Original Research

MAGNITUDE OF PRESCRIBED ANTIBIOTICS IN PEDIATRIC EMERGENCY DEPARTMENT IN BASRA HOSPITAL FOR MATERNITY AND CHILDREN

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ABSTRACT

Introduction: Antimicrobial agents are common employ in paediatric patients. Emergency department make good place for known prescribing pattern of antibiotics with frequent use for disease that interfere in treatment between private pharmacy & hospital. The irrational and overuse of antibiotic in last decades did not follow the international guidelines and infectious strategy which if not controlled or minimize will lead to higher rates of mortality in human societies. The aim was to find the magnitude of antibiotics prescribing in children internal emergency department at Basra hospital for Maternity and Children & showing relationship with misuse of it **Methods:** The study was performed on 560 paediatrics patients aged (1 month -13 years) that seen in the (Basra Hospital for Maternity and Children) emergency department during 4 months from December 2017 to March 2018. These cases were dividing according to containment antibiotic and several parameters such as patient diagnosis and number of antibiotics prescribed. **Results:** A total of 61% (n=342) patients were males. The average number of antibiotics per patient was 1.45 Prescription did not contain antibiotics 28.57% (n=160) Prescription contain antibiotics 71.42% (n =400) of all patient from total prescribed. Most cases diagnosis for prescribing antibiotics are (24%) Gastroenteritis (16.25%) bronchiolitis and (11.75%) pneumonia. **Conclusion:** The dispensing of antibiotics is not following constant or international guidelines which will cause problems like resistance and economic side also. Nearly almost the admitted patients received antibiotics regardless the culture results.

Keywords : Antimicrobial, paediatric, irrational use, emergency department, magnitude , Basra

Introduction

Antibiotics, this class of drugs that are widely prescribed for podiatric patients, and in almost cases their dispensing is not being according true pathway (though checking the culture sensitivity) which make a big problem, that is bacterial resistance for almost antibiotics, even the broad spectrum one, for the coming years. Such trouble will cause economical problem and large number of deaths by simple infections (Pradeepkumar et al., 2017; Sharma et al., 2016; Thapaliya et al.,2015). Irrational use of antibiotics will cause several problems; that are increase incidence of morbidity and mortality, toxic effect of some drugs, ineffective of these antibiotics due to new resistant strains of bacteria and higher morbidity and mortality rates (Yusuf et al., 2017; Baig et al., 2017 ; Hameed et al., 2016). World Health Organization (WHO) puts an indicator for antibiotic uses to assess the percentage of its use. Using of polypharmacy (more than one drug), using of antibiotic for non-infectious condition, wrong dose of antibiotics, using of injectable dosage form even the oral dosage form is present and the preferred and prescribe the drugs by generic name are some points prescribed in WHO indicator (El Mahalli, 2012). Some studies in Iraq were made for evaluating the pattern of antibiotics use. In Baghdad at 2017, a study was done in teaching hospital. This study shows the overuse of antibiotics either single or multiple drugs which in future will cause a big risk for individual and community (Alwan et al., 2017). Also, in Karbala a research was done to assess the habit of antibiotic use and the result shows irrational use of antibiotics, as mentioned in Obaid et al., (2017). In developing countries, antibiotics are taken by the patients directly from the pharmacy with-out prescription due to lack of laws that prevent their dispensing. These points will aid to develop high bacterial resistance and poor response to antibiotics. Rapid and urgent changes are needed to over-come this problem (Alhomoud et al., 2017 ; Abuirmeileh et al.2014; Mikhael, 2014; Ronat et al., 2014; Jamshed et al., 2018). In Basra, this is the first study to assess the antibiotic use in paediatric hospital. The aim of this study is to evaluate the pattern and level of antibiotic use for paediatric patients in Basra General Hospital for Paediatric and Maternity.

Methods

Prospective study was done on paediatric patients admitted into hospital through emergency department. The study was performed on 560 paediatrics patients aged (1 month -13 years) randomly selected who visited Basra Hospital for Maternity and Children (BHMC) emergency department during 4 months from December 2017 to March 2018. Their prescriptions were dividing according to containment antibiotic or not and several parameters recorded such as patient demographics, diagnosis and number of antibiotics prescribed. The data was collected by specific forma made for this study and statistical analysis was done by using Excel 2010 and MedCalc program. The ethical committee of scientific research in college of pharmacy was gotten.

Inclusion criteria:

Paediatric patient aged 1-15 years old admitted through emergency department

Exclusion criteria:

Any paediatric patient with chronic disease (cardiac, renal or respiratory disorder)

Results

Table 1 shows the age distribution of the paediatric patients who included in this study. Age groups are divided into five groups: less than one year (35.5%), 1-3 years (28.25%), 4-6 years (17.25%), 7-9 years (10%) and 10-12 years (9%).

Table 2 shows the number of patients who received antibiotics or not after admission into emergency department in hospital. Patients who did not receive antibiotics account 160 patients, while who received antibiotics account 400 patients. 57.5% received one antibiotic and 47.5% received more than one antibiotic.

Table 3 describes the diagnosis of paediatric patients who enter emergency department of hospital. Gastrointestinal infections account (24%), asthma (11.25%), pneumonia (11.75%), UTI (4%), blood disorder (12.25%), bronchiolitis (16.25%), fever (4.75%), epilepsy (4.25%), DM (1.25%), septicaemia (1.75%), meningitis (2%), otitis media (1%), and undiagnosed cases (5.5%)

Table (4) explains the percent of prescribed antibiotics in emergency department. Amoxicillin accounts the higher rate (40.5%) when compared to other antibiotics. Cefotaxime accounts (17.6%), flucloxacillin (16.2%), metronidazole (19.7%), gentamicin (7.4%), ceftriaxone (4.5%) and vancomycin (2.9%).

Table (5) shows the frequency of combined antibiotics that prescribed for paediatric patients. These combinations are cefotaxime + flucloxacillin (12.8%), amoxicillin+ metronidazole (37.6%), amoxicillin + gentamicin (29.7%), Flucloxacillin+ gentamicin (12.8%), Ceftriaxone + Flucloxacillin (7.9%), Cefotaxime + amoxicillin (16.8%), Cefotaxime + vancomycin (10.8%), Ceftriaxone + vancomycin (5.9%), Amoxicillin + Flucloxacillin (19.8%), Ceftriaxone + metronidazole (3.9%), Amoxicillin +metronidazole+ Flucloxacillin (8.9%) and finally Cefotaxime+ Flucloxacillin+ metronidazole (0.99%)

Table 1: Frequency of pediatric patients' admission into hospital during study period

Age	Frequency and percentage for 4 months
Less 1yr.	142 (35.5%)
1-3yr.	113 (28.25%)
4-6yr	69 (17.25%)
7-9yr.	40 (10%)
10-12yr	36 (9%)

Table2: Evaluation antibiotics prescribed in hospital during work period

Did not received Antibiotics	Received Antibiotics	
160	400	
	One Antibiotics	> One Antibiotics
	230 (57.5%)	170 (42.5%)

Table 3: Distribution of diagnosed admitted patients into emergency department in BHMC

Diagnosis	Percentage and frequency
Gastrointestinal infections	96(24%)
Asthma	45 (11.25%)
Pneumonia	47 (11.75%)
Urinary tract infections	16 (4%)
Blood disorder as prophylaxis	49(12.25%)
Bronchiolitis	65 (16.25%)
Epilepsy	17(4.25%)
Fever	19 (4.75%)
D.M*	5 (1.25%)
Septicemia	7(1.75%)
Meningitis	8 (2%)
Undiagnosed cases	22(5.5%)
Otitis media	4 (1%)

Table 4: Distribution of type of antibiotics prescribed in emergency paediatric department

Antimicrobial agents	Frequency and percentage (n=579)
Amoxicillin	235 (40.5%)
Cefotaxime	102 (17.6%)
Flucloxacillin	94 (16.2%)
Metronidazole	62 (19.7%)
Gentamicin	43 (7.4%)
Ceftriaxone	26 (4.5%)
Vancomycin	17 (2.9%)

Table5: Frequency of combined antibiotic agents in paediatric department

Combination antimicrobial agent	Frequency and percentage (n=101)
Cefotaxime + Flucloxacillin	13 (12.8%)
Amoxicillin +metronidazole	38 (37.6%)
Amoxicillin + gentamicin	30 (29.7%)
Flucloxacillin + gentamicin	13 (12.8%)
Ceftriaxone + flucloxacillin	8 (7.9%)
Cefotaxime + amoxicillin	17 (16.8%)
Cefotaxime + vancomycin	11 (10.8%)
Ceftriaxone + vancomycin	6 (5.9%)
Amoxicillin + flucloxacillin	20 (19.8%)
Ceftriaxone + metronidazole	4 (3.9%)
Amoxicillin + metronidazole+ flucloxacillin	9 (8.9%)
Cefotaxime + flucloxacillin+ metronidazole	1 (0.99%)

Discussion

A total of 560 paediatric patients were reviewed during this study that admitted into emergency department and not admitted into hospital departments. All the information was collected using specific forma was made for this purpose to assess the patients' characters, diagnosis and drugs prescribed.

Antibiotic resistance is a growing problem in worldwide and need rapid and urgent plane to overcome it and avoid future mortality. In this study, about 400 paediatric patients were participated in this study who admitted into emergency department of Basra Hospital for Maternity and Children and received antibiotics, while 160 patients did not receive antibiotics; making the total number of patients are 560 patients. This study is designed to measure percent of antibiotic uses and the purposes for them to be prescribed and to evaluate if the dispensing is compatible with the diagnosis.

In table 1, no. of paediatric patients who admitted into hospital. The higher age group who was less than one year age (35.5%), as the age becomes older; the percent of admission is being smaller. The age between 1-3 years, 28.25% was their percent, 4-6 years; about 17.25% was their admission percent. These age groups are more susceptible for infection and hospital admission. Such results were also shown in a research done by Thapaliya et al., 2015 and Palikhe, 2008. This is a big problem due to complications that may these children will face in future, either as drug side effects or effect on their immunity (Pomorska-Mól & Pejsak,2012). For future, it is necessary to ensure the right diagnosis before prescribing any antibiotic.

In table 2, the data of 400 patients arranged as number of prescribing antibiotics. 57.5% of patients received one antibiotic during hospital admission, while 42.5% of patients received more than one antibiotic (may be double or triple).

Combination of antibiotics is good for several conditions such as meningitis, pneumonia, congenital heart disease, upper respiratory tract infection, etc. as seen in table 3, which shows the cases that admitted into hospital during research period. The higher percent was gastrointestinal infection (24%), then bronchiolitis, pneumonia and asthma were (16.25%), (11.75%) and (11.25%); respectively. Such conditions, and the other which mentioned in table 3, are need for combination antibiotics, almost. Using of combination of antibiotics should follow the guidelines of treatment in addition of culture sensitivity test, to overcome the causative agent and less side effects of agent will get, as seen in Pradeepkumar et al.,2017 and Alwan et al., 2017. Some cases that mentioned in table 3 (like DM, fever, blood disorders) here the administration of antibiotic either prophylaxis to prevent any infection to occur due to these age group are immunocompromised patients, or to treat a serious infection for such patients.

In table 4, the frequency of prescribed antibiotics was explained. Amoxicillin with higher percent of dispensing (40.5%), and other antibiotics were (metronidazole 10.7% , flucloxacillin 16.2%, cefotaxime 17.6%, and ceftriaxone 4.5%). As we talk previously, the type of infections was serious and complicated that need combination in a lot of cases. Pneumonia, meningitis, urinary tract infection are need to be amoxicillin or cefotaxime is one of the treatment guideline due to staphylococcus species are involve (Husni et al.,2004). In this study, and as mentioned in table 3, gastroenteritis shows higher rate of admitted cases, then bronchiolitis and pneumonia, which can explain these percent of medications used.

Now in table 5, explains the type of combination of antibiotics. Amoxicillin plus metronidazole shows higher percent of combination (37.6%). This combination can cover aerobic and non-

aerobic microorganisms that are presents in children, like gastroenteritis which its prevalence is the highest among patients who participated in this study (Yek et al., 2010). Also, amoxicillin plus gentamicin shows high percent of patients (29.7%). This combination covers both gram positive and gram negative bacteria, in addition to synergistic effect on microorganism if this combination administered to the patients (Darras-Joly et al., 1996). Amoxicillin plus flucloxacillin combination is useful for increasing area for covering microorganisms, the synergistic effect on bacteria (Adam et al., 1983).

Conclusion:

The dispensing of antibiotics is not following constant or international guidelines which will cause problems like resistance and economic side also. Nearly almost the admitted patients received antibiotics regardless the culture results. This protocol need to be changed and make strict guidelines for prescribing antibiotics.

Conflicts of Interest

The author declare no conflicts of interest.

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