A Study on Drug Utilisation Patterns and Use of Corticosteroids in Otolaryngology Department

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Abstract

Background: The goal of our study is to analyse the prescribing practices of the physicians and to assess the drug utilization patterns of the drugs prescribed and the use of corticosteroids in otolaryngology department. This would encourage good evidence-based practice and facilitate the appropriateness of drug use. It is a prospective and observational study done over six months that includes patients attending Otolaryngology OPD. The data was observed using a designed data collection form.

Results: 150 patients were chosen over a span of 6 months, based on inclusion and exclusion criteria. Of the 150 patients who received ENT treatment, 63 were male and 87 were female. The largest proportion of patients is 20-40 years in the age group and the lowest percentage was in geriatric patients it was observed during the study that 58 patients were visited for the diagnosis of ear disorders, 48 for nasal disorders and 29 for throat infections and 8 for combined ENT infections. The widely prescribed antibacterials were beta-lactam (Penicillins and cephalosporins)- n=38, accompanied by-Macrolides-(n=8), Fluroquinolones (n=20), Penicillins (Amoxicillin+Clavulanic acid-n=10) and Flouroquinolones (Ciprofloxacin (n=20)) followed by Macrolides (Azithromycin-n=8) were the most widely used agent of these groups, i.e., βlactam). In addition to antimicrobial corticosteroids, fluticasone (n-42) and prednisolone (n=12) were also the most widely prescribed corticosteroids in ENT diseases. Antihistamines which are Fexofenadine (n=49) and Cetirizine (n=4) were also administered.

Conclusion: It is evident that Antibiotics and Corticosteroids does have a critical role to play in the management of diverse ENT complications. However, the use of Corticosteroids, more often than not, is subjective. Our study indicates that prescription or drug use analysis by clinical pharmacologist acts as a

tool to give feedback to clinicians concerning over or under prescribed drugs, cost-benefit analysis, and its rational use.

Keywords: *Otolaryngology, Drug utilization studies, Antibiotics, Corticosteroids, prescription patterns, rational use*.

Introduction

Otolaryngology: It is a specialty in medicine that fixates on the auditory perceivers, nasal perceiver and throat. It is withal known as ENT- "head and neck" surgery. Around 19 centuries, the specialists in this field acknowledged an array of interrelated systems in the head and neck. Otolaryngologist evolved various approaches and methods to examine and treat ENT complications, and eventually formed a specialty in medicine. According to American Academy of otolaryngology, it is the foremost speciality in medicine in U.S (Columbia University Irving Medical Centre, 2019).

ENT Infections:
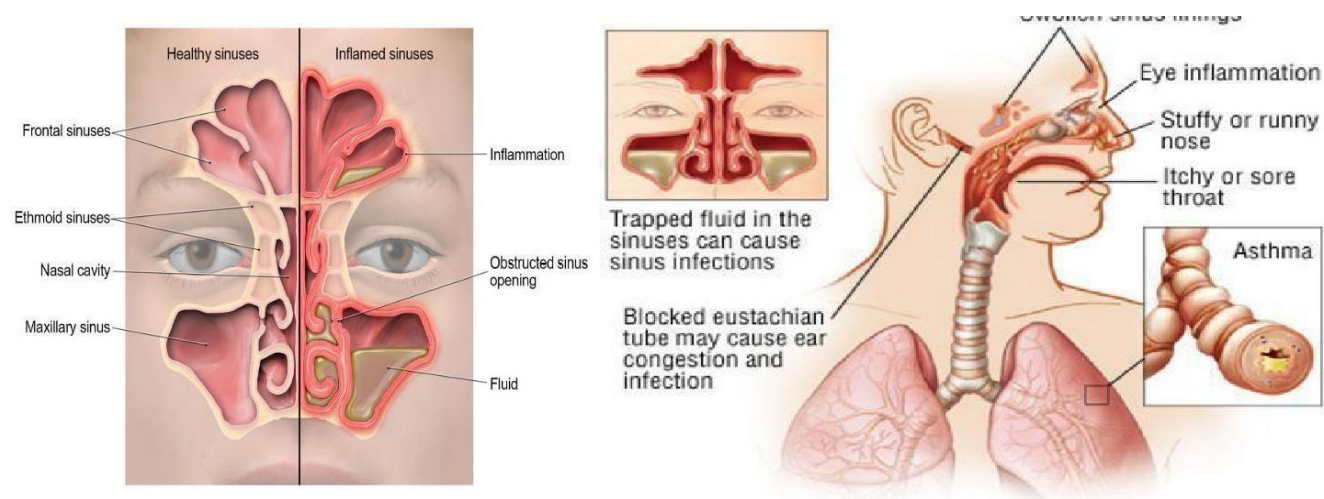
Infections of the ear, nose and throat (ENT) are most common diseases, affecting the majority of the population. These infections are generally caused by microorganisms viz bacteria, fungi and viruses and therefore the treatment involves the use of antimicrobials that are appropriate. Most of the RTIs are viral in origin, common organism being respiratory syncytial virus, which does not require antimicrobial use as they resolve spontaneously. However, antibiotics become necessary if secondary infections like lower respiratory tract infection, acute tonsillitis, sinusitis and acute otitis media with effusion complicate the respiratory tract infections (Njoroge GN *et al*., 2006, Geneva *et al*., 2004).

Acute respiratory infections in general hospital account for ambulatory and inpatient attendance. Total episodes of respiratory infections comprise URTIs including nasopharyngitis (common cold), pharyngitis, tonsillitis, and otitis media (OM). They are a major source of morbidity and viruses cause vast majority

of acute URTIs. In most circumstances, for example- nasopharyngitis which is of viral etiology requires no antimicrobial treatment. The use of antimicrobial is necessary if the infection is further complexed by: Acute otitis media with effusion, tonsillitis, sinusitis and LRTI (Jain N *et al*., 2001, MR Ain *et al*., 2010). Most studies have shown *that* most antibiotics have been prescribed for viral infections. The issue of antimicrobial overuse is often a global phenomenon. Increased healthcare costs, antimicrobial resistance, adverse effects and patient morbidity are due to inappropriate drug use. Monitoring and evaluating the patterns of drug use from time to time is important in order to allow appropriate changes in the prescription for maximal benefits of the treatment and reduction of side effects. There is more concern about inappropriate and costly prescriptions than under prescriptions. Antimicrobial prescription varies widely due to factors such as physician preference, local policy, cost and lack of local guidelines (Needham A *et al*., 1988, Sumalatha R., 2017).

Antibiotics: An antibiotic is an antimicrobial agent that acts against bacteria. It is a highly effective antibacterial agent in the fight against bacterial infections. Antibiotic drugs are commonly used to treat these infections and to avoid them. They can either kill or inhibit bacterial development. Antibiots cannot fight against viral infections like nasopharyngitis, flu, etc. Agents that fight against infections of viral etiology are referred to as "Antiviral drugs" (John Wiley & sons *et al*., 2012).

Occasionally, the term antibiotic (meaning: "life opposing"), in Greek (anti: "against" & bio: "life") generally refers to any substance fight against microorganisms, In the medical field some antibacterial agents are naturally occurring (penicillins), while non-antibiotic antibacterial (sulfonamides and anti-sulphonamides) are used. Although, these classes have the similar objective to kill and prevent microorganisms from growing.

From past remote time Antibacterial agents are being utilized extensively. John Parkinson (1567–1650) was the first person to directly document the utilization of moulds to treat diseases. In the 20th century antibiotics completely changed medicine. In 1928 "Alexander Fleming" discovered first antibiotic that is "penicillin". Fleming chased the challenge of marketing and translating it to the commercia use, after realizing the great potential in penicillin. Penicillin had been with the help of other biochemists Finally ready for widespread use. This was of significant benefit during the time of war. Unfortunately, starting with resistance didn't take too long. Effectiveness and easy access also led to overuse and resistance formed by a certain bacterium. This gave rise to extensive complications and WHO revealed that antibiotic-resistance is a "serious threat" which has become a global concern affecting all parts of the world" (Brook M *et al*., 2015, Gould K *et al*., 2016, Galarza CO *et al*., 2013).

Side Effects of Antibiotics:

Some of the common side effects include:

- Diarrhea;
- Nausea;
- Vomiting;
- Rash;
- Upset stomach;
- Some types of antibiotics or long-term use may also have side effects,
- fungal infections of the mouth, digestive tract, and vagina.

Rare Side Effects Include:

- renal stones during sulphonamides therapy
- abnormalities of blood clotting due to few of the cephalosporins
- Photophobia during ongoing tetracycline treatment
- Hearing loss is a rare side effect of erythromycin and aminoglycosides
- bowel inflammation in older patients is also a rare side effect caused due to penicillins, cephalosporins and erythromycin (Adam Feldman *et al*., 2019, Jenifer Huizen *et al*., 2018).

Antibiotic Resistance: The bacteria's emergence of antibiotic resistance is a general occurrence. Usually antibacterial-resistance recurrence is a result of evolutionary processes that occur amidst the antibacterial therap. This treatment often chooses high doses of antibiotics for bacterial strains with a physiologically or genetically enhanced ability to sustain. It may result in preferred growth of resistant bacteria under certain conditions, while the drug inhibits the growth of susceptible bacteria.

For example, in 1943 the Luria-Delbruk demonstrated antibacterial selection for strains that had previously acquired antibacterial-resistance genes. Antibiotics such as penicillin and erythromycin, are previously highly effective, though they have become less effective (against bacterial species) due to increased comsumption resulted in tolerance of many strains of the bacteria (Levy SB., 1994, Luria SE *et al*., 1943, Pearson *et al*., 2007, Topp E *et al*., 2013).

Antibacterial resistance may impose a biological cost, thus reducing the fitness of resistant strains, for example in the absence of antibacterial compounds, which can limit the spread of antibacterial- resistant bacteria. However, additional mutations can compensate for this cost of fitness, and can help these bacteria survive (Witte W., 2004, Dyer *et al*., 2003, Andersson DI., 2006, D'Costa VM *et al*.,2011, Gladki A *et al*., 2013).

Several antibacterial-resistance molecular mechanisms exist. Intrinsic antibacterial resistance may form part of a bacterial strain's genetic makeup. For example, the bacterial genome may absent an antibiotic target. Bacteria that have developed several resistant mechanisms have similar antibacterial- resistance strains. The spread of antibacterial resistance may be due to transfer of mutational genes (rDNA) through

genetic exchange. For example, genes of antibacterial resistance may be exchanged between different bacterial strains or species through plasmids carrying those genes of resistance. Plasmids carrying several genes that has developed resistance may grant tolerance to various antibacterials (Alekshun MN *et al*., 2007, Pawlowski AC *et al*., 2016, Marshall CG *et al*., 1998, Nikaido H., 2009, Baker-Austin C *et al*., 2006).

The strains and species of resistant antibacterials are denoted to as "superbugs". now they contribute to the diseases which were previously well controlled. For instance, emergence of bacterial strains causing TB are resistant to current effect of antibacterial therapy causing many therapeutic challenges. Nearly half a million new cases of multidrug-resistant tuberculosis (MDR-TB) occur worldwide each year as observed in the literature. For example, newly identified enzyme NDM-1 conveys antibiotic-resistance to a wide variety of antibiotics (beta lactams). The UK Agency for Protection of Health claimed "Most NDM-1 enzyme isolates are resistant to all standard intravenous antibiotics for the treatment of severe infections." On 26-05-2016, a colistin-resistant, "last line of protection" antibiotic, *E. coli* bacteria "superbug" was identified in the United States (Boseley *et al*., 2010, Mc Gann P *et al*., 2016, Moyer *et al*., 2016).

Corticosteroids: Corticosteroids are a class of steroid hormones produced in the adrenal cortex. Corticosteroids are classified into glucocorticoids and mineralocorticoids. They participate in a variety of physiological functions such as:

- stress-response,
- regulating inflammatory actions,
- carbohydrate metabolism,
- protein catabolism,
- blood electrolyte levels, and behaviour (Ana Gotter *et al*., 2018, Nussey *et al*., 2001).

Use of Corticosteroids in Otolaryngology: Corticosteroids are commonly used in a variety of illnesses. Corticosteroids are used for several indications in the field of Otolaryngology, including chronic rhinosinusitis, sudden sensori-neural hearing loss, and idiopathic facial nerve, or Bell's, palsy. Corticosteroids are often reserved as part of maximum medical therapy due to the significant side-effect profile when other treatments have not been successful. In the literature complications such as hip avascular necrosis, immunodeficiency, weight gain, insomnia and psychosis have been well described. Whilst some reactions are idiosyncratic, most side effects Correlates with increasing doses of Corticosteroids have been shown. Therefore, it is important to dosage Corticosteroids to provide maximum benefit while minimizing potential side effects (Saad Ansari *et al*., 2016).

The use of steroids to treat various spectrum of ENT complications is increasing. The recognizing of the acute and chronic side effects linked with corticosteroid administration is important for ENT surgeons. Controversial remains that, the effectiveness of corticosteroids in managing Meniere's disease, sudden idiopathic sensorineural HL, chronic otitis media, and vestibular neuronitis. Corticosteroids have an anti-inflammatory effect at a subcellular level by activating glucocorticoid receptors which interact with inflammatory transcription factors resulting in the suppression of proinflammatory molecules. At the cellular level corticosteroids reduce the amount of inflammatory substance (eosinophils, T lymphocytes, mast cells, and dendritic cells), The degree of inflammatory suppression corresponds to the steroid concentration in the tissue. Corticosteroids may be given in oral form, iv, topical, or through intralesional. The liver and kidneys are responsible for the metabolism and excretion of corticosteroids respectively. when given intranasally has short half- lives. It gives quick hepatic metabolism (Daran Cope *et al*., 2009).

Complications: contraindications accompanied with brief use of steroids are uncontrolled systemic sepsis and allergic reaction to steroids. Suppression of the hypothalamic–pituitary–adrenal axis. The Hypothalamic-Pituitary Adrenal axis is not suppressed by prednisone doses of > 5 mg / day (administered in the morning). Immediate withdrawal ocan lead to conditions such as acute adrenal crisis. After as little as 2 weeks of steroid therapy, withdrawal symptoms (malaise, fatigue, diffuse myalgias, and arthralgia), may be experienced (Daran Cope *et al*., 2009).

Effects on GIT: Gastritis, the formation of peptic ulcers and gastrointestinal bleeding are caused by use of glucocorticoids. The possibility of PUD increases by 1.1 to 1.5 times during the corticosteroid treatment. The use of intravenous steroids with non-steroidal anti-inflammatory drugs results in a 15- fold increased risk of complications of GIT. Approximately 6 per cent of patients can develop psychiatric effects.

Complications of Prolonged Use of Corticosteroids: The patients that have undergone renal and cardiac transplantation are at risk of developing "Femoral head avascular necrosis" (AVN) due to chronic use of corticosteroids. People who take long-term steroids for autoimmune disorders are also common. Other prolonged ADR's related with the use of long-term corticosteroids use are osteoporosis, cushingoid, atherosclerosis, cataracts, and purpura. Drug use studies are used as potential instruments in health assessment Patient care systems. Research on drug use is an essential part of pharmacoepidemiology because it describes the extent, nature and determinants of drug exposure.

Due to complexity of the usage of corticosteroids, optimal drug benefits may not be derived because of possible drug abuse, overuse and misuse. Studies of drug utilization are used to check the prescriptions

prescribed to the patient. It helps give clinicians the feedback so they can develop protocol for optimal drug use as well as educate the patients to use the appropriate drug. This study will therefore help us generate up-to-date information about drug use in the Department of Otorhinolaryngology, indications and suitability for drug use (Daran Cope *et al.*, 2009).

Need For Drug Utilization Studies: The WHO explained DUR studies as "the marketing, distribution, prescription and drug use with utmost consideration on the following medical, social and economic consequences." DUR studies focus on prescription, dispensing, administration, consumption of prescribed drugs. Studies of drug use may include descriptive epidemiological approaches to the study of drug use, but also an assessment of how drug use is related to the effects of drug use, whether beneficial or negative. Research in this field aims to analyse the current state and trends in the development of drug use at different levels of the health care system, be it national, regional, local or institutional. Studies on drug use can assess drug use at a population level, depending on age, sex, social class, morbidity, among other characteristics. These studies are useful for providing denominators for calculating rates of reported adverse drug reactions, monitoring the use of drugs from therapeutic categories where specific issues can be anticipated (e.g., narcotic analgesics, hypnotics and sedatives, and other psychotropic drugs), monitoring the effects of information and regulatory activities (e.g., adverse event alerts, monitored drugs). Data on drug use may be used by me to produce crude estimates of disease prevalence (e.g., cardiovascular disease), antidiabetic drugs), to plan drug imports, manufacture and distribution, and to estimate drug expenses. Drug use characterization may be extended by linking prescription data to the drug prescription reasons. They include the concept of appropriateness to be assessed in relation to treatment indication, concomitant diseases (that may contraindicate or interfere with the therapy chosen) and the use of other drugs (interactions). Therefore, they can document the extent of inappropriate prescribing of drugs (e.g., antibiotics, NSAIDs) and even the associated adverse clinical, ecological, and economic consequences. In addition, they can also explore the percentage of drugs that adhere to existing evidence-based recommendations for their indications (Helena Gama., 2008).

Aims & Objectives: This prospective study was conducted with the aim of analyzing the prescribing practices of the physicians and to assess the drug utilization patterns of the drugs prescribed and the use of corticosteroids in otolaryngology department. This would encourage good evidence-based practice and facilitate appropriateness of drug use.

Primary Objective: To facilitate the rational use of drugs and reduction of misuse of antibiotics and corticosteroids.

Secondary Objective:

- To support the prescribers, clinicians and general public for appropriate use of drugs
- To evaluate correct dosage regimens.
- To encourage the selection of medication linked to evidence based standard clinical guidelines.
- To ensure that the patient get the right drug in the right quantity at the right time.
- To establish better patient understanding of otolaryngologic drugs.

Materials and Methods

Study Design: A descriptive, observational prospective study to evaluate the drug prescription patterns in ENTDepartment.

Study Period: The study will be carried out for 6 months.

Study Population: The study population consists of at least 100 patients who qualifies the Inclusion criteria.

Source of Data and Materials:

- Patient consent form
- Patient data collection form
- Patient case note/prescription

Inclusion Criteria:

- All the patients of either gender attending otolaryngology department with their consent.
- Patients between the age groups of 18-65.
- Patients with ENT infections.

Exclusion Criteria:

- Patients who are not willing to give the consent.
- Patients with cognitive impairment
- patients with psychiatric disorders
- Pregnant and lactating women are not included

Method of Data Collection:

- Data collection
- Patient questionnaire/interview

Study Procedure: This is a prospective observational study where patients eligible are enrolled in to the study after obtaining the consent. The data collection form will be prepared and used. This form mainly contains the demographic details of the patient and medication chart. Study will be conducted at MEDICOVER HOSPITAL. All information relevant to the study will be collected at the inpatient and outpatient department.

Does the study require any Investigation or Intervention to Be Conducted on Patients?

No

Has ethical clearance been obtained from your institution in case of above?

The ethical committee clearance will be obtained from the Institutional Ethical Committee of MEDICOVER HOSPITAL before initiating the study.

Duration of the Study: The study will be conducted for a period of 6 months

Place of Study: The study will be conducted at MEDICOVER HOSPITAL

Results

For the present analysis, 150 patients were chosen over a span of 6 months, based on inclusion and exclusion criteria. Of the 150 patients who received ENT, 63 were male and 87 were female. The largest proportion of patients is 20-40 years of age, while the geriatrics was found to be at of minimal percentage (Table 1). In our study it was observed that 58 patients had undergone diagnosis for ear disorders, 48 for nasal disorders and 29 for throat infections and 8 for combined ENT infections (Table 2). The most commonly prescribed antibacterial was β-lactam (Penicillins and cephalosporins)-n=38, followed by- Macrolides-(n=8), Fluroquinolones (n=20), (Table 3.1). Penicillins (Amoxicillin with Clavulanic acid- n=10) and Flouroquinolones (Ciprofloxacin (n=20)) followed by Macrolides (Azithromycin-n=8) were the most widely used agent of these groups, i.e. βlactam (Table 3.2). In addition to antimicrobial corticosteroids, fluticasone (n-42) and prednisolone (n=12) were also the most widely prescribed corticosteroids in ENT diseases. In nasal disorders, corticosteroid therapy was most frequently administered, accompanied by Face. Antihistamines which are Fexofenadine (n=49) and Cetirizine (n=4) were also administered along with these medications. Antihistamines were often used in Nasal infections. 4 categories of factors contributing to non-adherence in ENT diseased patients were identified. They include socio-economic factors, therapy- related factors, patient-related factors, disease-related factors and, rate of adherence and non- adherence and factors associated with medication adherence.

Categories of factors contributing to nonadherence	Sub factors for each category
Patient related factors Age	Gender Level of education Interpersonal communication
Socioeconomic status Income status	Employment status Social support of families Peer
Health care related factors	Smoking allergies Strict selection criteria Economic resources
Therapy related factors	Antibiotics Corticosteroids antihistamines

Table 1: Factors Contributing to Nonadherence

Socio Economic Factors:

According to inclusion and exclusion criteria, a total of 150 patients were analyzed during study period.

Variable	Description	Cases Reported
Age	>18years	YES
Sex	Male /Female	150
Occupation	Educated Uneducated	57 93
Risk factors reported during counselling	family history of ENT infections History of infectious diseases.	97 43
Personal habits	Smoking Tobacco chewer Irrational antibiotic use	18 20 13

Table 2: Socioeconomic factors

Table 3: Gender wise distribution

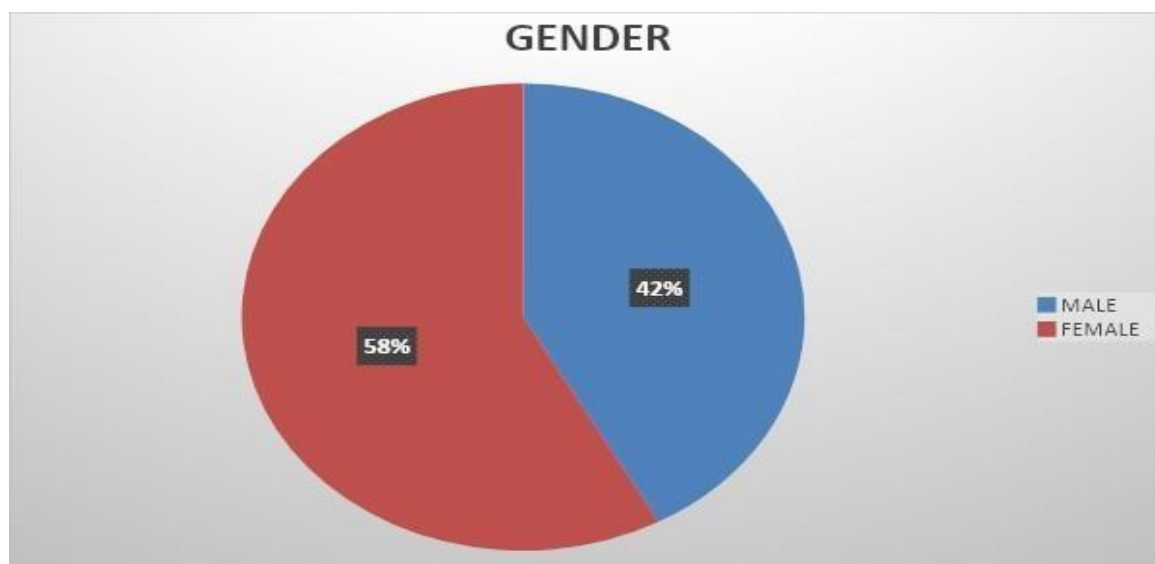| Gender	Cases collected
Male	63
Female	87

Fig 1- Gender wise distribution of sample size

From the above Tables and figures it is evident that among the total patients included in the study the numbers of male patients were 63 (42%) and the number of female patients were 87 (58%).

Table 4: Age wise distribution of study sample

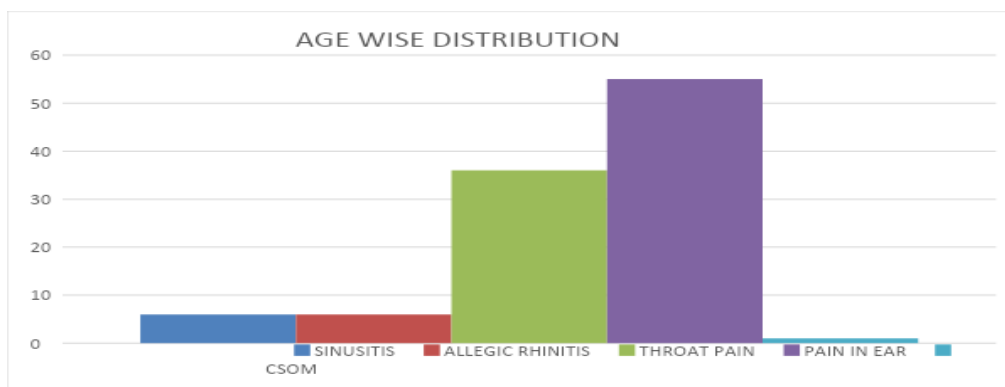| Age Group	CSOM	Sinusitis	Allergic rhinitis	Throat pain	Pain in ear
18-35 years	7	6	6	9	10
36-55 years	5	4	3	3	2
56-65 years	2	4	--	4	--

Fig.2 -Age wise distribution of study sample

As it can be seen in table 4 and figure2, the age group that is showing maximum attendance in both IP and OP department was 20-40 years. There were total 45 patients of between this age group.

Profile of Prescribed Medication:

Table 5: Distribution of drugs in study sample

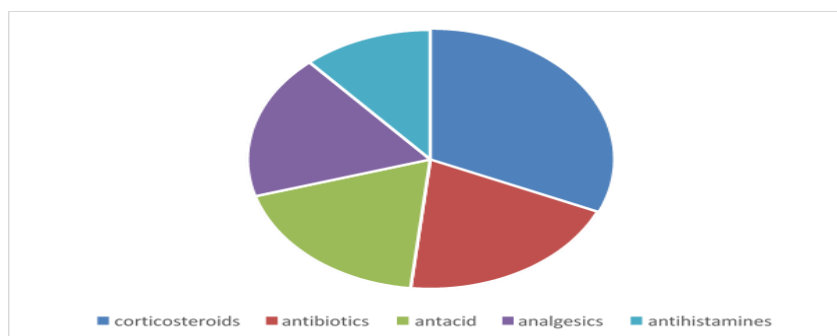| Drugs prescribed for ENT diseases	Cases collected
Antibiotic	70
Antihistamine	49
Corticosteroids	110
Analgesics	63
Antacid	65

Fig.3- Distribution of drugs in study sample

Table.5 and Fig.3 presents medication profile of patients based on type of ENT diseases. It revealed that antibiotic was 46.6 %, antihistamine was 32.6 %, corticosteroids was 73.3 %, antacids were 43.3% and analgesics was 42% were given to patients.

Table 6: Common side effects of long-term usage of corticosteroids

Symptoms	Patients experienced
Itch	10
Sleep disturbance	7
Headache	25
Burning pain	3
Swelling	3
Mood disturbances	15
Skin sensitivity	13
Weight gain	32
Irritability	16

Discussion

In our research we found dominance of otolaryngologic diseases primarily due to Chronic superlative otitis media, which can be attributed to poor medical management of peripheral Eustachian tube dysfunctions. The Patients were majority from rural background. This can be an indication of inadequate health care system, disproportionate trust in quacks and low socioeconomic status. Our study showed that the most common type of infection affected the ear like otitis media, otitis externa and impacted wax, followed by throat infection such as pharyngitis, tonsillitis laryngitis and nose infection such as sinusitis, rhinitis. Drug consumption in percentage was highest among ear infection as number of cases were high, followed by throat infection and nose infection. Our study had certain limitations, like there was lack of information about definite bacterial etiology and prevalent organisms which could have affected the result of study. Due to the fear and exorbitant cost of surgery the patient tends to delay the treatment leading to excessive use of medications including corticosteroids, antihistamines and antibiotics. Subsequently, this results in increasing antimicrobial resistance, Adverse drug reactions, prolong use of oral and intranasal steroid. The ADRs associated with the frequent use of corticosteroids include dependency, weight gain and tolerance.

Selection of antibiotics were done on the basis of Pus culture sensitivity reports and clinical experience of the ENT doctor at the hospital which indicates rational prescribing of antibiotics. Fluoroquinolones were the widely prescribed drugs by antimicrobial agents. Many cases of antibacterial groups widely administered were found to be β-lactam (74.58%), followed by quinolones (7.08%). Amongst these antibiotics, majority of patients were prescribed with ciprofloxacin (41.59%), amoxicillin+clavulanic acid (11.97%), cefixime+clavulanic acid (8.68%), followed by azithromycin (7.91%) where Ciprofloxacin (23.85%) was favored, accompanied by a combination of amoxycillin (20.06%), ampicillin +Cloxacillin (9.17%) A related report revealed that β-lactam antibiotics (amoxicillin, amoxicillin-clavulanate, cefdinir, Cefpodoximeproxetil and Cefuroxime axetil) are all deemed ideal for the initial diagnosis of acute bacterial rhino sinusitis in children. Theindiscriminate application of wide spectrum antibiotics is well known to improve bacterial resistance. The usage of Azithromycin and Clarithromycin should also only be suggested where it is needed extensively and where any allergies arises due to any antibiotic treatment.

Delay of dosage patterns from a narrow range to amoxicillin +clavulanate penicillin, suggested in this research, may be attributed to a rise in antibiotic tolerance that prompts doctors to select a wider and healthier alternative. Apart from penicilins and quinolones the cephalosporins were the preffered choice. The prevalent mixed category of diseases was the justification for administering the third generation Cephalosporin. Few patients undergoing antimicrobial treatment were on non-specific throat problems. We reported tosilitis as the most prevalent cause and these patients replied the antibiotics very well. We conclude that mostly the antibiotic drugs used in sore throat patients are a vigilant strategy for majority of our contemporaries. Majority of antibiotics were recommended based on the doctor's belief and professional knowledge. Proton pump inhibitors (omeprazole) to avoid gastritis induced by the gastroesophageal reflux and the medication. Apart from the drugs mentioned above, the use of corticosteroids is limited, these are being used as second line therapy only when first line treatments have been unsuccessful based on the need of the patient's illness.

The observations indicated that the most common corticosteroids prescribed were Fluticasone furoate. It was given intra nasally and were prescribed based on brand names. It was a potent drug of choice because it was observed that it had lesser side effects and higher beneficial profile.

Conclusion

The aim of the study was to carry out analysis and evaluation of drug prescribing pattern in ENT department. To conclude, it is evident that Antibiotics and Corticosteroids do have a critical role to play in the management of diverse ENT complications. However, the use of Corticosteroids, more often than not, is subjective. The present observation indicated that the majority of cases were of Ear infections and majority of those were diagnosed with CSOM due to ignorance of the disease and inadequate medical management in the past due to their low socioeconomic status. Fluoroquinolones and β lactams were commonly prescribed. Selection of antibiotics were done on the basis of Pus culture sensitivity reports and clinical experience of the ENT doctor at the hospital which indicates rational prescribing of antibiotics. Although the use of corticosteroids is limited, these are being used as second-line therapy only when first-line treatments have been unsuccessful based on the need of the patient's illness. The observations indicated that the most common corticosteroids prescribed were Fluticasone furoate. It was given intra nasally and were prescribed based on brand names. It was a potent drug of choice because it was observed that it had lesser side effects and higher beneficial profile. So, Because of the complexity of these drugs it is important to study on up to date information on drug usage in otolaryngologic disorders. This approach can best be subdued and practiced objectively in constructing evidence-based treatment paradigms by the detailed practical measures stated in our study in the earlier section. Our study also indicates that prescription or drug use analysis by clinical pharmacologist acts as a tool to give feedback to clinicians concerning over or under prescribed drugs, cost-benefit analysis, and its rational use.

Acknowledgement

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