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Metal burden in cancer patients

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The cancer prevalence in the Hyderabad is much higher than the national average cancer prevalence in India. The participants in the present study were 8 healthy individuals and 9 cancer patients all living in and around Hyderabad, with the healthy people being selected from the same household as the cancer patients. High concentrations of several potentially toxic elements were found in hair samples from people living in Hyderabad. Compared to standard reference ranges, the metals in excess in both the control and patient groups were aluminum (Al), barium (Ba), manganese (Mn), strontium (Sr) and uranium (U). The most significant findings were high lead (Pb), U and Ba concentrations. The maximum values for Ba, Mn, Pb and U were found in hair from breast cancer patients. The mean concentration of U in hair from the breast cancer patients was 0.63 $\mu\text{g U/g}$, which is more than double the value found in the control group and over six times higher than the reference range of 0.1 $\mu\text{g U/g}$. Water, soil, and phosphate fertilizers all seem to play a potential role, causing an increased metal burden in these group. The present study indicates that metals, and especially U, may be a factor in the development of breast cancer. The metal burden of multiple toxic metals as found in all groups can be reduced with precautionary measures, including a change in agricultural approaches and detoxification treatments for those already burdened. A reduction in total metal burden, however achieved, can only improve health.

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