

Use And Misuse Of Antimicrobial Agents In Healthcare Settings Of Diyala Province

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Abstract

Background: Antibiotics are among the most highly misused and irrationally prescribed medicines by health professionals, which directly contribute to the drug resistance problem.

Objective: To evaluate the rates of irrational antibiotic prescription in Baquba and Al-Batool Teaching hospitals.

Patients and Methods: This study was conducted in Baquba and Al-Batool Teaching Hospitals during the period from 1st December 2015 to 1st March 2016. Two- hundred and fifty-five randomly selected patients present to the internal medicine wards in emergency departments due to different causes were tested for antibiotic misuse. All of the medication prescribed were reported, reviewed and carefully assessed according to the standard criteria.

Results: This study revealed that (78.4%) of patients had been medicated with antibiotics in rate of 100% of irrational use. Cephalosporins score the higher rate (35.3%) in prescription followed by penicillins (23.5%). The most frequent indications for antibiotics prescribed were Urinary Tract Infections (UTI) with 51(25.5%) followed by Upper and Lower Respiratory Tract Infections (URTI, LRTI) with (48 %, 46%), respectively.

Conclusion: The rate of antibiotic misuse is unacceptably high. The antibiotics prescription need further evaluation to reduce unnecessary prescription.

Key words: Antibiotic misuse, antimicrobial agents, prescribing practice.

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Introduction

Medicine use is rational, when patients receive the appropriate medicine in doses, that met their own individual requirements, for an adequate period of time, and at the lowest cost both to them and the community [1]. Irrational use of medicine is when one or more of these conditions is not met, and this may take many different forms, for example, polypharmacy, over-use of antibiotics and injections, failure to prescribe in accordance with clinical guidelines, and inappropriate self-medication.

Since the discovery of antibiotics many substances have become available for the treatment of infections. Unfortunately, the inappropriate and excessive use of antibiotics are among the key factors for the increase and spread of antibiotic-resistant bacteria [2]. As a result, patients with antibiotic-resistant infections are likely to experience longer and more costly hospital stays, requiring treatment with more powerful antibiotics that may cause additional and more severe side effects [3][4][5].

Several studies have identified and examined specific causes of the misuse of antibiotics, including unnecessary prescribing [6][7][8]. And patient demanding [9][10][11]. Other factors include patients' knowledge, beliefs and attitudes towards antibiotic use and self-medication [12][13]. Thus, the control of antibiotic utilization needs multifaceted interventions involving healthcare practitioners and the public by raising awareness about the urgency and magnitude of economic and epidemiological impact of antibiotic misuse and prompt them to find ways of fighting excess costs and the emergence of resistant bacteria [10], while people must become informed about the risks of using too many antibiotics (including a high incidence of allergy) [14].

The aim of this study was to evaluate the rates of irrational antibiotic prescription in Baquba and Al-Batool Teaching hospitals.

Patients and Methods

This study was conducted in Baquba Teaching Hospital and Al-Batool Teaching Hospital of Maternity and Pediatrics during the period from 1st December 2015 to 1st March 2016. Two-hundred fifty-five

randomly selected patients present to the internal medicine wards in emergency departments due to different causes were tested for antibiotic misuse. For each patient a questionnaire (especially adopted for the present study) was utilized, including information about diagnosed condition, antimicrobial agents prescribed, the route of administration, the dosage and duration of treatment was completed. All of the medication prescribed were reported, reviewed and carefully assessed according to the standard criteria globally followed elsewhere [15].

Statistical analysis

Statistical analysis was performed using SPSS version -9. All variables were expressed as frequencies and percentages.

Results

Among the 255 patients included in this study, 140 (55%) were females and 115 (45%) were males. The results indicated that, the majority of the patients 102 (40%) were age 21-30 years, followed by 64 (25%) were above 30 and 51 (20%) and under 10 years. Whereas, only 38 (15%) were age 11-20 years, table (1).

Table (1): Demographic description of patients.

Sex	No.=255	%
Male	115	45
Female	140	55
Age (years)	No.= 255	%
≤10	51	20
11-20	38	15
21-30	102	40
>30	64	25

Analysis of data revealed that among 255 patients enrolled in this study, 200 (78.4%) had been medicated with antibiotics. Of them most frequent antibiotic classes prescribed

were as follows: cephalosporins (35.3%) penicillins (23.5%), macrolides (15.7%) and aminoglycosides (3.9%), table (2).

Table (2): Rate of antibiotics prescribed.

Antibiotic prescribed	No.=200	%
Cephalosprins-3 rd generation	90	35.3
Penicillins	60	23.5
Macrolides	40	15.7
Aminoglycosides	10	3.9
Total	200	78.4

Table (3) shows the distribution of most frequent indication for antibiotics prescribed ,Urinary Tract Infection (UTI) rank at the top with (25.5%), followed by Upper and Lower Respiratory Tract Infections (URTI, LRTI)in

rate(48 %, 46%), respectively, and Gastrointestinal tract infections (GITI) (12%). The proportions of misuse were 100% as the prescriptions were empirical without microbiologically confirmation.

Table (3): The most frequent indications for antibiotic prescription.

Indication	Cephalosporins	Penicillins	Macrolides	Aminoglycosides	Total (%)
UTI	16 (8%)	10(5%)	15(7.5%)	10(1%)	51 (25.5%)
URTI	20 (10%)	15 (7.5%)	13(6.5%)	0(0%)	48 (24%)
LRTI	26 (13%)	15 (7.5%)	5(2.5%)	0(0%)	46 (23%)
GITI	18 (9%)	18(9%)	7(3.5%)	0(0%)	43 (21.5%)
Others	10 (5%)	2(1%)	0(0%)	0(0%)	12 (6%)
Total	90 (45%)	60(30%)	40(20%)	10(1%)	200 (100%)

According to the result showed in table (4), 130 (65%) patients were receiving one antibiotic and 60 (30%) patients were

receiving two, whereas, 10 (5%) patients had triple therapy.

Table (4): The rate of multi-prescription of antibiotics.

No. of patients (%)	No. of antibiotics received (%)
130 (65%)	1
60 (30%)	2
10 (5%)	3

Discussion

Irrational use is wasteful and can be harmful for both the individual and the community. However despite the global problem of inappropriate use, few countries are monitoring medicines use. According to results, more than (78.4 %) of prescriptions contain antibiotics, which is an alarming high percentage compared to other studies that reported antibiotic description range between 32-47% [10][16][17]. The most frequent antibiotics prescribed were third generation cephalosporins with rate of (35.3%) followed by penicillins and macrolides with rates of (23.5%) and (15.7%), respectively. The rate of antibiotic prescribing is higher than from being accepted as rational, which were in tune to those reported in other publications [8, 10, 18]. However our result is seemed to be higher.

Without microbiological confirmation, 100 % of the prescriptions were empirical. This is may be due to patient's pressure on these healthcare facilities. In addition, some cases such as sick neonates or intoxicated child, where one cannot wait for culture reports and need to start antibiotic urgently. Regarding the clinical indication our result reported a particularly high rate of antibiotics description in upper respiratory tract infection (24%) that confirmed observations by Bugnon-Reber *et al.* [10], which are usually not an appropriate indication for the use of antibiotics. Unlike Wang *et al.* [2], 30% of patients medicated with two antibiotics.

This is because most of the prescribers at the emergency departments are junior staff who lack sufficient training, in addition to the absence of treatment guidelines and training of medical staff.

In conclusion, the rate of antibiotic misuse is unacceptably high in Baquba Teaching Hospital and Al-Batool Teaching Hospital of Maternity and Pediatrics and this could be attributed the absence of treatment guidelines and training of medical staff. Nationwide studies are needed to identify the pattern of antibiotic prescribing in order to restrict unnecessary prescriptions.

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