

# Miscarriages in families with a child with classic congenital adrenal hyperplasia and 21-hydroxylase deficiency (CAH)

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## Background (1)

- Miscarriage is the most common complication of early pregnancy.
- Among women with known pregnancy, the miscarriage rate is about 10 % to 20 %.
- Increased risk for miscarriage: age of the parents, lifestyle factors, medical conditions such as infections, fetal and maternal diseases.

## Aim of the study

To examine the risk of miscarriages in families with an offspring with classic CAH when both parents are heterozygous gene carriers.

## Background (2)

- In women with classic CAH, the fertility rate is lower than in the general female population, and an increased rate of miscarriages of 36 % has been reported in Germany.
- The miscarriage rate in women with nonclassic CAH is somewhat lower than in women with classic CAH. The rates vary between 19 % in France and 20.3 % in Israel, where this rate was significantly higher than the 10.9 % rate in the general population.
- There are no data on the incidence rate of miscarriages in families with an offspring with classic CAH.

## Methods

- We studied 50 families with an offspring with **classic** CAH.
- The families came from different parts of Germany and attended the annual meeting of the German CAH support group for parents and patients which was held in Hamburg in September 2014.
- Consent was obtained from all families.
- The data was collected anonymously by a questionnaire in accordance with the Declaration of Helsinki.
- The questionnaire was completed by the families at home and sent to Erlangen, where the data was analyzed.
- We had no data on the ages of the affected children and the individual CYP21A2 mutations.

### Definition of miscarriage

Spontaneous abortion after known pregnancy by the mother

- Miscarriage rates were calculated in relation to the number of clinically recognized pregnancies in families and compared to expected values in general population.
- Statistical analysis was performed using SPSS.
- One-way ANOVA was used to compare miscarriage rates among the parents, sibs of heterozygous females, and sibs of heterozygous males.
- The study was approved by the local ethics committee of the Pediatric Dept. of Erlangen.

## Results

**50 CAH families:** n = 117 children

- Children with CAH: n = 67 (39 girls, 28 boys).
- 37 families: n = 1. 12 families: n = 2. 1 family: n = 6.
- Ages of parents : mothers 22 – 55 yrs., fathers 25- 60 yrs.
- Genotype: known, but parents could not describe the mutations.

**19 families: 22 miscarriages;** 31 families: no miscarriage.

- 16 families: n = 1. 3 families: n = 2.
- **Miscarriage rate: 15.8 %**

**164 parental siblings**

- Ages: males 18 - 63, females 28 – 65 years
- Genotype: not defined in 82 % of the maternal siblings, and in 86 % of the paternal siblings.

Mothers: 90 siblings (41 brothers, 49 sisters)

Fathers: 74 siblings (33 brothers, 41 sisters)

**Miscarriage rate in siblings with children:**

- families of the mothers` siblings: **10.1 %**
- families of the fathers` siblings: **11.4 %**

## Conclusions

The average miscarriage rate of 15.8 % in families with a classic CAH child was not different from the rate found in a general population.

The miscarriage rates in the siblings` families were lower, but the differences were statistically not significant.

## Limitations

- Population: selective group of affected families.
- Data: obtained by a questionnaire.
- The figure of miscarriages might not be representative.