

Effect of low-dose oral acetylcysteine on Cisplatin-induced mitochondrial oxidative stress in patients with head and neck cancer

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Cisplatin anticancer drug induces mitochondrial oxidative stress and acetylcysteine (NAC) is an antioxidant that has been studied to attenuate cisplatin oxidative stress and toxicities in animal models. Objective: To evaluate the effect of low-dose oral NAC on cisplatin-induced mitochondrial oxidative stress in patients with head and neck cancer. Methods: This is a randomized double-blind placebo-controlled trial conducted with 49 patients undergoing treatment with high-dose cisplatin chemotherapy, concomitant to radiotherapy. Patients were randomly assigned and were given: (a) NAC syrup, 600 mg orally once a day at night for 7 consecutive days (two days before the chemotherapy, on the day of chemotherapy, and 4 days after chemotherapy), n = 26; or (b) Placebo, administered similarly to NAC, n = 23. Before and after five

days of the chemotherapy, blood samples were collected and peripheral blood mononuclear cells were isolated to perform the MitoSox Red test, a mitochondrial O₂-marker. Results: The placebo group showed a baseline mean of 238.4 ± 206.0 M.F.I versus 297.1 ± 268.6 M.F.I in the NAC group. After first cycle of chemotherapy, placebo group showed an increase in mitochondrial O₂- (286.8 ± 263.9 M.F.I, increase of 48.4 M.F.I) and NAC group a decrease (287.4 ± 268.6 M.F.I, decrease of 9.7 M.F.I); however, there was no statistic difference between the groups (p=0.7952, Mann-Whitney test). In the second and third cycles of chemotherapy, the results were also not statically significant. Conclusion: Low-dose oral NAC did not impact on cisplatin-induced mitochondrial oxidative stress in patients with head and neck cancer.

Biography

Patricia Moriel is a full Professor in the Faculty of Pharmaceutical Science at State University of Campinas (UNICAMP), Brazil. She is leader of the Clinical Pharmacy Group that is involved in the study of pharmacotherapy, drug adverse events, pharmacovigilance, pharmacokinetic e pharmacogenomics influences in adverse events, especially in cancer. She has authored more than 45 research articles, awards, conferences and the granting of a research projects. She has been director of several works of Master in medical and pharmaceutical science and doctoral theses

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