MATERNAL EXPOSURE TO ORGANOPHOSPHATE PESTICIDES, PON1 POLYMORPHISMS AND MISCARRIAGE

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Background and Aims: Although there is evidence from animal studies of impaired reproductive function by exposure to OP, the effects on spontaneous abortion have not been sufficiently evaluated in epidemiological studies. Paraoxonase (PON1) detoxifies organophosphates by cleavage of active oxons. Some *PON1* gene polymorphisms could reduce the enzyme activity and increase susceptibility to OP toxicity. The aim of this study was to asses the association between occupational exposure of women to organophosphate pesticides (OP) and miscarriage, and to evaluate the association of PON1 polymorphisms of mothers ($PON1_{55}$, $PON1_{192}$ and $PON1_{-108}$) on miscarriage.
Methods: A cross-sectional study was conducted in a population of women resident in communities highly exposed to OP. A total of 313 women, floriculture workers or spouses/couple of floriculture workers, were selected. They all had at least one pregnancy during last 10 years. We obtained information for 534 pregnancies. The $PON1_{55}$ and $PON1_{192}$ genetic variants were obtained by PCR-RFLP, while the $PON1_{-108}$ polymorphism was analyzed by RT-PCR.
Results: we do not found a significant association between occupational exposure to pesticides and miscarriage. Concerning PON1 polymorphisms, the risk of miscarriage was twice higher in mothers carrying the PON1 192RR genotype compared 192QQ genotypes (OR=2.2; 95% CI 0.93, 5.36). The $PON1_{55}$ M allele shown a higher risk of miscarriage compared with mothers carrying the $PON1_{55}$ LL genotype (OR=4,8; IC95% 1,6–14,2).
Conclusions: These results suggest that women carrying genotypes $PON1_{192}$ RR, $PON1_{55}$ MM and $PON1_{55}$ ML which are exposed to OP have higher risk of miscarriage.