Pineal hormone melatonin level in ex-mercury miners

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BACKGROUND: It is known that high Hg accumulation has been found in the pineal gland in retired miners which could modify the synthesis of melatonin (MEL). There are no data available in the scientific literature on the possible effect of Hg on MEL excretion.

OBJECTIVES: The principal objective of the study was to test the hypothesis that long term past occupational exposure to elemental mercury vapour (Hg0) in miners could modify the level of pineal hormone MEL in blood and urine.

METHODS AND SUBJECTS: 120 males were examined in the study. After selection the study population comprised 54 ex-mecury miners and 58 age matched workers from the control group. Environmental and biological data on the group of ex-mercury miners studied were collected from 1959 to 2000 from workload records, daily reports on Hg0 measurements in the workplace and personal medical records and biological monitoring data. Blood and urine MEL was determined by the ELISA method (IBL-Hamburg).

FINDINGS: The mean concentration of B-MEL in ex-mercury miners was significantly higher ($p<0.01$) than in controls. The mean value of U-MEL sulphate in miners was significantly lower ($p<0.01$) than in the control group.
B-MEL positively correlated with years of past miners' exposure to Hg0 ($p<0.01$) and was not associated with miners' age. A significant negative correlation was found between U-MEL sulphate and ex – mercury miners' age which could not be a consequence of lowered MEL synthesis as B-MEL in miners was very high.

CONCLUSION: The increased melatonine secretion could be an adaptive response induced by long-term past occupational exposure to Hg0.

KEYWORDS: *Elemental mercury, Past exposure, Melatonin*

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