ORIGINAL RESEARCH

An observational investigation of the drug sensitivity and use profile of individuals with upper respiratory tract infection

Dr. Vinay Purohit

Assistant Professor, Department of Pharmacology, K M Medical College & Hospital, Mathura, Uttar Pradesh, India

ABSTRACT
Aim: An observational investigation of the drug sensitivity and use profile of individuals with upper respiratory tract infection. **Materials and Methods:** The study was carried out retrospectively by Department of pharmacology after analyzing the copies of prescriptions of patients who had visited the O.P.D. of the ENT department. **Results:** majority of the patients were male 58.5% and rest 41.5% were female. Gram negative organisms are detected in (70.5%), Gram positive organisms detected (21.0%), and no organism detected (8.5%) of the swab samples. **Conclusion:** gram positive organisms were resistant to benzyl penicillin or ampicillin, clindamycin, ciprofloxacin or levofloxacin and sensitive to tetracycline, gentamicin, linezolid. Gram negative organisms were resistant to ampicillin, amoxyclav and sensitive to pipracillin or tazobactum, cefoperazone, amikacin, gentamicin, imipenem, cefepime, ciprofloxacin.
Keywords: couture, throat swab, gram positive, gram negative, throat infection

Corresponding author: Dr. Vinay Purohit, Assistant Professor, Department of Pharmacology, K M Medical College & Hospital, Mathura, Uttar Pradesh, India

INTRODUCTION
Antibiotic resistance is emerging as an important public health issue,[1,2] and overuse of antibiotics by physicians has been implicated as contributing to the problem.[3,4] More than one-third of all antibiotics prescribed for respiratory infections are because of sore throat,[1] and one in two patients presenting to their general practitioner (GP) with these symptoms receive antibiotics.[5,6] Meta-analysis of randomized controlled trials of antibiotics for sore throat have shown that they only provide a small reduction in symptom severity and duration (1 day).[7] Survey studies have shown that 1 in 5 patients taking broad-spectrum antibiotics and 1 in 12 taking narrow-spectrum antibiotics suffer side effects such as a rash or gastrointestinal upset.[8-12] Sore throat is a common complaint in upper respiratory tract infections and may indicate infection with group A *Streptococcus* (GAS).[13] Although GAS infections is considered an appropriate indication for antibiotic therapy, only 10% to 20% of sore throat presentations in general practice are culture positive for GAS.[14-18] The remainder are predominantly viral. Reports from various countries estimate that an antibiotic is prescribed in 30% to 75% of visits.[19-22] This suggests that antibiotics are prescribed more often than necessary. One reason for overuse of antibiotics may be current approaches to managing sore throat. Studies comparing clinical diagnosis with throat culture have shown a sensitivity of 50% to 70% and a specificity of 60% to 80%.[16-18,23] Thus, clinical judgement may miss up to 50% of GAS infections while identifying 20% to 40% of the large number of non-GAS sore throat presentations as needing antibiotics. In view of the past observations the present study was conducted with the aim to analyze the drug sensitivity profile of the patients suffering from sore throat.

MATERIALS AND METHODS
The study was carried out retrospectively by Department of pharmacology after analyzing the copies of prescriptions of patients who had visited the O.P.D. of the ENT department.

METHODOLOGY
Before starting study a written approval for the protocol was obtained. Then carbon copies of the prescriptions were collected from ENT OPD. From the collected carbon copies we randomly selected 200 copies. To avoid undue bias of the physicians during prescribing to a patient, the prescription copies were obtained from the office of ENT department. Information on demographic profile and treatment were spread over different age groups. Each prescription then was analyzed as per objectives of study.

STATISTICAL ANALYSIS
The data was entered in the form of a data matrix in Microsoft Excel® and analysed statistically using IBM® SPSS® version 20.0.0. Descriptive statistics were calculated as frequencies for categorical variables and means and standard deviation for continuous variables.

RESULTS

Table 1: demographic profile of the study population

Gender	N (%)
Male	117 (58.5%)
Female	83 (41.5%)
Age (Years)	
1-20	38 (19.0%)
21-40	71 (35.5%)
41-60	52 (26.0%)
>60	39 (19.5%)
Age (Mean ± SD)	38.16±3.61

Table 2: distribution of infective organisms on the basis of gram staining

Infective organisms	N (%)
Gram Negative (Pseudomonas aeruginosa, Klebsiella pneumonia, Escherichia coli etc.)	141 (70.5%)
Gram Positive (Staphylococcus aureus, Staphylococcus epidermidis etc.)	42 (21.0%)
No Growth detected	17 (8.5%)
Total	200 (100.0%)

Table 3: drug sensitivity profile of gram positive and negative organisms

Variables	Sensitive	Resistant	Total
Gram Positive			
Benzyl Penicillin	2	35	37
Tetracycline	33	2	35
Gentamicin	34	4	38
Clindamycin	9	29	38
Linezolid	36	0	36
Ciprofloxacin	6	29	35
Gram Negative			
Ampicllin	1	34	35
Tazobactum	94	4	98
Amikacin	92	1	93
Meropenem	94	1	95
Gentamicin	96	2	98
Ciprofloxacin	91	3	94
Amoxyclav	44	52	96

DISCUSSION

Respiratory tract infection is considered as one of the major public health problems and a leading cause of morbidity & mortality in many developing countries. *Streptococcus pyogenes* is one of the commonest bacterial pathogens that cause acute throat infection among school-aged children living in lower socio-economic conditions.[24] These Gram positive cocci are distributed worldwide and have been associated with a variety of sequelae such as impetigo, otitis media, necrotizing fasciitis, glomerulonephritis, acute rheumatic fever or rheumatic heart disease.[25] Antibiotic resistance is rising to dangerously high levels in all parts of the world. New resistance mechanisms are emerging and spreading globally, threatening our ability to treat common infectious diseases. Throat infections are one of the major causes of antibiotic resistance as over the counter use of medications in patients with ear discharge is prevalent in the area of study. In our study gram positive organisms were resistant to benzyl penicillin or ampicillin, clindamycin, ciprofloxacin or levofloxacin and sensitive to tetracycline, gentamicin, linezolid. Gram negative organisms were resistant to ampicillin, amoxyclav and sensitive to pipracillin or tazobactum, cefoperazone, amikacin, gentamicin, imipenem, cefepime, ciprofloxacin. Similar results were observed in a study by Rossi G.A et al while studying the prevalence of various microorganisms from throat swab specimens in patients attending a tertiary care

hospital, which shows that the susceptibility patterns varied depending on the drugs.[26] In a similar study Wakode et al studied 305 throat swab reports and found that isolated bacteria in throat swabs were found to be sensitive with cefotaxime, tetracyline, penicillin and gentamicin.[27]

CONCLUSION

Every microorganism has its own sensitivity and resistance profile towards a particular antibiotic. Patient should be prescribed best drug after going through these microbiological sensitivity/resistance test of their throat isolates, in order to avoid drug overuse and chances of development of drug resistant strains.

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