9th Yazd International Congress and Student Award on Reproductive Medicine with 4th Congress of Reproductive Genetics

Poster Presentations

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The protective effects of omega3 on ubiquitination and protamination of rat sperm after bleomycin, etoposide, and cisplatin treatment

Hashemi F[1], Razavi Sh[1], Khadivi F[2].
1.*Department of Anatomy, Faculty of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran.*
2.*Department of Anatomy, Faculty of Medicine, Tehran University of Medical Sciences, Tehran, Iran.*
Email: razavi@med.mui.ac.ir

Background: Generation of oxidative stress during chemotherapy leads to imbalance between oxidant and antioxidant in different organs, that consequencely, increase the risk of male infertility. Bleomycin, etoposide, cisplatin (BEP) are popular agents for testicular cancer treatment. Chemotoxic effects of BEP on reproductive organ including: weight loss, significant decrease in sperm concentration and motility. Also mentioned abnormal chromatin condensation induced by BEP can influence histone and reduced translation of protamine1. Ubiquitin is a small chaperone protein that ubiquitinated Histone2A protein during chromatin remodeling. Histone modification plays critical role for regulating nucleosome stability in order to control gene transcription and DNA repairment. During spermiogenesis, 95% of somatic histones replaced with protamine that results chromatin condensation. Every abnormalities in chromatin remodeling can lead to infertility. Omega3 (polyunsaturated fatty acids) has antioxidant, antiapoptotic and anti-inflammatory properties. Also, omega3 inhibits generation of reactive oxygen species that protects against oxidative damage and lipid peroxidation in testis.
Objective: The purpose of this study is evaluation the protective effect of omega3 on rat sperm protamination and ubiquitination after treatment with BEP drugs**.**
Materials and Methods: In this present study, 40 male rats were divided into four groups: Control, BEP, omega3 and BEP+omega3. Sperm protamination and ubiquitination were assessed using chromomycin A3 and immunofluorescence staining respectively.
Results: The mean percentage of ubiquitinated sperm in BEP group was significantly increased relative to control group ($p < 0.001$). But, the mean percentage of sperm protamination significantly decreased in BEP group relative to control group ($p < 0.001$). Rats in BEP+omega3 group showed a significantly decreased in the mean percentage of sperm ubiquitination as compared to BEP group ($p < 0.05$) while, sperm protamination increased significantly relative to BEP group ($p < 0.001$). Administration of omega3 after chemotherapy showed an improvement in sperm ubiquitination and protamination.
Conclusion: Our data indicated that omega3 after chemotherapy may be beneficial for chromatin remodeling during spermatogenesis following BEP treatment.
Key words: *Chemotherapy, Ubiquitination, Protamination, Rat sperm.*

The original full text of this abstract has been published in Nutrition and Cancer 2018; 70(8): 1308-1314. https://doi.org/10.1080/01635581.2018.1521438.
How to cite to this article: *Hashemi F, Razavi S, Khadivi F. The protective effects of Omega3 on ubiquitination and protamination of rat sperm after bleomycin, etoposide, and cisplatin treatment. Nutrition and Cancer 2018; 70(8): 1308-1314.*