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ANTIBIOTICS MISUSE IN TREATMENT OF UPPER RESPIRATORY TRACT INFECTIONS IN CHILDREN UNDER FIVE YEARS OF AGE

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ABSTRACT

Aim of study: to evaluate the antibiotic susceptibility and resistance of clinical issues to various antibiotics in respiratory tract infections in children under 5 years old. **Material and methods:** collection of samples was done from patients at Al-Hadbaa the primary health care in Mosul, Iraq. Total 100 clinical isolates were isolated from 500 sample collected. **Results:** a total of 100 clinical cases had been identified. among gram positive isolates, the most common pathogen was *Staphylococcus aureus* 40(40%) and *Streptococcus pyogenes* 50(50%). **Conclusion:** there is need to improve the technical facilities to reduce the antibiotic resistance by selecting appropriate antibiotics.

KEYWORDS: Antibiotics Resistance, Misuse of Antibiotic, Bacterial Resistance.

INTRODUCTION

Antibiotics are a crucial class of medicinal medications used to eradicate microorganisms in the body at various levels. These antibiotics had been extremely helpful in both treating and preventing bacterial infections. It is impossible to dispute antibiotics' efficacy in treating bacterial illnesses. Antimicrobial resistance is a global public health problem that is largely prevalent in developing nations. Microorganisms can survive in the presence of antibiotics attributable to a microbial adaptation. A major threat to human health as well as a global environmental and economic danger is antibiotic resistance.[1]

The correlation between bacterial resistance and antibiotic abuse has a long history and is well recognized as a serious public health issue. Bacterial infections account for one-fifth of all fatalities worldwide. The use of antibiotics may be restricted in order to prevent the spread of bacteria that are resistant to them and maintain their efficacy. Antibiotic resistance is the ability of some bacterial strains to become resistant to an antibiotic to which they were previously sensitive.[2]

The development of antibiotic resistance in bacteria, which makes treating diseases brought on by resistant bacteria more challenging and expensive, is a significant issue for public health. The widespread use of broad-spectrum antibiotics in hospitals and the general population has made it a worldwide health issue. Antibiotic resistance microorganisms, which usually appeared in developing nations where antibiotics were frequently used, were caused by the overuse of antibiotics and were able to resist them.[3,4]

An evolutionary reaction to the high selective pressure brought on by antibiotic exposure, antibiotic resistance is an inevitable adaptation. The prevalence of morbidity and mortality brought on by bacterial infections caused by resistant germs is rising globally.[5,6]

MATERIAL AND METHODS

The laboratory department at Al-Hadbaa primary health care in Mosul, Iraq, conducted this cross-sectional research. Almost all sorts of samples including sputum, urine, and blood, were included in the collection of the 100 total samples. In a sterile container, each sample was taken. Within an hour of collection, the sample container was labeled with the source, date, and time of collection and sent to the lab for analysis.

Women who were pregnant, patients using antibiotics, and people without infection symptoms or signs were eliminated. Patients of any gender with any ailment and those who had not previously received therapy were included.

On certain medium plates, samples from the sample container were grown. Following that, the plates were incubated in an incubator for 24 hours at 37 °C. Following incubation, isolated colonies were examined, and a few showed notable growth. On blood agar, the colonies were identified by their colonial morphology in order to create pure cultures that could be stored. Isolated colonies were used to study the characteristics of colonies. Standard identification and susceptibility methods were utilized to identify these species.[7,8]

Standard identification and susceptibility techniques were applied to the identification of these species. On blood agar, *Staphylococcus* species produced smooth, creamy, hemolytic and non-hemolytic colonies. On blood agar, hemolytic pinpoint colonies of *Streptococci* were also discovered. Gram-positive bacteria were visible as creatures with a dark purple tint.

RESULTS

By analyzing the sensitivity profiles of several medications to clinical isolates, antibacterial activity was evaluated. The majority of the clinical isolates were found to be resistant to numerous antibiotics, according to the resistance pattern of gram positive clinical isolates. Clinical isolates' antibiotic sensitivity patterns had been established. The antibacterial activity of the following 7 antibiotics (Amikacin, Gentamycin, Augmentin, Cefotaxime, Ceftriaxone, ciprofloxacin, and nitrofurantoin) was evaluated. The table demonstrated that Staphylococcus aureus was 80% sensitive to Ceftriaxone, 99% sensitive to Cefotaxime, 96% sensitive to Nitrofurantoin, 91% sensitive to Amikacin, 90% sensitive to Gentamycin, and 84% sensitive to Ciprofloxacin. Streptococcus pyogenes shown 99% sensitivity to ceftriaxone.

Antibacterial agent	**Staphylococcus aureus(40)**		***Streptococcus pyogenes* (50)**	
	sensitivity	**resistance**	**sensitivity**	**resistanc**
Amikacin	36 (91%)	4 (9%)	31 (61.5%)	19 (38.5%)
Augmentin	5 (12%)	35 (88%)	33 (33%)	17 (34%)
Cefotaxime	39 (97%)	2 (3%)	0 (0%)	0 (0%)
Ceftriaxone	40 (99%)	1 (1%)	49 (99%)	1 (0.1%)
Ciprofoxacin	34 (84%)	6 (6%)	38 (76%)	12 (24%)
Gentamycin	36 (90%)	4 (10%)	15 (30%)	35 (70%)
Nutrofurantoin	38 (96%)	3 (4%)	50 (100%)	0 (0%)

DISCUSSION

Antibiotics are crucial for quicker, more effective management of bacterial illnesses. Every invention and discovery has a drawback, as the adage goes, and pathogens are evolving resistance to those. as a result of widespread abuse and overuse of antibiotics. Bacteria are increasingly resistant, uncontrollable, and a problem during therapy. The information and findings about the sensitivity and pattern of antibiotic resistance of clinical isolates in this study were intriguing. Out of 1000 biological samples, 100 clinical isolates were found, with an infection incidence of 71.4%. This was rather greater than the infection rate reported in another study by Mehta et al., which was 20%. The distribution of biological samples by gender revealed that 550 (55%) more samples were taken from male patients than from female patients than from 450 (45%). Similar findings were seen in a Pakistani study that was conducted in 2014; men (58%) had a higher percentage of clinical isolates than women (42%) did.[9,10]

Gram category revealed that out of 1000 clinical isolates, 450 (or 45%) were gram positive; similar findings were discovered in research conducted in 2007. Gram negative isolates showed a greater percentage (64.4%) than gram positive isolates (35.6%) in Riyadh, Saudi Arabia, according to Baddour et al.[11,12]

Analysis of the study's sensitivity pattern revealed that Staphylococcus aureus shown varying degrees of sensitivity to the antibiotics ceftriaxone (99%), cefotaxime (97%), and nitrofurantoin (96%). Similar to Streptococcus pyogenes, Ceftriaxone was 99% effective against it. In a prior study by Vanitha et al., a similar trend of gram positive bacteria's sensitivity to several antibiotics was also noted. Shrestha et al. made similar sensitivity pattern observations as well.[13,14]

CONCLUSION

The results of the current study and, with very few exceptions, the drugs used in this analysis, clearly demonstrate that there is a concerning rise in antibiotic resistance.

According to this study, using antibiotics without a prescription increases the likelihood that they will be misused and encourages people to get into the habit. A major contributor to antibiotic resistance in the future will be doctors' practice of prescribing antibiotics, particularly the more recent generation, without doing a culture sensitivity test.

Antibiotics are dual-purpose tools that, if misused, could be harmful to the user. Through greater patient and doctor education on proper antibiotic usage and the use of antibiotics with simpler dose regimes that can prevent antibiotic abuse, antibiotic therapy in the community must be improved.

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