

# PESTICIDES EXPOSURE AND THE RISK OF CHILDHOOD ACUTE LEUKEMIA

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**Background and Aims:** Acute leukemia (AL) is one of the most common malignant tumors among children below the age of 15, and pesticide has been hypothesized as one of the risk factors for AL. In this study, the association between pesticide exposure and the risk of childhood AL is evaluated.

**Methods:** A total of 248 patients with newly diagnosed AL were recruited from four pediatric hospitals in Shanghai between January 1, 2006 and December 31, 2010, and 111 controls were matched with the cases based on gender and age. Pesticide exposure was determined by questionnaire and by measuring of organophosphate pesticide (OP) metabolites including Diethyl phosphrate (DEP), Dimethyl phosphrate (DMP), Dimethyl thiophosphrate (DMTP), Diethyl thiophosphrate (DETP) and Diethyl dithiophosphrate (DEDTP) in the subjects' urine using gas chromatography with a flame photometric detector.

**Results:** Total environmental chemical exposure of children [odds ratio (OR)= 9.320, 95% confidence interval (CI):2.842-30.568], maternal chemical exposure during pre-gestation and pregnancy (OR=3.333; 95%CI:1.524-7.289), household use of pesticides (OR=1.786; 95%CI:1.128-2.830), and household use of mosquito insecticides (OR=2.225; 95%CI:1.304-3.796) increased the risk of childhood AL. Median concentrations of organophosphate metabolites (DEP, DMP, DMTP, DETP and DEDTP) in the cases (5.7296, 9.6673, 14.0634, 4.3642, 3.8472 $\mu$ g/gCr respectively) were significantly higher than those in the controls (1.6901, 1.6828, 0.8451, 0.7221, 0.7221 $\mu$ g/gCr respectively) ( $P<0.05$ ).

**Conclusions:** This study found that chemical exposure and household use of pesticides, especially mosquito insecticides, might be associated with childhood AL, based on higher urine OPs levels in children with AL compared with those in the controls. Our findings add some evidence to the hypothesis that pesticides might be a risk factor for childhood AL. This association of AL risk with pesticide exposure merits further studies to confirm the association.

## References:

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