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Certain Central Nervous System Stimulants and Birth Defects

My charge, as I understand it, is to speak to the possible role that amphetamines and related drugs may play in the production of birth defects, if there is exposure at a vulnerable period of embryonic or fetal development, and if there are both a genetic predisposition to react adversely to these drugs and a genetic predisposition to some form of maldevelopment. All of the qualifications of the previous sentence must be applied to amphetamines and to most potential teratogens. Fortunately there are few agents in our environment that possess the disastrous teratogenic potential of thalidomide or rubella virus. And, conversely, under the right combination of genetic predisposition and exposure at a vulnerable period of development, one could project that almost any agent that has pharmacologic activity could be teratogenic. Between these extremes, I believe there exists a number of agents causing birth defects in enough susceptible individuals to constitute a significant health hazard. It is in this latter category that I believe dextroamphetamine may belong.

Some of my co-workers and I have devoted a not inconsequential portion of our research activity to investigating such teratogens, which are difficult to identify in the epidemiologic sense. To give an example: Thalidomide causes malformations, including a rare sentinel anomaly, phocomelia, in 50-80% of infants who have had a maternal exposure during the vulnerable period of embryogenesis. With these factors in favor of