# MiR-1240 a biomarker for abnormal CNS development in the neonatal period

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Arrow project presentation

### **Case presentation**

Mrs. B.E 32 y G1P0, 32 weeks of gestation came for fetal weight evaluation. Previous prenatal screening all within the normal range.

US; unable to demonstrate the posterior part of the brain

MRI; finding consistent with Dandy-Walker malformation.

The couple decided to terminate the pregnancy at 37 weeks of gestation.

## **Prenatal CNS evaluation**

- Screening by routine US Examination at 18-20 weeks
- Confirmation using MRI

Early diagnosis is important to make decisions regarding the pregnancy

MiR-124a is known to be involved in brain development



### Our research

<u>Hypothesis</u>: MiR-124a levels in amniotic fluid or maternal blood will be different in fetuses with brain anomalies compared to healthy fetuses

#### <u>Our goal</u>:

To find a correlation between the expression of miR124a levels in amniotic fluid of fetuses with CNS anomalies compared to healthy fetuses

## Methods

Study design- An observational case-control study

Setting- SHEBA medical center, gynecological department Samples of amniotic fluid and maternal blood where collected since May 2018.

### Participants-

All women with singleton pregnancy that perform an amniocentesis at SHEBA medical center are invited to participate

#### Variables-

1. Quantification of miR-124a from the samples is done using QRT-PCR.

 Medical data (chameleon)of the participants, including: BMI, age, medical history, gestational histories, prenatal tests, labor data and neonatal examinations.

### Method- cont.

Sample size calculation-Significance level- 5% Power- 80%

To achieve a large effect size D of 0.8

N= 52

X<sup>2</sup>/test or Fisher's Exact Test is used to compare between maternal characteristics

T test or Mann Whithney test is used to compare miR-124a levels ROC curve is used to test the discrimination capacity

Standardization of multiple variables will be done using logistic regression

Due to the limited number of variables that can be included in the regression, we will calculate the propensity score as the probability of a woman to have a fetus with a malformation, then the variable will be used to standardize the data

### **Example of QRT-PCR result**



### Preliminary results

#### **Relative miRNA-124a expression in Amniotic Fluid samples**



Expression levels of miR-124a are significantly (p<0.01) higher in the AF samples obtained from women carrying a healthy fetus compare to control. Health samples n=14, and for the malformation n=8

