CHRONIC EXPOSURE TO 2,3,7,8-TETRACHLORODIBENZO-*P*-DIOXIN MODULATES THE GROWTH OF ENDOMETRIOSIS IN THE CYNOMOLGUS MONKEY

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Objectives

The objective of this study was to examine the effects of chronic exposure to 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (TCDD) on the growth and development of endometriosis in monkeys.

Introduction

Endometriosis is a common gynaecologic disorder that is associated with distressing and debilitating symptoms. It's etiology and pathophysiologic mechanisms are largely unknown. Recently, this disorder was linked to TCDD and PCB exposure in animal models.

Material and Methods

Endometriosis was surgically induced in cynomolgus monkeys (Macaca fascicularis, n = 23) on day 12 to 14 of the menstrual cycle. Strips of endometrium (4 x 4 mm^2) were collected by hysterotomy and auto-grafted at five sites of the peritoneal cavity, i.e., the uterine fundus, the left and right ovary, left, and right broad ligaments. The animals received continuous exposure to TCDD of 0, 1, 5 or 25 ppt beginning at one month after surgery. The development of endometriotic lesions was monitored by laparoscopy performed at 1, 3, 6 and 12 months following induction of endometriosis.

Results and Discussion

Exposure to 5 and 25 ppt TCDD for 1 year produced a significantly higher survival of endometriotic lesions (26.7% and 33.3% respectively vs 16.0% in controls). Moreover, the diameters of the endometriotic lesions in the 25 ppt group were greater compared to controls (14.5 ± 3.2 vs 11.4 ± 1.6 mm). In contrast, exposure to 1 ppt TCDD induced significantly smaller lesions (4.2 ± 0.9 vs 11.4 ± 1.6) but did not affect the survival of lesions (20 vs 16%) compared to controls.

It is concluded that TCDD exerts a biphasic effects on the growth and development of endometriosis. At dose levels representative of occupational or accidental exposure (5 and 25 ppt), survival and growth of endometriosis were facilitated, whereas at low dose levels TCDD inhibited the growth of endometriotic lesions.

Acknowledgments

Authors wish to express their sincere thanks to Dr. Jocelyn Fournier for his surgical assistance.

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