9(60%)	2(13.3%)	15
Maxilofacial Surgeon	1(5.3%)	16(84.2%)	2(10.5%)	19
Urologist	2(14.3%)	6(42.9%)	6(42.9%)	14
Total	38(19%)	104(52%)	58(29%)	200

most common antibiotic used in Iran has been reported to be cephalosporines [12], as well, we attained the same data. The operations which used mostly antibiotics were gynecologists in their procedures, according to our data. AlaviMoghaddam et al also reported the gynecology and general surgery are the most common operations with antibiotic prophylaxis [14]. In a study done in Iran, the prescribed antibiotic was variable in different specialties and the cephalosporines and metronidazole were mainly prescribed by general surgeons; additionally, the aminoglycosides were generally administered by gynecologists [5]. Nonetheless, the type of antibiotic was not related to particular specialty. The concordance rate according to the guidelines was variable in different specialties

Hsu Ly et al. reported that training the physicians and educating the patients would result in a useful antibiotic consumption in communities [15]. The study by Apisarnthanarak et al. in Thailand reported higher discordance rate regarding guidelines among gynecologists and general surgeons [16]. Nevertheless, the urologists obtained the most rate of incorrect antibiotic administration. It was recommended by them to have consultations with infectious disease specialists, in order to reduce the inappropriate usage of antibiotics. The antibiotic control strategies are widely used in many countries to reduce the excess of antibiotic prescription rate [17, 18]. But only less than 10% in our study were member of antibiotic resistance committee of hospitals.

However, the effectiveness of antibiotic prescription control strategies is not yet clear and further prospective studies are required. Evidently some restrictions in antibiotic prescription and development of more definite indications and cyclic changes in main prescribed antibiotics in health care setting may result in valuable outcomes. Training courses, regarding antibiotic prescriptions forms, antibiotic administration guidelines, and consultations with infectious disease specialists may result in more desirable antibiotic prescription pattern [19]. Conclusively, optimal antibiotic utilization for preoperative prophylaxis is used nearly by half of physicians and also two-third have appropriate attitude toward the antibiotic usage and approximately 8% have concordance with the guidelines. However, further studies in other academic and private health care centers are required to be performed, in order to compare the results with current study; therefore, it would enable the physicians and researchers to design better programming to reduce the inappropriate antibiotic prescription rate. Indeed, the development of training course for physicians in infection control committee in hospitals would be beneficial.

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