Abstract

Master's thesis: **Analysis of drug-drug interactions in patients admitted to hospital (III.)**
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Introduction: Drug interactions are a common part of clinical practice, especially in patients with polypharmacy. On the one hand, the significance of these interactions can be positive, where the interaction between specific drugs helps to achieve treatment goals and improving the patient's condition. On the other hand, drug interactions can potentially or actually endanger or harm the patient.
Aim: The aim of this thesis was to identify potential drug interactions in the medication histories of patients admitted for hospitalization at the University Hospital in Hradec Králové using interaction databases. The objectives were to determine the prevalence of patients with at least one potential interaction and to categorize these interactions based on their mechanism, clinical severity, and level of documentation. Another aim was to identify medication classes involved in potential drug interactions. Manifested drug interactions are also described in this thesis.
Methodology: This study is classified by design as an observational cross-sectional study. The data were obtained from a previous study (Očovská et al. 2022). This thesis analyzes a sample of 184 patients, building on the theses of Kateřina Kukrálová and Daniela Mašková. Drug interactions were identified in the patients' medication histories using three interaction databases: Micromedex, UpToDate and Drug Agency drug interaction database. A potential drug interaction was defined as a combination of two drugs identified by at least one interaction database with a minimum of moderate severity or overall risk rating.
Results: Of the 184 patients analyzed in this thesis, 167 had at least one potential drug interaction. The prevalence of patients with at least one identified potential interaction was therefore 90.8% (95% confidence interval: 87–95). A total of 1,400 interactions were identified in 167 patients, which represents an average of 8.4 drug interactions per patient. Some interactions occurred in multiple patients, and therefore, out of the cumulative 1,400 interactions, 727 were distinct (unique) interactions. Most of the interactions were pharmacodynamic. The most common severity level of interactions was "moderate." The most frequent potential impacts were an increased risk of hypotension and bleeding. The most common medication classes involved in potential interactions were diuretics (17.6%) and drugs used in diabetes (7.9%). Of the potential interactions, 28 interactions were clinically manifested in 10 patients. The prevalence of manifested drug interactions was therefore 5.4% (95% confidence interval: 2–9). The most frequently involved drugs in the manifested interactions were from the classes of analgesics (20%) and antithrombotic agents (18%). The most common clinical manifestations of the manifested interactions were central nervous system depression and bleeding.
Conclusion: The results indicated a high prevalence of potential drug interactions, most of which were of moderate severity and pharmacodynamic in nature. The most frequently involved drugs in potential drug interactions were from the medication classes of diuretics and drugs used in diabetes. Despite the large number of potential interactions, only a small percentage (2%), were actually manifested in clinical practice, with the most common manifested interactions being associated with analgesics and antithrombotic agents.