

**Methods:** 24 cases with microdeletions and/or microduplications and 10 cases without detection of microdeletions or microduplications were analyzed by Agilent Sureprint 180 k and re-analyzed using Illumina HiSeq 2000 massive parallel sequencing platform. The copy number variations were identified in whole genome-wide with a flexible bioinformatic analysis pipeline, which was introduced GC content bias correction and population-based comprehensive normalization.

**Results:** 2X whole genome sequencing can accurately detect CNVs above 0.4 Mb as all microdeletions and microduplications detected were found. Most benign CNVs were uniformly detected in both methods, and no additional pathogenic CNVs were detected in the 10 samples without aberrations detected previously analyzed with array CGH.

**Conclusions:** Massive Parallel Sequencing is an alternative method for the detection of microdeletions and microduplications in children with mental retardation and/or malformations. The same technique offers diagnostic potentials for the detection of aneuploidies of free fetal DNA in maternal blood, and in time maternal blood sampling may reveal not only fetal aneuploidies but also microdeletion and microduplication syndromes.

## P25.11

### Prenatal diagnosis of Wolf-Hirschhorn syndrome (4p-) by 3D ultrasound

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To review prenatal diagnosis of a rare chromosome abnormality based on sonographic features and confirmed by molecular analysis. Prospective identification of a case seen in an academic referral center. 25 y.o. G2P0010 referred at 30 wk gestation for a suspected cleft lip on ultrasound. Comprehensive ultrasound using 2D and 3D imaging revealed a singleton female fetus with a bilateral cleft lip and palate. In addition, a prominent glabella with a broad and flat nasal root, hypertelorism and anti-mongoloid slant of the palpebral fissures were seen. Severe IUGR and hypoplastic kidneys were also noted. The heart was normal. The facial features were suggestive of a "Greek warrior helmet" appearance, a characteristic of Wolf-Hirschhorn syndrome (WHS) or 4p-. Amniocentesis confirmed a deletion of 4p and FISH confirmed the deletion of the WHS critical region. WHS is a rare contiguous gene deletion syndrome characterized by a hemizygous deletion of 4p16.3. It occurs in 1/20,000–50,000 births and is characterized by IUGR, multiple craniofacial and other midline anomalies. Survivors usually exhibit mental retardation and seizures. The diagnosis may be suspected prenatally in a fetus with severe IUGR, but has been reported infrequently. This case illustrates the utility of 3D imaging in the recognition of characteristic facial morphology, thus allowing targeted diagnostic testing.

Supporting information can be found in the online version of this abstract.

## P25.12

### Prenatal diagnosis of tetrasomy 18p

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A 36 years old female patient, gravida 2 parity 1, who had a full term vaginal delivery of normal female baby. In the index pregnancy, her risk of having Down's syndrome was 1:10267 on the

first trimester combined screening and 1:287 based on her age only. A routine ultrasound at 21 weeks showed bilateral choroid plexus cysts, clenched fists, left talipes and single umbilical artery. Amniotic fluid cytogenetics reported 47,XY,+i(18)(p10) which was abnormal male karyotype with tetrasomy 18p in all cells examined. Parental karyotyping were normal chromosomes. Pregnancy was terminated and the parents declined post-mortem examination.

**Discussion:** In our case, after detection of multiple abnormalities on the ultrasound, amniocentesis was offered as a high risk of having trisomy 18. In the literature, foetus with isolated choroid plexus cyst, the risk of trisomy 18 is 1:374. If it is associated with additional anomalies, the likelihood of trisomy 18 is increased almost 1800 fold (JK Gupta *et al* 1997). The findings of our case raised the question of any form of abnormality of chromosome 18 has common abnormal ultrasound findings. Our case (tetrasomy 18p) had the ultrasound features similar to those reported in foetus with trisomy 18. Tetrasomy 18p is a rare form of chromosome aberration and the estimated frequency of 1:40,000 new born. The molecular features and phenotype of tetrasomy 18p have been frequently reported. The main concerns are developmental delays and cognitive impairment of moderate to severe degree, which are universally present. However, there were limited reports of prenatal diagnosis for tetrasomy 18p. Currently, counselling for the management either continuing or termination of pregnancy are based on limited information. In the literature, there is little information regarding the natural history of disease, prognosis and recurrence in the future pregnancy. Further studies on these areas are needed to provide guidance in the management and counselling.

## P25.13

### A case of absent radius in trisomy 18

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A 34-year-old primiparous woman was referred to the outpatient department from local clinic in the 30+5<sup>th</sup> week of gestation for ultrasound detection of fetal neck cystic mass. The non-consanguineous parents were in good general health without any remarkable family histories. She had two spontaneous abortions in the past and had been cured from pulmonary tuberculosis after six months of medication when she was in high school. She had no underlying diseases or specific past histories otherwise. Ultrasound examination of Accuvix XQ (Samsung-Medison, Korea, Seoul) revealed about absent radius and flexed position of hands, and then IUGR of six weeks and polyhydramnios were also noted. Follow up Doppler sonography four weeks later showed absent diastolic flow of umbilical artery and fetal movement was not detected. The pregnancy was decided to be terminated under the informed consent from the parents. A stillborn female infant was delivered in the 34+6<sup>th</sup> week of gestation weighing 1000 g. Chromosome analysis (Cytogenetic laboratory, Seoul St. Mary's Hospital, Seoul, Korea) confirmed the karyotype of 47, XX, +18.

Supporting information can be found in the online version of this abstract.