EPV1610

Effect of clozapine and olanzapine on the production of malondialdehyde in reaction to free radical attack on deoxyribose

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Introduction: Clozapine and olanzapine are among the most effective antipsychotic drugs. However, their use is associated with the development of metabolic syndrome and lipid profile disorders. It is therefore interesting whether they can affect the level of oxidative stress associated with the Fenton reaction, which is a source of harmful hydroxyl radicals in the blood that damage DNA.
Objectives: The aim of our study was to test the in vitro antioxidant properties of two known neuroleptics – clozapine and olanzapine, which are commonly used in the treatment of schizophrenia and bipolar disorder.
Methods: The study was based on the ability of the hydroxyl radical to split deoxyribose into malondialdehyde (MDA). In the experimental system, the Fenton reaction was used as a source of the hydroxyl radical, in which the divalent iron cation reacts with hydrogen peroxide to form a highly toxic hydroxyl radical. For this purpose, deoxyribose was incubated under appropriate conditions with FeSO4 (0.5 mM), EDTA (1 mM), H2O2 (14 mM) and cloazpine or olanzapine at concentrations of 1, 5, 20 or 50 µmol/l. These concentrations corresponded to the concentration of drugs in the cerebrospinal fluid. A clean system (containing no drugs) was used as a positive control. Then, thiobarbituric acid (TBA) was added to the reaction mixtures in the presence of trichloroacetic acid.
Results: Both olanzapine and clozapine inhibited the formation of malondialdehyde (MDA) from deoxyribose under the influence of the Fenton reaction. At concentrations of 1 and 5 µmol/l, both neuroleptics did not inhibit the reaction. At concentrations of 20 µmol/l, olanzapine inhibited the reaction by 15%, and clozapine by 20%. At concentrations of 50 µmol/l, olanzapine inhibited the reaction by 30%, and clozapine by 37%. The difference between the two neuroleptics was not statistically significant.
Conclusions:

1. At concentrations of 1 and 5 umol/l, both neuroleptics did not inhibit the studied reaction.
2. At concentrations of 20 and 50 umol/l, both neuroleptics inhibited the reaction.
3. The difference in the degree of inhibition of the reaction between clozapine and olanzapine was not statistically significant.

The similar results of inhibition of the reaction by both neuroleptics probably result from a similar chemical structure. The fact that clozapine and olanzapine inhibit the Fenton reaction may have a beneficial effect in protecting tissues from oxidative damage.

Disclosure of Interest: None Declared

EPV1611

Clinical Pharmacist Recommendations for Rational Benzodiazepine and Zolpidem Use During Daily Ward Rounds in Inpatients with Mental Disorders: A Retrospective Pre-Post Study

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Introduction: Benzodiazepines and zolpidem are commonly prescribed as long-term treatments for anxiety and insomnia, although recommendations generally do not support their extended use. These medications are often prescribed for longer durations than necessary, at inappropriate doses, and with potential drug-drug interactions. In this context, rational prescribing strategies are essential. One potential strategy is the integration of a clinical pharmacist into the inpatient team for daily interdisciplinary ward rounds. However, this approach remains under-researched in the context of inpatients with mental disorders.
Objectives: This study aimed to evaluate the impact of a clinical pharmacist on medication-related problems (DRPs) focused on benzodiazepine and zolpidem use during daily ward rounds within an interdisciplinary team in a Slovenian psychiatric hospital.
Methods: A retrospective observational pre-post study was conducted at Ormož Psychiatric Hospital in Slovenia, including patients treated between 2019 and 2020. During this study, clinical pharmacists provided recommendations focused on benzodiazepines and zolpidem. The primary outcomes assessed were the difference in the total number of DRPs observed at the time of hospital discharge compared to admission. The secondary outcomes evaluated adherence to existing treatment guidelines.
Results: The study involved 20 participants with a mean age of 57.2 years (SD = 17.1). A total of 23 recommendations related to DRPs associated with benzodiazepine and zolpidem use were performed (1.15 per patient). Of these, 19 DRPs (82.6%) were identified as potential issues, while 4 DRPs (17.4%) were already expressed. Most DRPs concerning benzodiazepines and zolpidem were classified as unnecessary treatment, with 18 recommendations (78.3%). The remaining five recommendations (21.7%) addressed treatment effectiveness. The most common recommendation was the discontinuation of benzodiazepine and zolpidem therapy, suggested in 12 cases (56.5%), followed by adjustments to the treatment regimen, predominantly dose reductions, in 9 cases (39.1%). In only one case (4.3%) was the recommendation to initiate benzodiazepine treatment. Initially, the acceptance rate of recommendations was 100.0% (N = 23) at the time of discharge, but this decreased to 82.6% (N = 19) three months after discharge. Adherence to treatment guidelines improved ($p < 0.05$).
Conclusions: The results indicate that this approach led to fewer DRPs, improved adherence to treatment guidelines, and a high