International Journal of Current Advanced Research
ISSN: O: 2319-6475, ISSN: P: 2319-6505, Impact Factor: 6.614
Available Online at www.journalijcar.org
Volume 7; Issue 12(C); December 2018; Page No. 16576-16577
DOI: http://dx.doi.org/10.24327/ijcar.2018.16577.3067

Research Article

ANTIBIOTIC RESISTANCE IN E.COLI STRAINS IN SAMPLES FROM ALMOUJTAHD HOSPITAL

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A R T I C L E I N F O

Article History:
Received 13th September, 2018
Received in revised form 11th October, 2018
Accepted 8th November, 2018
Published online 28th December, 2018

Key words:
Antibiotic Resistance in E.Coli

A B S T R A C T

Objective: This study aimed to determine E.coli antibiotic resistance to different antibiotics. **Materials and methods:** This is a retrospective study at AlMoujtahd Hospital (Damascus Hospital) between 1/6/2017 and 31/12/2017) including all samples of E.coli infections during the studied period. **Results:** We found 72 samples with E.coli Infection. The most resistance was against Cefaclor (93.1%), while the highest sensitivity against E.coli was by Amoxicillin-clavulanic acid (56.1%).
Conclusion: Resistance of the E.coli in our study to different antibiotics was much higher than the resistance percentages of similar studies and that shows the obvious misuse, overuse and lack of knowledge about their effects among general population.

INTRODUCTION

Antibiotics has changed medicine and saved millions of lives for decades now. However, bacterial resistance is becoming a major problem by causing adverse effects on morbidity and mortality rates. (1-6). The antibiotic resistance crisis has been related to the lack of awareness about these medications, the misuse and overuse of them. (2-5) According to the Centers for Disease Control and Prevention in the U.S, some of the bacteria due to its very high resistance are becoming an urgent and serious concern. Moreover, this issue could be causing a burden clinically and financially on the healthcare systems worldwide. (1,5,7,8).

MATERIALS AND METHODS

This study was a retrospective study of all the cultures of E.coli infection of patients who reviewed AlMoujtahd Hospital (Damascus Hospital) and were hospitalized and diagnosed with E.coli infection between 1/6/2017 to 31/12/2017. This study included 72 cases. Only the authors to ensure the privacy collected all the data and all the names and personal information were blinded. Statistical analysis was done using SPSS 25.0.

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RESULTS

Table 1 Gender Distribution of Our Study

Gender	N	%
Female	53	73.6
Male	19	26.4
Total	72	100.0

Table 2 Source of samples in our study

Source of sample	N	%
Urine	56	77.8
Sputum	1	1.4
Wipe from wounds	6	8.3
Blood	2	2.8
Pus	5	6.9
CSF	1	1.4
Catheter	1	1.4
Total	72	100.0

Table 3 Frequency of cases that are (Resistant, Sensitive, and Intermediate) to different antibiotic therapies

Pathogen / antibiotic* combinations	No. of cases reported	All cases			Chi-Square value	P-value
			n	%		
CRX	38	Resistant	29	76.3	10.526	0.0001*
		Intermediate	0	0		
		Sensitive	9	23.7		
CAZ	63	Resistant	33	52.4	14.952	0.001*
		Intermediate	8	12.7		
		Sensitive	22	34.9		
CZ	59	Resistant	41	69.5	39.695	0.000*
		Intermediate	2	3.4		
		Sensitive	16	27.1		

		Resistant	38	61.3		
GN	62	Intermediate	13	21.0	21.903	0.000*
		Sensitive	11	17.7		
		Resistant	30	66.7		
NOR	45	Intermediate	3	6.7	25.2	0.000*
		Sensitive	12	26.7		
		Resistant	13	36.1		
MER	36	Intermediate	0	0	2.778	0.096
		Sensitive	23	63.9		
		Resistant	23	34.8		
AK	66	Intermediate	18	27.3	1.182	0.554
		Sensitive	25	37.9		
		Resistant	14	34.1		
AUG	41	Intermediate	4	9.8	13.22	0.001*
		Sensitive	23	56.1		
		Resistant	22	55.0		
CTX	40	Intermediate	0	0	0.4	0.527
		Sensitive	18	45.0		
		Resistant	54	93.1		
CCL	58	Intermediate	1	1.7	93.345	0.000*
		Sensitive	3	5.2		
		Resistant	38	63.3		
CPR	60	Intermediate	3	5.0	30.7	0.000*
		Sensitive	19	31.7		
		Resistant	38	63.3		
CTR	60	Intermediate	1	1.7	34.3	0.000*
		Sensitive	21	35.0		

***CRX**: Cefuroxime, **CAZ**: Ceftazidime, **CZ**: cefazoline, **GN**: gentamycin
NOR:norfloxacin, **MER**: meropenem, **AK**: amikacin
AUG: Amoxicillin-clavulanic acid, **CTX**: Cefotaxime, **CCL**: Cefaclor
CPR: Cefprozil, **CTR**: Ceftriaxone.

DISCUSSION

This study was done to determine the resistance of E.coli to commonly used antibiotics. Our study included 72 cases of E.coli infection with a predominance of females 53 cases (73.6%) and 19 males (26.4%). Most of the cases were urine samples 56 cases (77.8%), which was the most common. 6 cases were collected using wipes from wounds, 5 cases from pus samples, 2 cases from blood samples and 1 case of each of the following: catheter, cerebral spinal fluid (CSF) and sputum samples.

A similar study (9) compared the resistance of E.coli to different antibiotics. It showed that the highest resistance was to Ampicillin (68.9%) followed by ciprofloxacin (23.6%), while the least resistance was to Imipenem (0%) and Meropenem (0.8%) followed by Amikacin (1%).

Another study (10) showed that E.coli resistance to Fluoroquinolones was (31.3%), which was the highest. Moreover, E.coli resistance to Cephalosporins was (6%), while the lowest resistance was to Carbapenems (0.2%).

In our study, E.coli was resistant to most Cephalosporins with a statistical significant ($p<0.05$). 93.1%, 76.3%, 69.5%, 63.3%, 63.3%, and 52.4% of E.coli cases were resistant to CLL, CXR, CZ, CPR, CTR and CAZ, respectively. E.coli resistance to Fluoroquinolones (norfloxacin) was 66.7%. Furthermore, 61.3% of E.coli cases had resistance against Aminoglycosides (gentamycin).

Only one medication in our study (Amoxicillin-clavulanic acid) had a more prevalent sensitivity against E.coli with a statistical significance ($p<0.05$) in which 56.1% of E.coli cases were sensitive to it.

It should be noted that the resistance of the E.coli in our study to different antibiotics was much higher than the resistance percentages of similar studies (9, 10) and that shows the obvious misuse, overuse and lack of knowledge about their effects among general population.

CONCLUSION

We found 72 samples with E.coli Infection. The most resistance was against Cefaclor (93.1%), while the highest sensitivity against E.coli was by Amoxicillin-clavulanic acid (56.1%). To conclude, resistance of the E.coli in our study to different antibiotics was much higher than the resistance percentages of similar studies and that shows the obvious misuse, overuse and lack of knowledge about their effects among general population.

Compliance with Ethical Standards

Funding: This study was not funded by any institution.

Conflict of Interest: The authors of this study have no conflict of interests regarding the publication of this article.

Ethical approval: The names and personal details of the participants were blinded to ensure privacy.

Acknowledgments

We would like to thank AlMoujtahd Hospital staff and management for their help.

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