

Arsenic as a marker of cancer risk

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Introduction

Trace amounts of arsenic are considered as necessary for normal development of organism. Animals study shows inverse correlation between arsenic and toxic effects. Exclusion of this element from food causes in animals among others depressed growth and abnormal reproduction [1,2]. Arsenic is generally considered as a cancer risk factor (kidney [3], bladder [4], skin [5] and lung cancer [4]).

Methods

Four prospective group were analyzed. The cohort of women BRCA1 carriers consists of almost 601 initially unaffected with 42 cases developed during the 4 years of follow-up. The cohort of women BRCA1 non-carriers consists of almost 1698 initially unaffected with 110 cases developed during 5 years of follow-up. The men cohort consists of almost 1467 initially unaffected with 103 cases developed the 2 years of follow-up.

Blood arsenic level was measured by ICP-MS Elan DRC-e (PerkinElmer).

Results

Low arsenic blood level (AB) in prospective cohort of women *BRCA1* carriers and women *BRCA1* non-carriers decrease risk of cancer respectively 4 (AB < 0.65 µg/L, p=0.004, OR=4.10, 95%CI: 1.1-19.15) and over 29 (AB < 0.59 µg/L, p=0.0001; OR=29.50, 95%CI: 4.10-212.00) times.

The results of men prospective cohort are unexpected. Among men with arsenic blood level exceeding 1.40 µg/L, risk of cancer is decreased more than 5 times (p=0.0482, OR=5.768, 95%CI: 0.7821-42.539).

Conclusions

Results from this study suggests that arsenic blood level can be the strongest diet marker of cancer risk among women and men in Poland. Diet modifications changing blood arsenic level may be effective way of cancer prevention.

References

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