A case of 22q11. 2 duplication in a fetus with increased nuchal translucency and left-sided pleural effusion

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Objective
To present a prenatal diagnosis of de novo 22q11.21 microduplication by array comparative genomic hybridization (aCGH) in a fetus with increased nuchal translucency and left-sided pleural effusion.

Methods
A 28-year-old, gravida 3, para 0 woman received Non-Invasive Prenatal Screening (NIPS) at 10 weeks of gestation. NIPS reported abnormal result at 22q11 region. Prenatal ultrasound revealed increased nuchal translucency at 13 weeks of gestation and left-sided pleural effusion at 16 weeks of gestation. She then underwent amniocentesis. Conventional cytogenetic analysis, multiplex ligation-dependent amplification (MLPA) and array comparative genomic hybridization (aCGH) were performed. MLPA was also performed on parental blood samples.

Results
Whole-genome aCGH on uncultured amniocytes was performed using a SurePrint G3 Human CGH ISCA TM (Agilent) array. aCGH detected a 2.80-Mb microduplication at chromosome 22q11.21, or arr[GRCh37] 22q11.21 (18,706,001-21,505,417) x3, (X, Y)x1. The DNA extracted from uncultured amniocytes was analyzed by MLPA using the SALSA MLPA KIT P250-B2 DiGeorge Probemix, which showed duplication in the chromosome 22q11.2 region from low copy repeat (LCR) 22-A to D. MLPA analysis on parental blood samples did not reveal such genomic imbalance. Conventional cytogenetic analysis revealed a normal male karyotype. The pregnancy was subsequently terminated at 21 weeks of gestation. The fetus had facial dysmorphism with hypertelorism, prominent nasal root, bulbous nasal tip, and excess nuchal skin fold.

Conclusion
Microduplication 22q11.2 is characterized by a highly variable clinical phenotype from normal to multiple defects. From the literature, prenatal ultrasound findings included increased nuchal translucency, heart defects, palatal anomalies, polyhydramnios and multiple congenital anomalies. Our presentation added current knowledge to 22q11.2 microduplication's prenatal ultrasound findings as increased nuchal translucency and pleural effusion. aCGH and other molecular technique such as MLPA is an adequate adjunct to conventional karyotyping for identifying such genomic imbalance.