

PHARMACOECONOMICAL STUDY OF DRUG UTILIZATION PATTERN OF THIRD GENERATION CEPHALOSPORIN WITH SPECIAL REFERENCE TO SOLAN TOWN

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ABSTRACT

In this constantly changing world the alteration and adaptations are the two keys to success. Dynamic nature of the person and material makes it stable over a longer time. The limitation of one category is overcome by the other and tries to cement its place. One such category is Cephalosporin's which shows variation from 1st to 4th generation. The present study focuses on the Drug Utilization pattern of third generation cephalosporin with special reference to Solan, Himachal Pradesh.

KEY WORDS

Solan, Cephalosporin's, market scenario, diagnostic effects

INTRODUCTION: ¹⁻⁷

Cephalosporins are beta-lactam compounds in which the beta-lactam ring is fused to a 6-membered dihydrothiazine ring, thus forming the cephem nucleus. 1st generation cephalosporin's have better activity against gram-positive bacteria and less gram-negative activity, while 3rd generation agents, with a few exceptions, have better gram-negative activity and less gram-positive activity. Side chain modifications to the cephem nucleus confers

- 1) An improved spectrum of antibacterial activity
- 2) Pharmacokinetic advantages
- 3) Additional side effects.

Cephalosporins are bactericidal agents and have the same mode of action as other beta-lactam antibiotics. All bacterial cells have a cell wall that protects them and Cephalosporins disrupt the synthesis of the peptidoglycan layer of bacterial cell walls, which causes the walls to break down and eventually the bacteria die. Cephalosporins generally cause few side effects. Common side effects mainly involve the digestive system with mild stomach cramps or upset, nausea, vomiting and diarrhea. These side effects are usually mild and go away with time. Cephalosporins

can sometimes cause overgrowth of fungus normally present in the body. This overgrowth can cause mild side effects such as a sore tongue, sores inside the mouth and even vaginal yeast infections.

More serious but infrequent reactions that can sometimes occur with cephalosporins include black, tarry stools; chest pain; fever; painful or difficult urination; allergic reactions; serious colitis. Serious colitis is a rare side effect that includes severe watery diarrhea (sometimes containing blood or mucus), severe stomach cramps, fever and weakness or faintness. Because the cephalosporins are structurally similar to the penicillins, some patients allergic to penicillins may be allergic to a cephalosporin antibiotic. The incidence of cross-sensitivity is approximately 5–10%.

Third generation cephalosporins have a broad spectrum of activity and further increased activity against gram-negative organisms. Some members of this group (particularly oral formulated products) have decreased activity against gram-positive organisms. The parenteral third generation cephalosporins (ceftriaxone and cefotaxime) have excellent activity against most strains of

Streptococcus pneumoniae, including the vast majority of those with intermediate and high level resistance to penicillin. These agents also have activity against *N. gonorrhoeae*. Ceftazidime provides useful antipseudomonal activity.

The third generation cephalosporins are:

- Cefdinir
- Cefixime
- Cefpodoxime
- Ceftibuten
- Ceftriaxone
- Cefotaxime

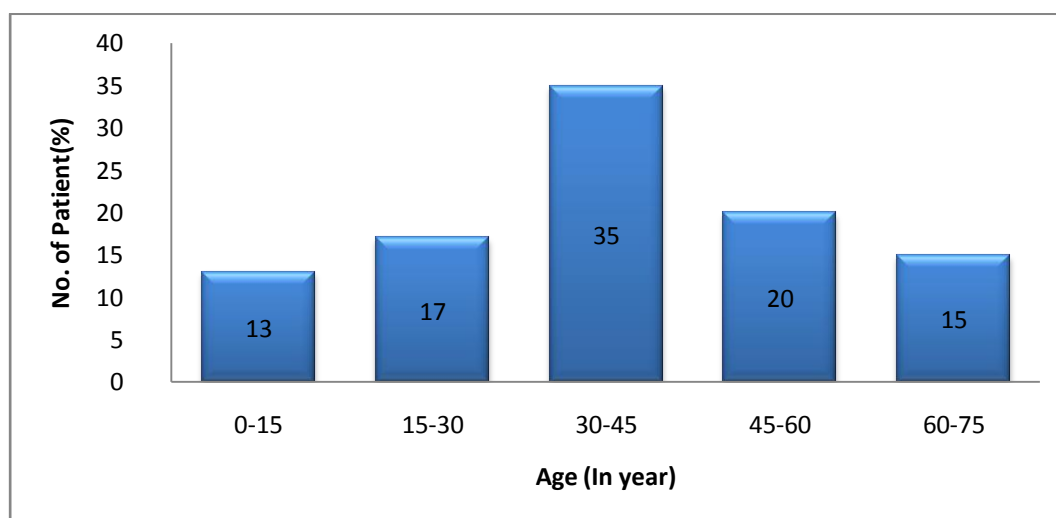
METHOD

Solan, a well-known educational, social and cultural center is chosen purposively for the study as people of different sections and societies live here. The present study is proposed to evaluate the actual use of IIIrd generation cephalosporin in Solan city. The study was conducted at various government and private hospital in Solan. During the study period total 100 cases (OPD=72, IPD=28) were studied. Demographic detail of patient, disease related information and drug related information's were collected by interviewing the patients. The patients were interview by using a self-prepared data collection. The interview schedule was framed and all sorts of information were collected. The data tabulated, classified & analyzed giving statistical treatment.

RESULTS AND DISCUSSION

The data in the age of patients are shown in the Figure 1

Figure 1: Distribution according to age

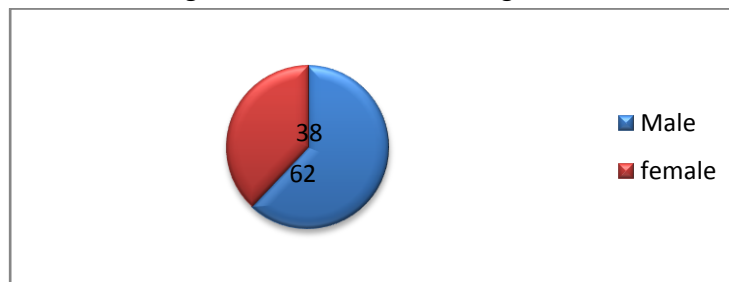


It is evident from the above figure that 35% of the patients are under the age group of 30-45 years whereas 20% of the patients are between the age group of 45-60 years. Thus the figure 1 reveals that

the middle age group is much active in utilizing the 3rd generation cephalosporin.

Among the 100 respondent, the ratio of male and female utilizing the 3rd generation cephalosporin is presented in Figure 2.

Figure 2: Distribution according to sex



The above figure shows that 62% of patients are males whereas 38% are females. It shows that males are much actively using antibiotics in comparison with females. This could be an indication that 3rd generation cephalosporin are helpful in curing disease cause by N. gonorrhea which is predominantly responsible for male oriented diseases.

Since the 3rd generation cephalosporin are more active hence more utilized. The effect of drug also depends on patient's body weight, as the body weight act as a sole criteria in deciding the dose. Figure 3 clearly indicates that 39% of the average body weight (40-60kg) patients utilize this category of antibiotics.

Figure 3: Distribution according to body weight

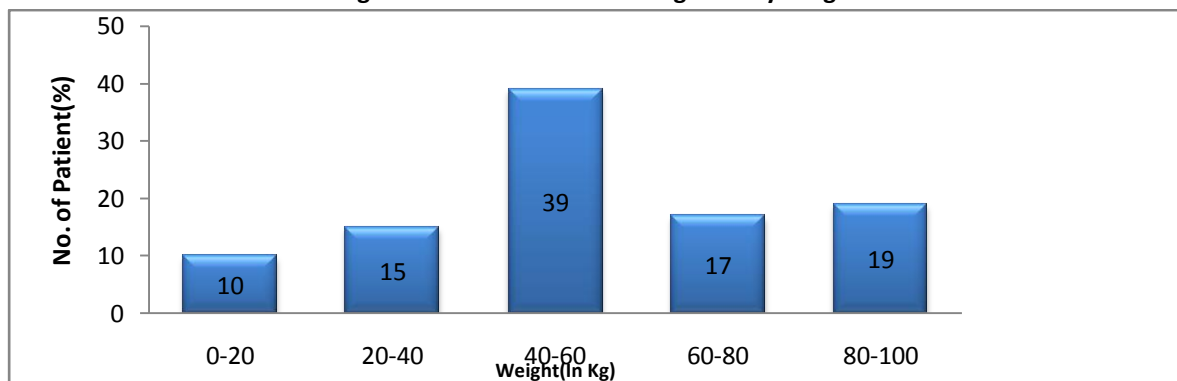
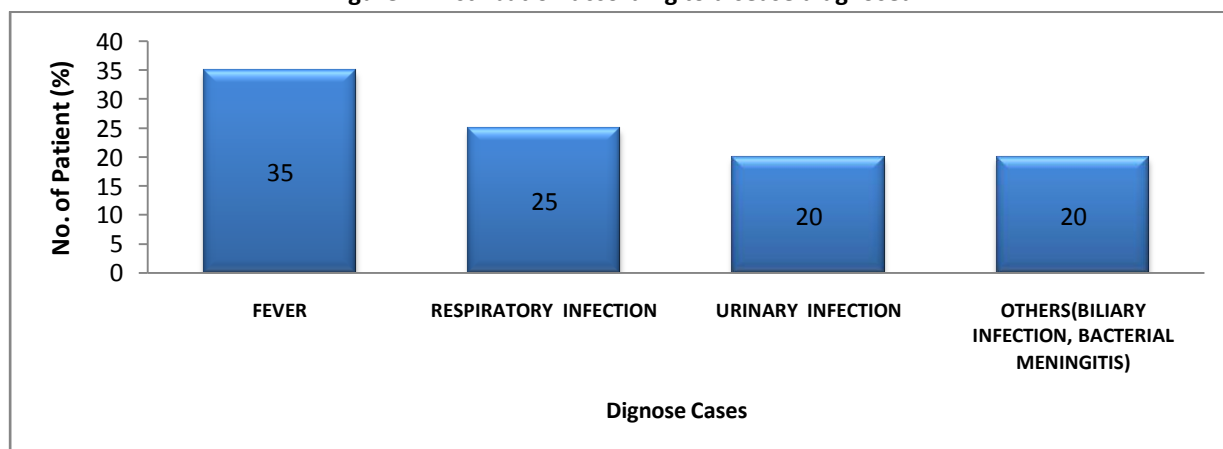


Figure 4 represented the use of 3rd generation cephalosporin based on the diagnosis of diseases. The category is excessively used in case of fever 35%, followed by RTI (25%), UTI (20%) and other categories of diseases. This could be explained on the basis that

most of the diseases or infection is accompanied with rise in body temperature. So the drug of 3rd generation cephalosporin helps in naturalizing this elevated temperature.

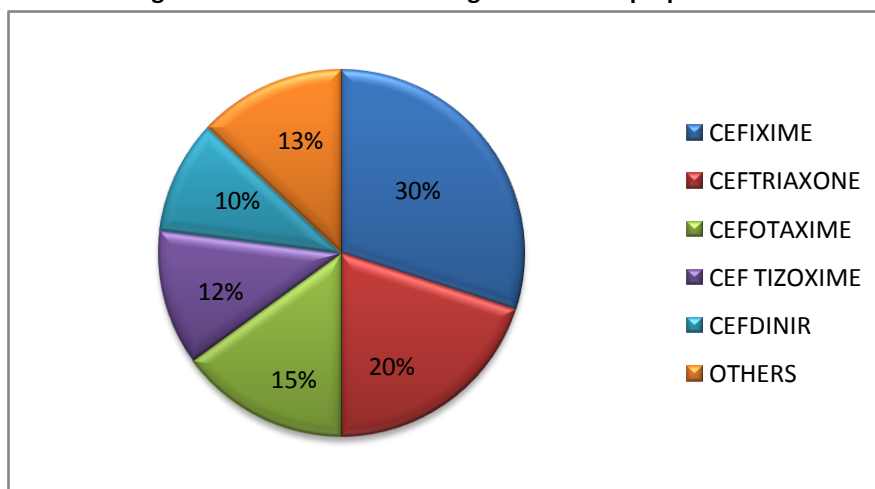
Figure 4: Distribution according to disease diagnosed



The market scenario of 3rd generation cephalosporin is represented in Figure 5. This clearly indicates the dominance of cefixime (30%) over the other drugs. This is basically due to its oral dose availability and

long past record. Moreover, this the only oral agent recommended by the Centers for Disease Control and Prevention (CDC) for the treatment of uncomplicated urogenital or rectal gonorrhea.

Figure 5: Distribution according to marketed preparation



CONCLUSION

From the present study it could be concluded that drug utilization of 3rd generation cephalosporin in Solan is quite high. Cefixime (TIME) (30%) and ceftriazone (MONOCEF) (20%) are used in Solan. Since these agents are expensive hence it clearly indicates the economical standard of people of Solan. Also these agents are quite often used for neonatal infection which is matter of further consideration.

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