**GRAND MATERNAL SMOKING IN PREGNANCY AND GRANDCHILD´S AUTISTIC TRAITS AND DIAGNOSIS AUTISM**

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Over the last decade a significant and relevant prevalence increasing for autism spectrum disorders (ASD) has been documented. On the assumption that genetic and/or environmental factors may be related with the etiology of this disorders, the present study try to associate the smoking exposure during grandmother´s pregnancy with the risk of autism in her offspring.

The data collected for the study were part of the Avon Longitudinal Study of Parents and Children (ALSPAC) which was designed to assess the ways in which the environment interacts with the genotype to influence health and development. The authors determined four traits with a high predictive value to identify children with autism (social communication score; speech coherence score; sociability temperament scale; repetitive behavior score). They subsequently analyzed the connection between extreme levels in any of these values and the potential linkage to their grandmother´s exposure to tobacco during pregnancy.

The results showed that the score on repetitive behavior and social communication trait were significantly higher increased if the maternal grandmother smoked during pregnancy, especially if the mother didn´t herself smoke. Adjustment these results for ethnic, educational level and social group of maternal grandfather and ages of the grandparents resulted in an increase in the odds ratio for these traits: repetitive behavior AOR 1.27 [1.08-1.50]; social communication AOR 1.25 [1.13-1.94]. Even more; they detected that this relationship varies with the sex of the child, being grand-daughters much more affected than grandsons.

For the 170 children autism diagnosed no significant association with maternal grandmother´s smoking was finding. However, after adjustment for biological and social confounding factors the odds ratio increased to 1.41 [1.01-1.97], being significant. Also, in this case, the association was strongly higher in the group where the mother herself didn´t smoke (OR 1.53 [1.06-2.20]).

Paternal grandmothers smoking in pregnancy showed no associations with any of the four principal traits, neither with autism.

The authors propose two plausible etiology mechanisms for the observed associations: transmission of damage to mitochondrial DNA or epigenetic inheritance from one generation to the next.