ABSTRACT

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

Title of diploma thesis: Evaluation of the rationality of geriatric pharmacotherapy in long-term care facillities (II.)

Thesis supervisor: Assoc. Prof. Daniela Fialová, PharmD, Ph.D.

Author: Leona Tichá

Introduction: Anticholinergic drugs, i.e. drugs with an antagonistic effect on muscarinic receptors, are used in therapy mainly in the treatment of psychiatric, gastrointestinal, urogenital, eye and respiratory diseases. They affect the secretion of glands, induce mydriasis, cause relaxation of smooth muscles in the respiratory tract and urogenital tract, and in some indications their anticholinergic action in the central nervous system (CNS) is also used. However, these drugs have frequent side effects, which include decreased glandular secretion (including dry mouth), constipation, urinary retention, higher risk of negative impacton cognitive functions and even induce dementia, recurrent falls, tachycardia and syncopes, orthostatic hypotension, and central anticholinergic syndrome. Anticholinergic (ACH) drugs are characterized by anticholinergic activity (AA), which can be weak (1), moderate (2) or strong (3). When multiple drugs are administered, the resulting anticholinergic burden of the drug regimen may contribute to an increased risk of anticholinergic adverse complications. In geriatric patients, polypharmacotherapy and polymorbidity are very common and there are changes in both the pharmacokinetics and pharmacodynamics of drugs in older age. For this reason it is also necessary to evaluate the anticholinergic load of drug regimens and to minimize the necessity of using systemically acting ACH drugs. The aim of this work was to determine the prevalence of the use of ACH drugs and drug regimens with different AAs in the group of seniors of the START/MED/093 project and document predictive factors that determine the occurrence of ACH side effects in the population of seniors in long-term care.

Methodology: This thesis was part of the START/MED/093 research project, which took place in the years 2021–2024 in long-term care facilities in 4 European countries, namely in the Czech Republic, Croatia, Slovakia and Bulgaria. In all countries, 3-4 regionally different long-term care facilities were involved (max. 75 patients pereach facility, aged 65 and over who met the conditions of the study). Patients with severe cognitive impairment, severe hearing and speech problems, acutely hospitalized or patients in palliative care and seniors with a life expectation less than 12 months were excluded from the study. The study was approved by the Ethics Committee of the Faculty of Pharmacy, Charles University, and only patients who signed an informed consent were included. Data were collectedby using the interRAI-LTCF questionnaire (version for long-term care facilities), which enables a comprehensive geriatric assessment. This assessment includes sociodemographic, clinical (diagnoses, symptoms), functional, drug, service-related characteristics, and basic laboratory results.

Results: A total of 876 seniors aged 65 and over who stayed in long-term care facilities were examined (225 patients in the Czech Republic and Slovakia (in each country), 226 patients in Croatia and 200 patients in Bulgaria). 71.4 % of the group were women and the mean age of all patients was 80.5 years (+/- 7.8 SD). Polypharmacotherapy (5-9 drugs) was used by 43.3 % of patients and more than 10 drugs (hyperpolypharmacotherapy) were used by 29.9 % of patients. Most of the patients in the Czech Republic used 10+ medications (55.6 %). At least 1 problem potentially related to the use of ACH drugs (cognitive dysfunction or dementia, depression, falls, dizziness and chronic constipation) was noted in 76.9 % of the patients. Among factors statistically significantly associated with the occurrence of these complications were documented: age 85 years and older, the presence of any psychiatric diagnosis in personal anamnesis and the use of three or more ACH drugs. The most commonly prescribed drug with mild anticholinergic activity (AA=1) was furosemide (26.4 %), with AA=2 (moderate activity) ipratropium bromide (1.8 %) and with AA=3 (strong activity) hydroxyzine (0.7 %). In the whole sample, furosemide (26.4 %), followed by the combination of tramadol/paracetamol (13.4 %) and metformin (10.6 %) were the most frequently prescribed drugs with any AA. 72 % of patients used 1 or more ACH drugs at the same time (the highest number of users was documented in Slovakia (84.0 %),

followed by the Czech Republic (81.3 %) Croatia (80,1 %) and Bulgaria (30.0 %)). Most the patients (24.9 %) used ACH drug régime with the cumulative AA 1. Drug regimes with cumulative AA 2 were prescribed in 17.9 % of patients, with cumulative AA 3 in 14.2 % and cumulative AA 4+with in 15.1 % of patients, respectively

Conclusion: More than 72.0 % of seniors used at least 1 ACH drug and more than 15.1 % of patients used drug regimens with high anticholinergic activity. In order to prevent drug-related complications, it is necessary to monitor the activity of the drug regimen and to individualize treatment in older age, especially in older adults using more ACH medications, aged 85 years and over and with psychiatric co-morbidities. Any adverse reactions must be identified and prevented early so that they do not have a serious impact on the health of older patients.

Keywords: Anticholinergic drugs, geriatric patient, long-term care facilities, rational geriatric pharmacotherapy, innapropriate drug prescribing.

Ethical Approval: The study was approved by the Ethics Committee of the Faculty of Pharmacy in Hradec Králové, Charles University in the Czech Republic (No UKFaF/297850/2022). All participants were informed about the purpose and objectives of the study and the collected data were used for research purposes only. Patients confirmed their consent to participate in the study by reading and signing the informed consent. All data was collected and recordedanonymously with the help of numerical codes, the rules of anonymity and confidentiality of data according to the regulation of the European Union on the protection of personal datå (GDPR) were followed.

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