

Abstract

Institution/department: Charles University, Faculty of Pharmacy in Hradec Kralove, Department of Social and Clinical Pharmacy

Title of diploma thesis: Ageing of the population and selected aspects of risky drug prescribing in senior age (II.)

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INTRODUCTION: Ageing of the population in developed and developing countries is accompanied with increasing proportion of seniors. Because of age-related physiological and pathological changes, polymorbidity is very common in older patients and often accompanied with polypharmacy and higher risk of drug-drug interactions (DDIs). Moreover, age-related changes in drug pharmacokinetics and pharmacodynamics contribute to higher clinical significance of various DDIs. The aim of this diploma thesis was to determine the prevalence and most common DDIs in the Czech sample of seniors assessed during the EuroAgeism H2020 project in three different settings of care – acute, ambulatory care and in community pharmacies. The secondary aim of the thesis was also to thoroughly describe mechanisms of most common DDIs, their clinical relevance and available evidence.

METHODOLOGY: For determining the prevalence of DDIs we used Czech data of seniors 65+ (in total N=1602) collected during the EuroAgeism H2020 project (data collection period: 2018-2021) in 3 different settings of care – acute care (N=589), ambulatory care (N= 563) and in community pharmacies (N= 450). In all three settings of care patients have been assessed using GCA (Comprehensive Geriatric Assessment) protocols of the EuroAgeism H2020 project in several regionally different bigger facilities in each setting of care. Drug data of all patients were analyzed using MedScape „Drug Checker“ software and summarized using descriptive statistical analyses as prevalences of serious, moderate and minor DDIs with identification of top 10 DDIs in each category and each setting of care. Other 2 DDIs databases (UptoDate and Micromedex) were used to compare the information of risks and available evidence about most common DDIs. For descriptive statistical analyses we used R-software version 4.0.3. and χ^2 -test (or Fischer exact test) for comparisons of prevalences in various categories.

RESULTS: The average age was 78 years ($\pm 7,6$ SD yrs) in total sample, with higher values in ambulatory care (82,8, $\pm 8,5$ SD) and lower values in community pharmacies (71,7, $\pm 6,3$ SD) ($p < 0,001$). Polymorbidity (6+ chronic disorders) and hyperpolypharmacy (10+ medications) were identified in

total sample in 48.4 % /26,4 % of seniors, in acute care in 62,9 %/47,4 % of seniors, in ambulatory care 60,7 %/ 22,6 % and community pharmacies in 24,9 %/ 3,8 % seniors, respectively (p<0,001). The average number of DDIs identified in 3 different settings of care was: 6,6 ($\pm 6,2$ SD) in acute care, 4,3 ($\pm 4,9$ SD) in ambulatory care and 1,8 ($\pm 3,6$ SD) in community pharmacies (p<0,001). The prevalence of 1+ DDIs was determined 90,5 % in acute care, 78,7 % in ambulatory care and 43,8 % in community pharmacies, with the prevalence of serious DDIs 43,6 %, 32,7 % and 15,1 %, respectively. In total sample, the prevalence of any 1+ DDIs was 73,2 % and 1+ serious DDIs 31,8 %. Among the most frequently prescribed serious DDIs were found drug combinations increasing the risk of hyperkalemia, bleeding or increasing the drugs' toxicity. Teoretical information about the clinical relevance of drug interations signifnificantly differed among MedScape, Upto Date and Micromedex databases.

CONDLUSION: DDIs were identified in the sample of Czech seniors with a very high prevalence (> 70 %), as well as serious DDIs were very common (>30 %), particularly in acute and ambulatory care. None of identified DDIs was contraindicated for use, but majority required close monitoring of therapy. Information on clinical relevance and seriousness of drug interactions widely differed among drug-drug interactions' databases. Work of clinical pharmacists helping to determine individual clinical relevance of DDIs and individual sollutions of DDIs in various clinical situation and various setting of care is highly beneficial.

KEY WORDS: drug-drug interaction, rational therapy in old age, geriatric patient, risks of pharmacotherapy

SUPPORT:



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