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Is post exposure prevention of teratogenic damage possible: Studies on diabetes, valproic acid, alcohol and anti folates in pregnancy: Animal studies with reflection to human

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Highlights

- This review discusses the possibility to prevent the teratogenic effects of valproic acid, diabetes and alcohol following prenatal exposure, especially in animals.
- VPA- induced anomalies, mainly NTD, can be prevented by folic acid and the ASD like symptoms can be ameliorated by antioxidants and by the methyl donor S-adenosine methionine. Diabetes-induced embryopathy can be prevented by antioxidants and dietary means, and prenatal alcohol –induced damage can be prevented by antioxidants, folic acid and dietary supplements.
- In spite of successful animal studies, human data is scanty or non-existing; it seems that the time has come for appropriate human studies.

Abstract

We discuss the possibilities to prevent the post-exposure teratogenic effects of several teratogens: valproic acid (VPA), diabetes and alcohol. Co-administration of folic acid with VPA reduced the rate of Neural Tube Defects (NTD) and other anomalies in rodents, but apparently not in pregnant women. Antioxidants or the methyl donor S-adenosyl methionine prevented Autism Spectrum Disorder (ASD) like behavior in mice and rats. In vivo and in vitro studies demonstrated that antioxidants, arachidonic acid, myoinositol and nutritional agents may prevent diabetes-embryopathy. Prevention of alcohol–induced embryonic and fetal injuries and neurodevelopmental deficits was achieved by supplementation of zinc, choline, vasoactive intestinal proteins (VIP related peptides), antioxidants and folic acid. While the animal research described in this review is indicative of possible preventions of the different