Antibiotic usage and costs in the community
Impiego di antibiotici in comunità e relativi costi

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INTRODUCTION

Economic analyses have become increasingly important in healthcare in general and with respect to pharmaceuticals in particular. Antibacterial treatment is an ideal area for pharmaco economical analyses, which is founded on the key principles of economics [1-5]. Antibacterial drugs account for between 3 and 25% of total prescriptions and from 6 to 21% of the market value of drugs in different countries [1]. Despite major variations within each antibiotic class, penicillins, cephalosporins, macrolides and quinolones are the most commonly used group of antibiotics in the community [6]. This study sought to examine the overall trend for non-hospital antibiotic prescriptions and costs in a medium-sized province in Turkey.

MATERIALS AND METHODS

This study was undertaken between February and July 2001 in Denizli, a city with 300,000 inhabitants on the Aegean Coast of Turkey. Ten pharmacies out of 192, and representing the city centre, were selected for analysis. Denizli is an industrial city with a high income especially from textiles. The climate is mild throughout the year. All prescriptions were evaluated prospectively daily by an Infectious Disease Research Assistant. The number of antibiotics in each prescription, their subgroups, and costs, calculated in US Dollars, were recorded by using a computer program (dbase IV).

RESULTS

A total of 43,011 prescriptions from ten pharmacies were evaluated between February and July 2001. Antibiotics accounted for 16.4% (range 9.1%-25%) of total prescriptions and 30.8% (range 13.8%-53.4%) of the market value of drugs. Total costs of antibiotics were calculated as US Dollars 115,611.98, with entire prescription costs amounting to US Dollars 375,363.61. Penicillins (49.7%), followed by cephalosporins (17.3%), macrolides (9.5%) aminoglycosides (7.6%) and quinolones (4.3%) were found to be the most frequently prescribed antibiotics during the 6-month study period. Amounts of antibiotics calculated in defined daily dosage (DDD) were very high for penicillins followed by cephalosporins, macrolides, aminoglycosides, quinolones and others (sulphomamides, lincosamides) (Figure 1). In terms of cost, penicillins accounted for 47.6% of total antibiotic sales, followed by macrolides (22%) and cephalosporins (16.9%) (Figure 2). Of the penicillins, the most frequently prescribed were sulbactam/ampicillin (54%) and amoxyccillin/clavulanate (23.2%). Cefaclor (27.3%), cefuroxime (26.6%) and cefazolin (17.3%) were the most widely used cephalosporins. Azithromycin (67.3%) and clarithromycin (29.6%) together accounted for an important part of the macrolides. Oral tablets, capsules (66.2%) were the most frequently used form of antibiotics followed by suspensions and granulas (22.9%). Intravenous and intramuscular formulations accounted for only 9.5% of all antibiotics.
Antibiotics constitute one of the most commonly used groups of drugs in daily clinical practice and therefore represent a significant expense. Inappropriate use of antibiotics is thought to be the primary factor in the development and persistence of antibiotic-resistant bacteria in the community [5]. All such choices should be steered to obtain the maximum benefit to society. The aim of this study was to evaluate the percentage of non-hospital antibiotics in prescriptions and their costs in a city in Turkey.

Antibacterial drugs account for between 3 and 25% of total prescriptions and from 6 to 21% of the market value of drugs in different countries [1]. In our study antibiotics accounted for 16.4% of total prescriptions and 30.8% of the total costs. Although the percentage of antibiotic usage is between the numbers cited, total value of antibiotics in prescriptions is higher, the reason being that most antibiotics are imported and expensive. By contrast, other drugs like analgesics, antipyretics, anti-inflammatory agents are produced in the country and are not expensive.

Penicillins followed by cephalosporins, macrolides, and aminoglycosides were found to be the most frequently prescribed antibiotics in our study. In Spain, Bremon et. al. reported that penicillins were the group registering the highest consumption, followed by macrolides, cephalosporins, and quinolones [6]. In a study carried out in 15 European countries, the most commonly used antibiotics were broad-spectrum penicillins, which varied between 56%...
(Spain) and 20% (Germany) of total sales. The most important finding in this analysis was the great variation in outpatient antibiotic use [7]. Lelekis et al. reported that penicillins (33%), quinolones (16%), second generation cephalosporins (14%) and macrolides (14%) were found to be the most frequently prescribed antibiotics in a study in Greece [8]. The results of these different studies and ours reveal that penicillins, cephalosporins, macrolides and quinolones are mostly prescribed in outpatients.

A high percentage of prescription of aminoglycosides (7.5%) was observed in our study when compared with the other studies. One possible explanation may lie in patients’ insistence that physicians prescribe a parenteral antibiotic perceived as more effective than oral formulations. In order to reduce the prescribing of inappropriate antibiotics, many strategies may be pursued. In Sweden, by means of a strategic national programme for the rational use of antibiotics, antibiotic prescribing was reduced by 22% between 1993 and 1997 [9].

Many different strategies of antimicrobial cost-containment have been recently proposed and documented: use of single dose therapy, use of long half-life drugs, use of oral therapy when feasible, outpatient antibiotic therapy and switch therapy [3].

In conclusion, in Turkey the consumption rate and economic burden of antibiotic usage in the community were found to be high. These findings suggest the advisability of prioritising rational antibiotic usage policies.

Key words: Antibiotics, cost, pharmacoeconomics

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**REFERENCES**


