

Copper as marker of cancer risk in *BRCA1*(+) women in Poland

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Introduction

Copper is a micronutrient necessary for functioning of the organisms. Copper homeostasis is tightly regulated and is hard to change. The higher copper level are observed in different conditions, including inflammation and cancer. In literature there are 7 studies concerning Cu level and cancer in prospective study, the latest from 2006. Those papers show inconclusive data [1-7].

The study was conducted to determine if blood copper level could be a risk factor in developing cancer.

Material and Methods

In our study, in a cohort of 648 women, *BRCA1* mutation carriers, during the average period of 48 months of observation 85 new cancers of different location were developed.

Copper was quantitatively measured in diluted blood samples by inductively coupled plasma mass spectrometry (ICP-MS) using mass spectrometer (Elan DRC-e, PerkinElmer) in DRC mode.

Results

In the whole studied group statistically significant almost 2-fold increased risk of developing cancer for higher than 865 µg/l of copper concentration in blood was observed (OR=1,72; p=0,0268; 95% CI:1,081 – 2,759). The risk was more than 3-fold increased for above Cu concentration in blood for *BRCA1* mutation carriers in the age under 50 years (OR=3,28; p=0,0002; 95% CI=1,698 – 6,32)

Conclusions

The high copper level is a good marker of increased cancer risk for BRCA(+) women under 50 years of age. Further investigations are needed if decreasing blood copper level will be beneficial for those women.

References:

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