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The project "*Exposure-outcome relationships in male urogenital malformations with special reference to endocrine disrupters*" is funded under EU Framework V programme. It is part of the Quality of Life and Management of Living Resources, Key Action 4: Environment and Health.

Further information can be obtained from the Coordinator.

Exposure-outcome relationships in male
urogenital malformations
with special reference to endocrine disrupters

EXPORED
2002 - 2005

A project funded by the European Union under the Quality
of Life and Management of Living Resources Programme,
Key Action 4: QLK4-CT-2001-00269

Endocrine disrupting chemicals

There is growing evidence that man-made chemicals in the environment can disturb the hormone system in humans. Most of our knowledge about this phenomenon comes from observations in wildlife and experiments with animals or laboratory tests. However, little is known about the possible effects of endocrine disrupting chemicals (EDCs) in humans.

Hormone disrupting effects in humans?

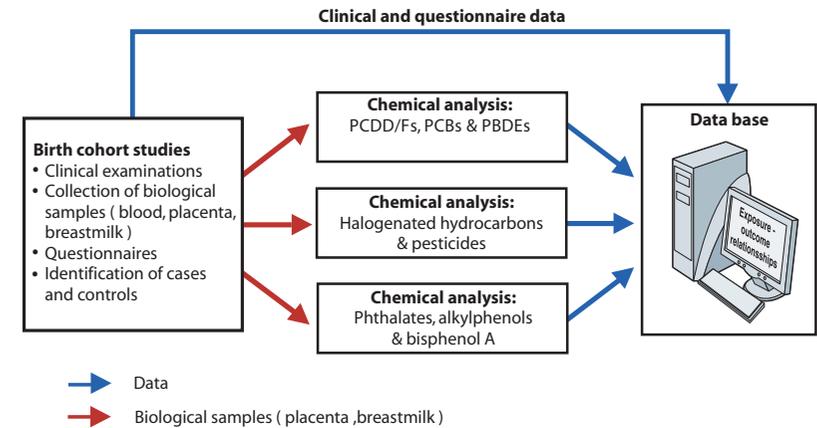
There are some worrying trends in the health of both men and women. Incidences of testicular, breast and prostate cancer are increasing in industrialised countries. These cancers are all known to be influenced by hormones. A deterioration in sperm quality observed in most industrialised countries has likewise raised concern. In addition, certain congenital abnormalities in newborn boys also appear to have increased in frequency, i.e. hypospadias (wrong position of the opening of the urethra) and cryptorchidism (testicles that have not descended into the scrotum). These malformations can be provoked by EDCs in animal studies, and similar effects observed in wildlife have been linked to accidental exposure to EDCs. However, there is as yet no proven direct link between these reproductive health problems and exposure to EDCs – mainly due to the lack of data on the extent of human exposure and exposure-outcome relationship.

Is there a link between reproductive abnormalities in humans and exposure to EDCs?

This is the question that the EXPORED project aims at answering. The project is based on earlier cohort studies in Denmark and Finland, two countries with different frequencies of cryptorchidism and hypospadias (EU project QLK4-1999-01422). Boys with at least one of these above-mentioned malformations have been diagnosed at birth and followed up to 18 months together with matched controls. Biological samples, such as placenta and breast milk, have during these studies been collected systematically for exposure assessment. The hormone status of the children has been examined and a large database has been created on the basis of questionnaires. The objective is to combine information from these sources to assess the role of exposure to endocrine disrupters for the risk of developing genital malformations.

Experimental approach

The fetal exposure to EDCs in boys with congenital urogenital malformations and their controls will be assessed by chemical analysis of placenta tissue and breast milk for dioxins, polychlorinated biphenyls, polybrominated diphenyl ethers, halogenated hydrocarbons, selected pesticides, phthalates, alkylphenols, and bisphenol A.



Expected achievements and answers

Based on data from this large study cohort of boys with congenital urogenital malformations and their controls the consortium will provide information on:

- Regional variation in the exposures comparing countries with a high and a low incidence of urogenital malformations
- Answers on exposure - outcome relationships
- Relationship of exposure to occupation, diet, life style, medical and pregnancy history information collected earlier with questionnaires to mothers
- Relationship of exposures to endocrine information (hormone profiles) analysed in the infants earlier
- Dioxin risk analysis

Finally, the project will provide an important addition to the centralised European database on male reproductive health that allows analysis of the possible causes for regional and temporal differences in reproductive health