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Adverse outcomes of in utero exposure to antiepileptic drugs: The role of altered function of placental transporters

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Antiepileptic drugs (AEDs) taken during pregnancy are among the most common causes of potential harm to the fetus. Exposure to older generation AEDs during pregnancy may lead to adverse effects such as intrauterine growth retardation, major congenital malformations and impaired postnatal cognitive development. Since AED treatment generally cannot be withdrawn even when pregnancy is planned, there is an urgent need to understand how in utero exposure to these drugs results in developmental toxicities. Up to date, most mechanistic studies on AED teratogenicity have investigated their direct activity on the fetus for producing harm or their impact on the levels of hormones and nutrients in maternal plasma. In contrast, our research focuses on the interface between mother and fetus, namely the placenta. We investigate AED-mediated regulation of major transplacental transfer mechanisms for compounds known to affect fetal structural and cognitive development. These include nutrients, hormones and medications. Better understanding the impact of AEDs on placental transport mechanisms will hopefully help in guiding optimal pharmacotherapy and monitoring in pregnant women.

Biography

Sara Eyal is a graduate of the Hebrew University's School of Pharmacy. Her post-doctoral fellowship took place at University of Washington. Her current research focuses on barriers to drug distribution, e.g. the blood-brain barrier and the placenta, and on individualization of pharmacotherapy with CNS drugs. She also serves as the Head of Research of the Hebrew University Pharm.D. Program.

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