Screening for 22q11.2 Deletion Syndrome With a pcfDNA Assay that Incorporates Fetal Fraction Amplification: Prenatal Ultrasound Findings and Pregnancy Outcomes

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Introduction

- Detection of pregnancies at risk for 22q11.2 deletion syndrome (22q11.2DS) by prenatal cell-free DNA (pcfDNA) enables parental education, pregnancy management and early intervention in affected newborns.
- We previously reported on a whole genome sequencing (WGS)-based pcfDNA assay that incorporates fetal fraction amplification (FFA). Among 22 patients who screened positive for 22q11.2 microdeletion and had diagnostic testing results available, all 22 were confirmed as positive (100%; 95% confidence interval: 84.6%–100%).

Objective

- Here, we report on ultrasound findings and pregnancy outcomes among patients with suspected 22q11.2DS identified by this pcfDNA assay.

Methods

- We retrospectively analyzed pregnancy outcome data from patients who underwent WGS-based pcfDNA screening with FFA (Prequel™, Myriad Genetics, Inc.) between August 2020–March 2023 and tested positive for 22q11.2DS.
- Pregnancy outcome data were requested via routine HIPAA-compliant process for continuous quality improvement.

Conclusions

- A high-PPV pcfDNA-based 22q11.2DS screening assay identified patients for whom ultrasound results were consistent with 22q11.2DS.
- Screening for 22q11.2DS using pcfDNA can assist in identifying pregnancies that are more likely to have abnormal ultrasound findings and birth outcomes.

Results

- Ultrasound results were obtained for 69.7% (53/76) of identified high-risk 22q11.2DS pregnancies (Figure 1).
- Findings consistent with those established for 22q11.2DS were present among 73.6% (39/53) of these patients, including congenital heart defects (64.1%, n=24), polyhydramnios (28.2%, n=11), intrauterine growth restriction (25.6%, n=10), and renal defects (12.8%, n=5) (Figure 2).
- Pregnancy outcomes were available for 88.6% (47/53) of patients with ultrasound data reported (Figure 3).
- There were 32 (60.4%) term deliveries, 7 (13.2%) pre-term deliveries, 4 (7.5%) elective terminations, 2 (3.7%) cases of intrauterine fetal demise (IUFD), 2 (3.7%) miscarriages, and 6 (11.3%) no pregnancy outcome/delivery data provided (Figure 3).

Figure 1. Screening indications for the cohort

Figure 2. Summary of ultrasound results*

Figure 3. Pregnancy outcomes for patients with ultrasound data reported (n=53)

REFERENCES:

DISCLOSURES: All authors were employees of Myriad Genetics, Inc. at the time of the study and received salaries and stock options.