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THESIS ABSTRACT

Role of metformin in oxaliplatin-induced peripheral neuropathy in colorectal cancer patients

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Background: Metformin, an anti-diabetic drug, has been found in recent studies to have multifactorial effects in different clinical settings. **Aim**: Peripheral sensory neuropathy is the most prominently reported adverse effect of oxaliplatin. This study was conducted to evaluate metformin role in oxaliplatin-induced neuropathy. **Patients and Methods**: From November 2014 to May 2016, 40 patients with stage III colorectal cancer 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**: At the end of the 12th cycle, the mean pain score in metformin group was significantly lower than those of control group, (6.7 versus 7.3, P = 0.005). On the other hand, 95% of patients in control group experienced grade 2 and 3 neuropathy while only 60% experienced grade 2 and 3 neuropathy. 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 the 6th and the 12th cycles. **Conclusion**: Metformin may be a promising drug in protecting colorectal cancer patients against oxaliplatin-induced chronic peripheral sensory neuropathy.

Keywords: Colorectal cancer; Metformin; Peripheral neuropathy; Oxaliplatin

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