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PRENATAL ALCOHOLIZATION OF HUMAN EMBRYOS AND FETUSES ALTERS STRUCTURE OF SYNAPSES AND PROPERTIES OF BENZODIAZEPINE RECEPTORS IN THEIR BRAIN

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Background: Influence of prenatal alcoholization on development of embryo's human brain and process of synaptogenesis and neurotransmission has been studied inadequately. It has been noticed that acute impact of the alcohol reinforces GABAergic transmission and chronic alcoholization increases selectivity of reverse agonists of benzodiazepine receptor (BDR), that indicates presence of relationship between action of ethanol and functioning of GABA-benzodiazepine receptor complex.
Materials: Objective of present investigation appeared to be a study of dynamic of formation and development of synaptic contacts and benzodiazepine receptors of synapses of the embryonic brain at weeks 7-15 of development obtained from healthy women and alcoholic ones.
Results: Investigations with electronic microscope in cells of embryonic brain obtained from women with alcohol addiction have shown slower formation of synaptic structures as compared with the norm. In addition, we revealed increasing of synaptic contacts number during brain development and alteration of properties of benzodiazepine receptors of synaptosomal membranes during embryo development stage that is expressed in decrease of affinity of receptors (decrease of affinity [^{3}H]flunitrazepam binding) and increase of their density with radioreceptors assay. In cells of the embryo brain obtained from women suffering from alcoholism slowing of formation of synaptic structures as compared with norm and transformation of properties of synaptosomal BDR has been found out, what may be a cause of alteration of neuromediator transmission.
Conclusions: Provided data indicate presence of relationship between action of ethanol on formation of synaptic structures and functioning of benzodiazepine receptor in human embryo and fetus brain.

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