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On good radicals and bad antioxidants: A radical shift in understanding the role of free radicals in cellular damage?

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Free (oxygen) radicals produced in increased concentration during cellular damage are generally considered as a cause of such damage. This substantiated theory of free-radical diseases when uncontrolled overproduction of reactive oxygen species (ROS) termed oxidative stress leads to oxidative alteration of integral cellular components and important macromolecules like lipids, proteins and nucleic acids which readily results in cellular damage. Subsequently, cells may undergo death which if occurring in a massive scale is manifested as tissue damage which in turn often leads to organ dysfunction. That is why, substances with anti-oxidative properties were supposed to act as efficient agents towards free-radical diseases. However, a number of large-scale clinical trials have demonstrated that administration of exogenous antioxidants failed to be effective and often led to serious complications e.g., CARET study involving 18,000 smokers and beta-carotene reported significantly higher lung cancer incidence (by ~30%) as well as mortality rate due to lung cancer (by ~20%) in comparison to placebo group. The present paper covers negative findings from several unsuccessful clinical trials and provides a possible explanation of the phenomenon. Undesirable effects of antioxidants are likely due to their unfavorable action onto the fundamental ROS-mediated physiologic processes such as oxidative phosphorylation, removal of defective and cancer cells, intra- and inter-cellular signaling. Concluding use of exogenous antioxidants aiming to treat pathologies involving oxidative damage either in therapeutic or preventive/prophylactic mode has to be thoroughly weighed up.

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Single life time cytological screening in high risk women as an economical and feasible approach for controlling cervical cancer in developing countries like India

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Aims & Objective: In view of funding crunch and inadequate manpower in cytology in developing countries like India, single lifetime screening for cervical cancer has been suggested. In this study, an attempt was made to identify high risk groups of women for this screening to make it more effective for early detection.

Materials & Methods: Cytological data were derived from the ongoing routine cervical cytology screening program for women attending Gynaecology OP Department of Queen Mary's Hospital of KG Medical University, Lucknow, India during a span of 35 years (April 1971-December 2005).

Results: Cervical smears in a total of 38,256 women were cytologically evaluated. The frequencies of squamous intraepithelial lesions of cervix (SIL) and carcinoma cervix were found to be 7.0% and 0.6% respectively in the series. Predisposing factors related to cervical carcinogenesis were analyzed in detail to establish the most vulnerable groups of women for single life time screening. The incidence of SIL and carcinoma cervix was found to be maximal in women above the age of 40 years irrespective of parity and in multiparous women (with three or more children) irrespective of age. The incidence of cervical cytopathologies was significantly higher in symptomatic women, the frequency of SIL being alarmingly higher in women complaining of contact bleeding and that of carcinoma cervix in older women with postmenopausal bleeding.

Conclusion: It is consequently felt that single life time screening must include the three groups of women delineated above. Such selective screening appears to be the most economical, cost effective and feasible approach to control the menace of cervical cancer in developing countries like India.

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