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Research Letter

Prenatal diagnosis of low-level mosaicism for trisomy 2 associated with a favorable pregnancy outcome

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Dear Editor,

A 46-year-old, primigravid woman underwent chorionic villus sampling at 12 weeks of gestation, which revealed a karyotype of 47,XY,+2 in 34/34 cultured chorionic villi cells. However, array comparative genomic hybridization (aCGH) analysis using uncultured chorionic villi tissues revealed a mosaic trisomy 2 level of 14%. This pregnancy was conceived by *in vitro* fertilization with embryo transfer (IVF-ET). Her husband was 50 years of age. The woman underwent amniocentesis at 18 weeks of gestation. Among 27 colonies of cultured amniocytes, 26 colonies had a karyotype of 46,XY, and the rest one colony had only one cell with the karyotype of 47,XY,+2. The parental karyotypes were normal. Simultaneous molecular cytogenetic analyses were performed on uncultured amniocytes using aCGH, interphase fluorescence *in situ* hybridization (FISH) and quantitative fluorescent polymerase chain reaction (QF-PCR). QF-PCR analysis excluded uniparental disomy 2. The result of aCGH was arr 2p25.3q37.3 (1-242,933,638) ×2.20 detected by Roche ISCA Plus Cytogenetic Array. aCGH analysis on the DNA extracted from the uncultured amniocytes revealed a less than 10% mosaic level of trisomy 2. Interphase FISH analysis on uncultured amniocytes revealed a mosaic trisomy 2 level of 5.6% (6/107 cells), comparing with two normal controls of 4.5% (5/112 cells) and 3.6% (4/110 cells) respectively using this FISH probe. The woman underwent cord blood sampling at 30 weeks of gestation, which revealed a karyotype of 46,XY in 25/25 cord blood lymphocytes. During the whole course of pregnancy, prenatal ultrasound findings were unremarkable. At 39 weeks of gestation, a 3,048-g healthy male infant was delivered with no phenotypic abnormalities. Postnatal uncultured urinary analysis using interphase FISH at age 2 weeks revealed a mosaic trisomy 2 level of 9.7% (13/134 urinary cells), comparing with two normal controls of 2.7% (3/112 cells) and 2.7% (3/110 cells) respectively using this FISH probe. The neonate was phenotypically normal during follow-ups at age 6 months. Postnatal uncultured urinary analysis using interphase FISH at age 6 months revealed a mosaic trisomy 2 level of 6% (3/50 urinary cells), comparing with two normal controls of 4.5% (5/112 cells) and 3.6% (4/110 cells) respectively using this FISH probe.

The present case provides evidence that low-level placental mosaicism for trisomy 2 can be associated with a favorable pregnancy outcome. The present case also shows that prenatal diagnosis of a single colony with a single cell with trisomy 2 at amniocentesis can be associated with a favorable pregnancy outcome. The peculiar aspect of the present case is the discrepancy of mosaic trisomy 2 level between cultured chorionic villi cells and uncultured chorionic villi tissues. In the present case, the cultured chorionic villi cells had full trisomy 2 (34/34 cells) using conventional cytogenetic analysis, whereas the uncultured chorionic villi tissues had only 14% mosaic trisomy 2 level by use of aCGH. Therefore, we suggest that molecular cytogenetic technique such as aCGH on uncultured chorionic villi is very important for the correct diagnosis of the true mosaic level in placental mosaicism for trisomy 2. High-level placental mosaicism for trisomy 2 can be associated with oligohydramnios and intrauterine growth restriction [1–3]. A correct diagnosis of the true level of mosaicism for trisomy 2 is very helpful in genetic counseling and

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obstetric management of prenatally detected mosaic trisomy 2. Prenatal confirmation of mosaic trisomy 2 at amniocentesis using molecular cytogenetic techniques such as aCGH, QF-PCR and interphase FISH on uncultured amniocytes has been previously described [2–5]. The present case adds to our previous reports and shows that such techniques are very useful in prenatal diagnosis of mosaic trisomy 2.

Conflict of interest

The authors have no conflicts of interest relevant to this article.

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