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Short communication

Potential drug- drug interactions in hospitalized patients with respiratory diseases

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Introduction

Chronic respiratory diseases are a group of chronic diseases that affect the airways and other lung structures. Hundreds of millions of people around the world suffer from these diseases. Although the drugs used for respiratory diseases are associated with little interactions when respiratory medications are used appropriately, patients using these drugs may be taking a significant number of other drugs. According to the World Health Organization, minimizing or preventing these interactions should be the primary goal of guaranteeing the quality of life because these interactions can cause morbidity and mortality (Bosquet and Kaltaev, 2007). Drug interactions occur when the effect of the drug is influenced from the co-administration of another drug. The clinical response depends on many factors, including individual patient characteristics such as age or associated diseases (Fontneau, 2018). As respiratory diseases are widespread and in Albania there is not too much information about drug interactions, we conducted this study, which helps in understanding the prevalence of the phenomenon and the factors associated with potential interactions. The ultimate objective is to facilitate the safe and effective use of drugs in the future.

Materials and methods

In this study were involved 109 patients, who were hospitalized at the pneumology department in "Shefqet Ndroqi" Hospital, Tirana, Albania during the period February 2019 until April 2019. This was a transversal study used to determine the prevalence of the drug-drug interactions and to identify correlations with different variables. The study was conducted based on data from hospitalized patients charts as well as reports of their discharge. The following data were extracted from medical documentation: patient characteristics (age, sex, concomitant diseases, smoking habit, residence) number of diagnoses per patient, and length of hospital stay. Data about medication prescribed on admission and at discharge were retrieved from the discharge letter. We used Microsoft Excel package and the application provided from the platform www.drugs.com to identify the interactions. In this website interactions were categorized based on clinical relevance and mechanism of action.

Results and discussion

In total 109 patients were included in the study, 33 (30.27%) of them were diagnosed with respiratory insufficiency, 28 (25.68%) with COPD and 22 (20.18%) with bronchial asthma. The most prevalent concomitant disease in our patients was Arterial Hypertension (55.96%). Males represented 64.22% and females 35.78% of the included patients. The mean age was 57.64± 18.7 years. Group age between 46-75 years had the highest percentage of potential interactions in both hospital prescriptions (65.77%) and outpatient prescriptions (60.55%). As the age increases, the risk of potential drug interactions increases, while the percentage of interactions is lower at younger ages. 79.82 % of patients lived in urban zones and 20% of them in rural zones. This can be related to the fact that patients living in cities are more exposed to have pulmonary diseases probably due to the air pollution. Prevalence of polypharmacy was high: 54.13 % of patients received prescriptions with more than

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7 drugs. We found an increase in drug interactions related to the polypharmacy. This finding is in line with other similar studies (Harshal et al., 2016; Kapp, 2013; Nazeem and Nosenoor, 2018). A total of 1233 drugs was prescribed. The number of drugs prescribed in hospital showed an average of 8.46±4.49 drugs and in discharge an average of 6±3.74 drugs. Only 8 patients did not present potential drug-drug interactions in their prescriptions both in hospital and in discharge. 68.91% of interactions both in hospital and in discharge were of moderate clinical relevance and 73.32 % of them included a pharmacodynamic mechanism. The results are similar to a study conducted in Gujarat where 50.83% of the drug interactions were pharmacodynamic and 76% moderate (Chavda et al., 2015). %). The highest number of interactions in the same patient was 31, found in hospital prescriptions in one patient. Medications that contributed most frequently to the high frequency of interactions were corticosteroids (such as prednisolone and budesonide), which were considered potentially inappropriate in 82.57% of prescriptions including both hospital and outpatient prescriptions. Also, beta2 agonists such as salbutamol were considered inappropriate in 77.98% of the prescriptions. Although less prescribed, digoxin was inappropriate in all 9 prescriptions. This is because drugs with a narrow therapeutic index are more likely to be involved in severe interactions.

Conclusion

The frequency of potentially inappropriate interactions is very high in both hospital and outpatient prescriptions. The study showed that polypharmacy is present in most of the patients and this expose them to a higher risk of developing drug interactions. There is a need to further exploit the factors contributing to the drug interactions. More efficient procedures for recognizing and controlling interactions would influence the prescribers to improve the drug therapy. Clinical pharmacists should be involved in detecting interactions at the discharge of patients from the hospital.

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