

Abstract

Analysis of drug utilization of antibiotics for systematic administration in the Czech Republic in 2005–2019

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Introduction and aims: Antibiotics (ATB) are substances with a bacteriostatic or bactericidal effect. Treatment with ATB carries a risk of side effects, drug interactions and risk of resistance occurrence. The reason for monitoring the consumption of ATB is not only the apparent coherence between their consumption and the increase of resistance, but also the economic side of bacterial infections treatment. The aim of this study was to analyze the consumption of ATB for systematic administration in the Czech Republic (CR) in 2005-2019.

Methods: The analysis of the consumption of ATB was performed as a retrospective analysis of data from the database of the State Institute of Drug Control in the period from 1. 1. 2005 to 31. 12. 2019. Anatomical-therapeutic-chemical classification based on defined daily doses (DDD) of individual drugs was used for the analysis. The consumption of ATB was calculated as DDD per thousand inhabitants per day (TID). The data on the number of residents was acquired from the Czech Statistical Office. The total consumption of ATB in individual years and the total costs of ATB in financial units in individual years were analyzed. The consumption of ATB for individual representatives or subgroups for selected ATB groups was analyzed. Then the relative indicators of the consumption of ATB were evaluated. The results were processed using descriptive statistics.

Results: The highest consumption of ATB occurred in 2015, when it reached the value of 20.8089 DDD/TID. This was followed by a decrease in the consumption of ATB. The consumption of ATB was 16.8711 in 2019, which was the lowest value of the consumption of ATB during the analyzed period. The lowest costs for ATB occurred in 2016, when they reached 1 457 million Czech crowns (mil. CZK). The costs of ATB have increased since this year. The costs reached the value of 1 702 mil. CZK in 2019. The β -lactam ATB (penicillin's) was the most used group of ATB during the whole analyzed period. Their consumption was 6.0003 DDD/TID in 2019. A significant decrease in the consumption of ATB occurred in the group of fluoroquinolones. Their consumption was 1.6585 DDD/TID in 2005 and only 0.6832 DDD/TID in 2019.

Conclusions: The CR is not one of the countries with high consumption of ATB, nor does it have unfavorable results of relative indicators of the consumption of ATB. However, according to the results of the analysis, there were several unfavorable trends, such as an increase in the consumption of macrolides, protected penicillin's, cephalosporins II. and III. generation and seasonal variation of the consumption of ATB.

Key words: antibiotics, drug utilization, antimicrobial consumption, antimicrobial therapy.