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Blood and Tibia Lead Changes during Menopause

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Key words:

Blood lead, tibia lead, lead mobilization, bone turnover, estrogen replacement therapy

Abbreviations:

ERT	Estrogen replacement therapy
XRF	¹⁰⁹ Cd-based K shell X-ray fluorescence
DXA	Dual energy X-ray absorptiometry
FSH	Follicle-stimulating hormone
BMD	Bone mineral densitometry
BMI	Body mass index

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Abstract

Despite the dramatic decline in environmental lead exposure in the United States during the past couple of decades, concern has been expressed regarding mobilization during menopause of existing lead stored in bone. To investigate whether bone lead concentrations decrease and blood lead levels increase, we conducted a prospective study of 91 women who were scheduled to undergo a bilateral oophorectomy for a benign condition at Mount Sinai Hospital in New York City during October 1994 – April 1999. Excluded were women who were under the age of 30 years or who were postmenopausal at the time of the surgery. A small but significant increase in median blood lead levels was observed between the baseline visit and the 6-month visit ($0.4 \mu\text{g/dL}$, $p < 0.0001$), particularly for women who were not on estrogen replacement therapy ($0.7 \mu\text{g/dL}$, $p=0.008$). No significant change was observed between 6 and 18 months post surgery in blood lead values nor was there evidence of significant changes in tibia lead concentrations during the follow-up period. These findings do not point to substantial mobilization of lead from cortical bone during menopause.