CHILDHOOD HEALTH AND DEVELOPMENT IN RELATION TO PERSISTENT ORGANOCHLORINE COMPOOUNDS

DDE IS ASSOCIATED WITH INCREASED RISK OF PRETERM DELIVERY AND SMALL-FOR-GESTATIONAL-AGE BIRTHWEIGHT IN HUMANS

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Introduction

Use of DDT for control of malaria continues throughout the topics[1]. DDT is used with the belief that human toxicity is minimal[1]. The DDT metabolite, DDE, is detectable in the serum of nearly all humans, even in countries where use has been banned for over 25 years[2].

Early studies of the reproductive toxicity of DDT/E in animals[3,4], and humans[5,6] were suggestive of adverse effects but were far from definitive.

As part of a larger study of the health effects of *in utero* exposure to organochlorines, we were able to examine the association of DDE serum levels with selected reproductive and developmental outcomes in humans.

Methods

The Collaborative Perinatal Project (CPP) was a joint effort of scientists at NIH and 12 U.S. academic centers done to investigate the cause of neurologic disorders and other diseases in children. Over 56,000 pregnant women were enrolled from 1959-1966, and their children were systematically followed to age 7. Sera were collected from the mothers and stored in glass containers at -20 °C, with no recorded thaws. Organochlorine levels were recently measured in sera from 2,800 CPP mothers at the Centers for Disease Control. Samples were selected either from subjects selected at random (n=1,200), or from subjects with outcomes of interest; e.g., those who had male birth defects or low IQ. The median level of DDE was about four times greater than in recently collected specimens.

Results and Discussion

In these data serum levels of DDE, an androgen-receptor blocker, were not related to occurrence of male birth defects (cryptorchidism, hypospadias, or supernumerary nipples). DDE levels were, however, associated with increased risk of premature delivery, of small-for-gestational-age size at birth, and with reduced height at age 7.

One potential mechanism by which DDE may adversely effect pregnancy, both during gestation and at the time of delivery, is via inhibition of prostaglandin production[7]. Decreased levels of prostaglandins have been associated with preterm delivery in humans[8].

Our findings, if confirmed, may impact decision making about DDT use for malaria control and international negotiations regarding elimination of persistent organic pollutants.

References

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