Osama Mohamed Ibrahim et al., J Dev Drugs 2018, Volume 7
DOI: 10.4172/2329-6631-C3-033

Role of Metformin in Oxaliplatin-Induced Peripheral Neuropathy in Egyptian Colorectal Cancer Patients

Osama Mohamed Ibrahim, Basma Mahrous El-fatatry, Fatma Zakaria Hussien and **Tarek Mohamed Mostafa**
Tanta University, Egypt

Statement of the Problem: Oxaliplatin is an essential drug in treatment of colorectal cancer. Peripheral sensory neuropathy is the most prominently reported adverse effect. No standard agent has been approved for prevention of this neuropathy.

Purpose: This prospective controlled study was conducted to evaluate the role of metformin in prevention of oxaliplatin-induced peripheral neuropathy.

Methodology & Theoretical Orientation: From November 2014 to May 2016, 40 patients with colorectal cancer stage III were enrolled and randomly allocated to a control group received 12 cycles of FOLFOX-4 regimen and a metformin group received the same regimen plus metformin 500 mg three times daily. The metformin efficacy was evaluated using the brief pain inventory short form "worst pain" item, National Cancer Institute Common Terminology Criteria for Adverse Events (NCI-CTCAE version 4.0) and a12-item neurotoxicity questionnaire (Ntx-12) from the validated Functional Assessment of Cancer Therapy/Gynecologic Oncology Group. In addition to malondialdehyde, interleukin-6 and neurotensin serum levels assessment.

Results: By the end of 12 cycles, the mean pain scores in metformin group were significantly lower than those of control group, (6.7 versus 7.3, $P = 0.005$). Ninety-five percent of patients in control group experienced grade 2 and 3 while 40% of metformin group remained in grade 1 and only 60% experienced grade 2 and 3, $P = 0.002$. Furthermore, metformin group showed significantly higher total scores of Ntx-12 questionnaire than control group (24.0 versus 19.2, $P < 0.001$). Mean serum levels of malondialdehyde and neurotensin were significantly lower in metformin group after 6 and 12 cycles. However, mean serum levels of interleukin-6 showed non-significant difference between the two groups.

Conclusion & Significance: Our findings may suggest that metformin is a promising drug in protecting colorectal cancer patients against chronic oxaliplatin-induced peripheral sensory neuropathy.

Recent Publications:

1. Zedan A, Hansen T, Fex Svenningsen A, et al (2014) Oxaliplatin-induced neuropathy in colorectal cancer: many questions with few answers. Clinical colorectal cancer.;13:73-80
2. Drott J. (2014) Oxaliplatin-induced neurotoxicity among patients with colorectal cancer: Open Journal of Nursing. 2014; 4:265-274.
3. Hou X, Song J, Zhang L, et al. (2010) Metformin reduces intracellular reactive oxygen species levels by upregulating expression of the antioxidant thioredoxin via the AMPK-FOXO3 pathway. Biochemical and biophysical research communications. 396:199-205.
4. Atkinson T, Mendoza T, Sit L, et al. (2010) The Brief Pain Inventory and its "pain at its worst in the last 24 hours" item: clinical trial endpoint considerations. Pain Medicine. 11:337-346.
5. Kopec J, Land S, Cecchini R, et al. (2006) Validation of a self-reported neurotoxicity scale in patients with operable colon cancer receiving oxaliplatin. J Support Oncol.; 4:W1-W8.

Biography

Osama M Ibrahim got his Master Degree & PhD in Clinical Pharmacy from the University of the Pacific, School of Pharmacy, California, USA. He was the first faculty staff to hold a PhD in Clinical Pharmacy in Egypt. He worked as a clinical pharmacy professor in addition to a cardiovascular consultant in many countries. He established Clinical Pharmacy Diploma as well as a PharmD program in Egypt. His research interests are in the area of Cardiovascular Disorders, Applied Pharmacokinetics and Drug Information. He has more than 35 national and international publications.

osamamhi@hotmail.com