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Short Communication

Autism Spectrum Disorder Linked to Pesticide Residues in the Diet

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DESCRIPTION

Pesticides can affect hormones involved in neurodevelopment and can pass the placenta. There is still a need to investigate the effects of these chemicals due to their long half-lives of up to 10 years in lipids and bioaccumulation in the environment and food chain, despite the fact that certain classes of pesticides, including Organochlorine (OC) pesticides, have been banned or restricted in Western countries. Although newer replacement types of pesticides, like pyrethroids and Organophosphate (OP) insecticides, lack these lipophilic characteristics, their widespread use makes them pertinent to considerations about public health [1]. Recent biomonitoring studies show that both the general public and pregnant women are exposed to detectable quantities of both newer and older types of pesticides.

There is evidence linking prenatal pesticide exposure to developmental and cognitive delays in children, and new research suggests that pesticide exposure may also be linked to Autism Spectrum Disorder (ASD) [2]. ASD is a complicated neurodevelopmental syndrome marked by early-onset difficulties and deficiencies in social communication. Numerous pieces of evidence point to a genetic and environmental factors to the etiology of ASD, with the prenatal stage as a susceptibility period.

Only a small number of research have directly examined the link between prenatal pesticide exposure and ASD related outcomes. Early research looked at home exposure to agricultural pesticide exposure and found a higher incidence of ASD with exposure to specific OC and OP pesticides [3]. While the largest study to date utilizing this exposure metric identified relationships with many individual non-persistent pesticides and near proximity to agricultural applications, two more recent studies looking at close proximity to agricultural applications have found no association with ASD. Although there have also been reports of null results, a few studies that used measured prenatal levels to establish exposure have revealed evidence for links between higher exposure to specific OC, OP, and pyrethroid pesticides and increased risk for ASD and ASD related traits. Although pesticides are known to co-occur, limited research has examined the combined impacts of pesticides in relation to ASD and/or child neurodevelopment. The main way that the average person is exposed to the main kinds of pesticides is through their diet, especially how much fruit and vegetables they consume [4]. Fruits and vegetables are the foods with the greatest percentage of identified pesticide levels among all those examined annually, according to the US Pesticide Monitoring Program. Although in less amounts compared to conventional produce, pesticide residues have been found in organic foods as well.

CONCLUSION

In addition to being the main way that most people are exposed to pesticides, diet is also a good source of micronutrients, which may help lower the risk of negative effects or interact with pesticide exposure. To fully understand how nutrition and pesticides affect ASD and related consequences, more research is required. In this high-familial probability cohort, we did not discover any correlations between dietary pesticide residue scores and the likelihood of ASD related features. Instead, we discovered an adverse relationship between features related to Autism Spectrum Disorder (ASD) and vegetable intake, or potentially important nutrients in vegetables, or correlates of a diet with high vegetable intake. Future research should build on the combined impact of prenatal pesticide exposure on ASD related outcomes.

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