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Poster présenté à

Association de la Recherche contre les Tumeurs de la Prostate ARTP 2014, 19 November, Paris Palais des Congrès

Results

Most important, as Cadmium half-life is as long as 30 years (*Leblanc JC, 2006*), it is not eliminated spontaneously and accumulates in the prostate with time, which corresponds to an increased PK risk with age. Cadmium vapours, even in the solid state, penetrate insidiously, are odorless and tasteless. Molluscs (mussels, oysters), crustaceans organism. Tobacco contains Cadmium, [but also dioxine TCDD (→ Ha-Ras mutations), nitrosamines (→ Ki-Ras mutations)]. The Hazard Ratio for PK specific mortality is 1.82 if the patient smokes (*Kenfield SA, 2011*)

. Occupational studies show a correlation with the professional work in contact with Cadmium (*Kjellstrom T, 1979*, in Sweden).

C-Myc oncogen

Cadmium increases the oncogene c-Myc in renal (*Tang N, 1991*) and RWPE-1 prostatic cells (*Achanzar WE, 2000*).

C-Myc stimulates telomerase promoter (high levels in PK). C-Myc up-regulates the **androgen receptor** messenger RNA (*Grad J, 1999*)

. Myc confers androgen-independent prostate cancer cell growth (*Bernard D, 2003; Kokontis J, 1994*)

. C-myc transgenic mice develop prostatic intra-epithelial neoplasia (*Zhang X, 2000*)

Loss Of Heterozygosity (LOH) of Bin-1 (**B**ridging **i**ntegrator 1) located at chromosome 2q14, an

Written by TRAN Guy Mong Ky
Saturday, 13 June 2015 21:10 - Last Updated Saturday, 13 June 2015 21:11

anti-Myc tumor suppressor is found in 42% of KP, in metastatic tumors and androgen-independent tumor cell lines (Ge K, 2000; Sakamuro D, 1996; Schmidt EV).

Subjects with Bin-1 LOH are likely to be more vulnerable to Cadmium oncogenicity.

Conclusion

Cadmium is a risk factor in a PK subgroup; 3 high-quality studies of toenail selenium and PK risk indicated a reduction in PK risk (Relative Risk = 0.29) with a toenail selenium concentration 0.85-0.94 µg/g (Hurst R, 2012).

TheUS Selenium and Vitamin E Cancer Prevention Trial (SELECT) showed that a long term supranutritional supplemental dose of selenomethionine (200 µg/d) in a selenium-replete population did not significantly reduce the risk of developing prostate cancer. However no data on the cadmium level were presented (Lippman SM, 2009).

ALA, thiocctic acid) are Cadmium chelators (El-Maraghy SA,2011). Some soils are rich in Cadmium: in the surrounding area of discharges, gold mines (Orbiel valley, where snails have a Cadmium level 30 times the normal value), dams funds (Sauviat); professionally, workers at risk are those of Cadmium-Nickel battery (Sahmoun AE, 2005), anti-corrosion coating, plastic paints, luminescent materials, metalworking (INRS toxicological card, 1992)

A systematic study of toenail Cadmium levels by graphite-furnace atomic absorption spectrometer is advocated in PK. For this subgroup, Cadmium chelation by Selenium (+ vitamine E) and ALA is logical. Heavy metal detoxification by parsley, coriander, garlic (allium ursinum) may be useful (Willem JP, 2014).

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