

STUDY ON ANTIBIOTIC USE IN BULGARIA

I.N. GETOV* - Z.D. DIMITROVA*

SUMMARY

Antibiotic (AB) consumption in Bulgaria during the year 1992 as compared with 1989 has been evaluated by the method of Defined Daily Doses (DDDs). An increase of 16.6% for the total antibiotic consumption for 1992 has been found as compared with 1989. Antibiotics of the J01C group - Beta-lactam antibacterials and penicillins show nearly three fold increase with Amoxicillin (Amopen) on the first place in the list of the AB use - DDD 44,5 (1992). A substantial increase in the J01D-A Cephalosporins and other related substances and J01F A Macrolides also has been registered. On the contrary the use of J01E Sulfonamides and Trimetoprim has decreased - nearly by 87%. The need of monitoring the AB utilization in Bulgaria according the World Health Organization recommendation is discussed.

KEY WORDS

DDDs, pharmacoconomics, ATC classification, drug sale, antibiotic utilization

INTRODUCTION

The wide application in therapy as well as the substantial share of the total drug sale antibiotics have

* 1680 Sofia, "Krasno selo" bl. 8, ap. 2, BULGARIA.

makes the research on their utilization very important (1, 2). The potential for rapid spread of AB resistant microorganisms, their plamids and genes throughout the world is another major concern for the need of investigations of antibiotic consumption (3,4). The analysis of the received data and revealed trends would allow to modify the national drug policy toward World Health Organization (WHO) recommendations for safe, rational and cost-effective drug utilization.

In this respect the evaluation of trends in the AB consumption in Bulgaria seems very important, as far according our previous investigations and available data 40-60% of all hospitalized patients receive antibiotics. The figures vary from 5-10% for child-delivery units to 100% for surgical and intensive care units and units for tuberculosis patients.

The data concerning the pattern of AB utilization in Bulgaria however used to be expressed in terms of cost, volume or other unit of measurement. This fact makes comparison with the data for other countries and for previous years impossible.

The main goal of this study is to evaluate antibiotic consumption in Bulgaria by the method of DDDs during the year 1992 as compared with 1989. In the course of the investigation Anatomical Therapeutic Chemical (ATC) classification system recommended by WHO has been applied. As it is known extensive ATC-alteration in the group of antibiotics took effect in most countries at the beginning of 1992, and the new definitions are used now in all cases

(5). The latest issue of the List of registered and legalized medicines in Bulgaria follows also these recommendations (6).

METHODS

The study includes all registered and legalized in Bulgaria AB items at 01.01.1994 - 184 trade names in 424 different forms. The basic data have been kindly provided by the National Drug Institute at The Bulgarian Ministry of Health. Following the methodology proposed by WHO, DDDs method has been applied.

DDD is the assumed average dose per day for the drug use in its main indication in adults(7). For the purpose of the comparative analysis the Anatomico-Therapeutic Chemical classification has been applied for the Bulgarian list of antibiotics. DDDs have been calculated following the equation:

$$DDDs = (A / DDD \text{ ATC} * 1\ 000) / (365 * B)$$

Where:

DDD ATC = standard average dally doses according
ATC classification of WHO

A = Active substance sold

B = Inhabitants number

365 = days of the year

It has been accepted that the total amount sold is consumed, beeng aware of descrepancy wich could exist between this and actual drug consumption values.

RESULTS AND COMMENDS

The range of antibiotics registered in Bulgaria is wide

- 184 items, distributed in nine groups according their chemical structure (Fig.1).

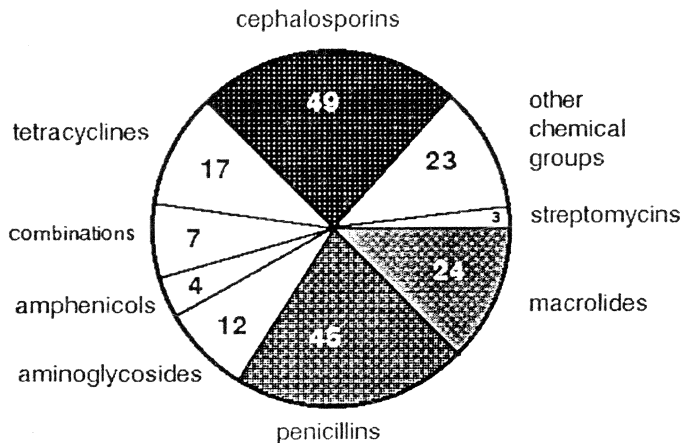


Fig.1. Distribution of antibiotics, registered in Bulgaria in groups according their chemical structure.

The well developed local AB manufacture as well as the presence of many foreign pharmaceutical companies on the bulgarian drug market could explain this comparatively great number of antibiotics registered recently in Bulgaria. AB consumption at a national level over the three years period studied shows various deviations. An increase of the consumption for the group as a whole has been registered for the year 1992 as compared with 1989 (a growth rate 16,6% for the period). The rise observed probably is due to the some extend to the changes in the national drug policy during this period as well as the changes in drug distribution. The most substantial increase (by the factor of three) has been found for the J01C group - Beta-lactam antibacterials and penicillins. At the top position in the consumption list for the period studied is

Amoxacillin (Amopen) with DDDs for 1992 44,5 respectively (Fig.2).

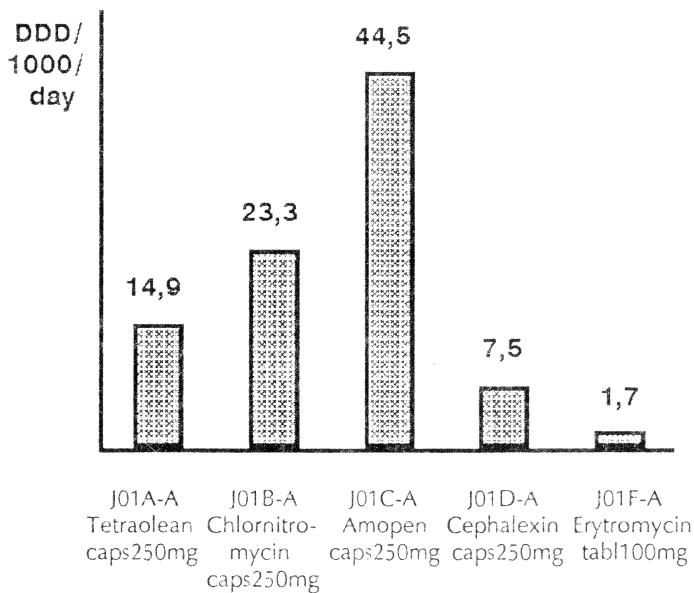
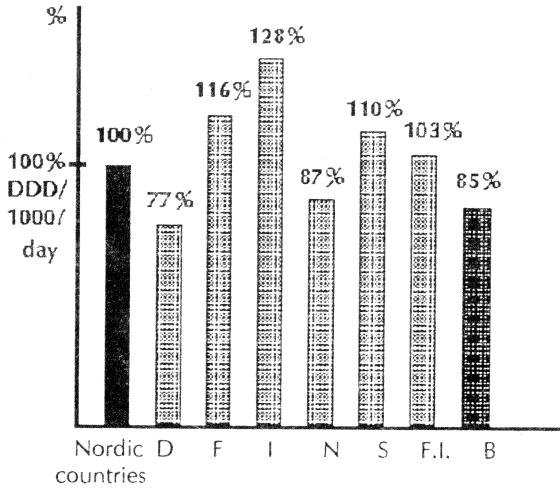


Fig. 2. Antibiotics with the highest level of use during the year 1992 (DDDs/1000/day).

Besides the group of penicillins an increase of the consumption of J01D-A Cephalosporins and J01F Macrolides is observed as well. This result might be explained with the fact that many new AB drugs have been developed. They have entered the therapeutic practice in a short time. On the contrary the use of some antibacterials from J01A and J01B (tetracyclines and amphenicols) is falling. The same pattern is valid also for the sulfonamides. Trends in the total AB consumption for Bulgaria are shown on fig.3.



D- Denmark
 F - Finland
 I - Iceland
 N - Norway
 B - Bulgaria
 S - Sweden
 F.I.- Faroe Islands

Fig.3. Comparison between antibiotic use during the year 1992 between Bulgaria and Nordic countries. Data are expressed in DDDs/1000/day (%).

It could be seen that values and trends are close to those for Denmark and Norway for the same period published in Nordic Statistics of Medicine (8). The share of different groups (according ATC classification) of the total consumption however is very different from those of the Nordic countries. Obviously a thorough analysis of the drug strategy of these Nordic countries is advisable in order to achieve a more rational effective and safe antibiotic use.

In a local study (in six regions of Bulgaria) the share of the different forms of the total AB consumption has been followed for the period of four years (1990-1993). Nearly 30% of Bulgarian population is living in this regions. Marked preferences for the parenteral forms (51% of the AB sale) registered could be explained by the influence of different factors: good therapeutic effect, lower costs and wide use in hospitals. The lowest use of rectal forms (4%) reflects possibly their higher costs and lower availability on the Bulgarian drug market.

CONCLUSIONS

From the analysis of DDDs values of all antibiotics registered in Bulgaria for two selected years (1989 and 1992) the highest consumption of Amopen, tetracyclins and chloramphenicols has been found.

For the three year period (from 1989 to 1991) the increase of the consumption of the J01C -Penicillins is the most substantial.

DDDs values for the total AB consumption in Bulgaria are close to those published for Denmark and Norway. The share of different groups of the total consumption however is very different from those of Nordic countries.

When the consumption of different sale forms is compared a marked preferences for parenteral forms is registered.

We hope that the AB utilization data on the level presented in this paper are the necessary information tool concerning total AB use and trends. The next step is to try to find out the reasons behind and the consequences of the

utilization pattern found. All these data would be helpful for the antibiotics use monitoring in Bulgaria in order to meet WHO recommendation.

REFERENCES

1. Kerr J., Barr J., Antibiotic pharmacoconomics: an attempt to find the real cost of hospital antibiotic prescribing, *Ulster Med. J.*, 62, 1993, 50-57
2. Kennedy M., Forbes A., Baum D., A review of the drug utilization, *Amer. J. Hosp. Pharm.*, 1983, 5, 797-801
3. Neu H., The crisis in antibiotic resistance, *Science*, 257, 1992, 1064- 1073
4. North D., Controlling the costs of antibiotic resistance, *Clin. Ther.*, 15, 1993, 3-11
5. Graber H., Rational antibiotic therapy: new drugs, changing concepts, *Ther. Hung.*, 38, 1990, 3
6. Anatomical Therapeutic Chemical (ATC) classification index, WHO Collaborating Centre for Drug Statistics Methodology, Norway, Jan. 1993
7. Wertheimer A., The defined daily dose system for drug utilisation review, *Amer. J. Hosp. Pharm.*, 1986, 21, 233-257
8. Nordic statistics on medicines 1990-1992, NLN Publication 32, Uppsala, 1993