Endocrine Disrupters and Testicular Dysgenesis Syndrome

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Key Words

Endocrine disrupters · Testicular dysgenesis syndrome · Environment · Hormone-dependent cancers

Abstract

Over the last couple of generations, we have been exposed to an increasing number of endocrine disrupters in our environment, including dichlorodiphenyltrichloroethane (DDT), PCB, certain pesticides, the phthalate DBP, synthetic steroids in meat and many other agents (table 1), which act as agonists or antagonists of sex steroids. Although biologists working with wildlife have been concerned about the possible effects of these chemical agents on animal reproduction, it appears that clinicians have been less concerned about possible health effects in humans. However, the increasing incidence of hormone-dependent cancers, including cancer of the breast, prostate and testis, and signs of an increasing incidence of male reproductive health problems should alert us to the possible association between exposure to endocrine disrupters and the current high frequency of reproductive problems. In Denmark, for example, 5% of all children are now born after assisted reproduction (intracytoplasmic sperm injection, in vitro fertilization, donor insemination and intrauterine insemination) and 1% of all (mostly young) men develop testicular cancer. Evidence exists to support the concept that hypospadias, undescended testis, poor semen quality

Table 1. Endocrine disrupters

Ubiquitous chemicals

Oestrogenic, e.g.

Bisphenol A

Dichlorodiphenyltrichloroethane (DDT)

PCBs

Nonylphenol

Phyto-oestrogens

Ultraviolet screens

Anti-androgenic, e.g.

DDE

Di-butyl-phthalate

Vinclozolin (a fungicide)

Meat hormones

Oestrogens (oestradiol, zeranol)

Androgens (testosterone, trenbolone acetate)

Gestagens (progesterone, melengestrol acetate)

and testicular cancer are symptoms of an underlying testicular dysgenesis syndrome, which may be becoming increasingly common due to adverse environmental effects. Experimental and epidemiological evidence suggests that testicular dysgenesis syndrome is a result of disruption of foetal programming and gonadal development during foetal life. Copyright © 2002 S. Karger AG, Basel

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