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Growing evidence related to the association between endocrine disruptor chemicals and stillbirth

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According to the definition of the United Nations Environment Programme and of the World Health Organization, the endocrine disruptor chemicals (EDCs) are foreign substances that alter the homeostasis of the endocrine system, causing adverse effects in a previously (up to the time of the exposure) healthy organism[1]. They can influence the endocrine system, acting as hormonal molecules[2]. They are bio-persistent because of their degradation resistance in the environment and they can be found in pesticides, metals, additives or contaminants of food, deep and superficial waters, and personal care products[3]. Today, the role of EDCs in many human diseases is under investigation and particular attention has been focused on maternal, fetal, and childhood exposure[4-6]. In this regard, we have investigated, by gas chromatography-mass spectrometry (GC-MS), the concentration of EDCs in 51 cortex specimens obtained from 43 cases of sudden intrauterine unexplained death syndrome (SIUDS) and 8 cases of sudden infant death syndrome (SIDS), occurred in the Northeast Italy, a region notoriously devoted to fruit cultivation[7]. More in detail, 25 EDCs have been subjected to GC-MS, following the standard protocols. Among the analyzed substances, five organochlorine pesticides, that is α-chlordane, γ-chlordane, heptachlor, dichlorodiphenyldichloroethylene, dichlorodiphenyltrichloroethane, and the two most sold organophosphorus pesticides (OPPs), chlorpyrifos and chlorfenvinfos, have been detected at part-per-billion (ppb) levels in 15 cases with SIUDS and 3 cases with SIDS. Therefore, environmental EDCs are able to cross the placental barrier, and enter into fetal and neonatal brains[8]. Here, they can induce developmental alterations, especially in the basal nuclei, the major controllers of the vital functions, and impairment of the receptorial expression of orexin[9]. These findings imply a conceptual redefinition of the fetal-placental and fetal blood-brain barriers (not insuperable barriers, but rather layers for delayed absorption), and open the way for a possible EDC involvement in stillbirth, too.

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