Pregnancy outcome in amniocentesis and chorionic villous sampling: 10-year report
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Abstract

Background: Chorionic villus sampling (CVS) and amniocentesis are two invasive methods of diagnostic approaches for prenatal diagnosis. The indication, adverse effects and outcome of these two methods are different. The goal of this study is to compare indication, complications and outcomes of CVS and amniocentesis in pregnant women underwent prenatal screening program.

Methods: Medical records of 14646 women who underwent CVS, or amniocentesis were reviewed in two tertiary hospitals (yazd and Women hospitals, affiliated hospitals of Tehran University of Medical Sciences). The procedures were conducted during 10 years, using 22 gauge needles. A structured questionnaire applied to collect information regarding (age, gravidity, live birth, gestational age, placenta location, indication of procedure, alpha-fetoprotein level, procedure complications, final outcome (abortion, live birth, intranatal fetal death (IUFD), number of needing, human chorionic gonadotropin level, and age at birth. Statistical analyses performed with SPSS(version 18, SPSS Inc., Chicago, IL, USA). Results: Are presented as mean ± standard deviations, and frequencies. The χ2 test with Fisher exact test was applied for comparing categorical variables and ANOVA test used to compare continuous variables. P < 0.05 was considered statistically significant.

Results

Medical records of 14464 patients reviewed. For 1073 patients amniocentesis was performed while for 391 cases CVS was one. Table 1 shows the characteristics of patients in both groups. Mean needle time was significantly higher in CVS group (Table 2). The mean number of needle time according to placenta location was not significantly different in both groups (Table 3). The most finding of CVS result was minimal Thalassemia while trisomy 21 was the most finding in amniocentesis group. Table 4 indicates the side effects in amniocentesis group and intranatal fetal death was the most complication in CVS group. Conclusion: Indication, results and complications of CVS and amniocentesis are different. © 2014 Tehran University of Medical Sciences. All rights reserved.

Keywords: Amniocentesis, chorionic villi sampling, Pregnant women, Prenatal diagnosis, Indication, Complications

Discussion

The result of the current study showed that mean maternal age, gestational age, and age at birth of the neonates were significantly lower in CVS group than the other group (Table 6). The results also showed that in both groups, the placenta was located mainly at the anterior position and mean number of needle time in two groups according to the location of the placenta was not significantly different. In CVS group, the previous history of the problem was the most reason for doing the procedure while in amniocentesis group the main reason was abnormal biomarkers. Danilidis et al. reviewed medical records of patients attended to their clinic for amniocentesis during 4 years (12). In their study, amniocentesis result was normal in 93% and Down syndrome was detected in 4%. The outcome of pregnancy was live births in 89%, stillbirths in 5% (273), miscarriages in 1% and terminations in 7%. In our study, Down syndrome detected in 5% of cases who underwent amniocentesis and abortion or termination done in 7%. Brambati et al. performed CVS on 1,844 women at weeks 13-20 of gestational age in whom the indication of the procedure was chromosomal anomalies in 85% (13). Tekinbakt et al. evaluated 311 patients who underwent amniocentesis. They reported that the indication for amniocentesis was mostly advanced maternal age, followed by positive family anamnesis (4). The most karyotype in their study was trisomy 21, followed by monosomy X which is consistent with other studies (14). They also reported that the indication for the procedure was normal or abnormal, while we detected 8 complications related to the amniocentesis. The mean rate of complications of amniocentesis such as miscarriage, amniotic fluid loss, bleeding, pyrexia, etc. (reported between 1% and 2% in previous studies (5,6,14,15). In a single-center 16 years experience, Olsbo et al. reported a total fetal loss of 0.4% of patients underwent amniocentesis and 0.26% in the group without this procedure (10).

In CVS group, abortion occurred in 2 (0.5%) which is lower than the rate reported by Choudry et al. (1.5%) (3). Since-mid 1960, when chromosome analysis after amniocentesis introduced by Steele and Breg (16), screening for chromosomal abnormalities before birth becomes possible. Amniocentesis is an invasive method which is the most common prenatal diagnostic procedure. The main purpose of amniocentesis is obtaining fetal cells derived from skin, mucous membranes, amnion, and umbilical cord for karyotyping or DNA analysis (12). It is usually performed between 15 and 20 weeks of gestational age and performing the procedure before 14 weeks of gestational age is related to the higher risk of miscarriage (12). Literature showed that procedure related complications could be controlled by the size of the needle used for the procedure (5,11,17). In most centers, it is performed by means of a 22- gauge spinal needle transabdominally under ultrasound guidance. The needle size which was used for both procedures in our cases was 22 gauge. In a previous study, Thirikov et al. used 29 gauge needle for amniocentesis for 316 patients and reported no procedure-related fetal loss. No other complications were observed (4). However, the 29 gauge needle has its limitations such as higher risk of bending and it needs more attention for obese cases (4).

The cost of the needle in our center is 15 but the cost is near 255 in other countries. CVS is a diagnostic test for inherited disorders which involves removing some chorioid villi cells from the placenta before 14th weeks of gestational age (3). The most indication for CVS is an increased risk of fetal aneuploidies due to advanced maternal age, family history or abnormal screening tests (3). CVS is related with fetal limb reduction defects, preeclampsia, focal placental hemorrhage and inflammation (18). We found none of these complications in this study. Conclusion: Indication, results and complications of CVS and amniocentesis are different. So, the proper method should be considered for a specific patient.

References


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