

IMPAIRED SEX HORMONE HOMEOSTASIS IN PATIENTS WITH BREAST, PROSTATE AND TESTIS CANCER: WHAT IS THE ROLE OF CADMIUM AND LEAD?

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The endocrine potential of Cd and Pb, an important mechanism of their toxicity, has been established in certain hormone-dependent cancers (1,2). This study aimed to determine Cd and Pb levels in blood, tumor and healthy surrounding tissue of patients with breast, prostate and testis cancer and investigate the correlation of Cd and Pb with sex hormone levels in the patient's blood. The study involved 55 breast, 41 prostate and 52 testis cancer patients, while healthy women (41) and men (61) represented control groups. Electrothermal atomic absorption spectrophotometry was used for Cd and Pb levels determination. Significantly higher Cd levels, i.e. lower Pb in tumor tissue compared to the healthy surrounding tissue were found in patients with breast cancer. A positive correlation was confirmed between Cd levels in the changed tissue and both human gonadotropins, and a negative correlation with estradiol, as well between Pb in tumor tissue and testosterone levels. Patients with prostate and testis cancer were characterized by significantly higher blood Cd levels compared to healthy subjects. Furthermore, significant Cd and Pb tumor tissue accumulation was shown in prostate and testis cancer patients. A significant positive correlation was found between blood Cd and estradiol levels in patients with prostate cancer. The study highlighted higher Cd level as a significant predictor of cancer, and confirmed impaired sex hormone homeostasis as pivotal mechanism of toxicity underlying the toxic effects of Cd and Pb in patients with breast, prostate and testis cancer.

References

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NARUŠENA HOMEOSTAZA POLNIH HORMONA KOD PACIJENATA SA KARCINOM DOJKE, PROSTATE I TESTISA: KOJA JE ULOGA KADMIJUMA I OLOVA?

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Endokrini potencijal kadmijuma (Cd) i olova (Pb), kao važan mehanizam toksičnosti oba metala, potvrđen je kod određenih hormon-zavisnih karcinoma (1,2). Ova studija je imala za cilj da utvrdi koncentracije Cd i Pb u krvi, tumorskom i okolnom zdravom tkivu pacijenata sa karcinomom dojke, prostate i testisa i ispita korelaciju Cd i Pb sa nivoom polnih hormona u krvi pacijenata. Obuhvatila je 55 pacijentkinja sa karcinomom dojke, 41 pacijenta sa karcinomom prostate i 52 pacijenta sa karcinomom testisa, dok su u kontrolnu grupu bile uključene zdrave žene (41) i zdravi muškarci (61). Koncentracije Cd i Pb su analizirane elektrotermalnom atomskom apsorpcionom spektrofotometrijom. Značajno više koncentracije Cd, odnosno niže Pb u tumorskom u odnosu na okolno zdravo tkivo utvrđene su kod pacijentkinja sa karcinomom dojke. Pozitivna korelacija je potvrđena između koncentracija Cd u tkivu izmenjene strukture i oba humana gonadotropina, a negativna sa estradiolom, te između Pb u tumorskom tkivu i testosterona. Pacijente sa karcinomom prostate i testisa karakterisale su značajno više koncentracije Cd u krvi u odnosu na zdrave ispitanike, a pokazana je i značajna akumulacija Cd i Pb u tumorskom tkivu prostate i testisa. Značajna pozitivna korelacija utvrđena je između koncentracije Cd i estradiola u krvi kod pacijenata sa karcinomom prostate. Studija je pokazala da su više koncentracije Cd značajan prediktor za nastanak karcinoma i potvrdilanarušenu homeostazu polnih hormona kao važan mehanizam toksičnosti koji se nalazi u osnovi toksičnih efekata Cd i Pb kod obolelih od karcinoma dojke, prostate i testisa.

Literatura

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