

Perceived pain and anxiety before and after amniocentesis among pregnant Turkish women

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Summary

Purpose of investigation: To examine maternal perception of pain and anxiety before and soon after midtrimester genetic amniocentesis. **Methods:** Two hundred and ninety-two women consecutive were prospectively included in the study between March and December 2002. Study variables included age, gestational age, gravidity, parity, educational history, history of previous invasive prenatal procedures, indication for amniocentesis and source of information regarding amniocentesis. Maternal pain and anxiety associated with performing amniocentesis were subjectively quantified with the use of the visual analog scale (VAS). **Results:** Actual pain after amniocentesis was significantly lower compared with perceived pain before the procedure (3 [0-10] vs 5 [0-10], $p < 0.001$). Perceived anxiety before amniocentesis was significantly higher than perceived anxiety immediately after amniocentesis (7 [0-10] vs 5 [0-10], $p < 0.001$). Women who were informed about the procedure beforehand perceived the procedure to be less painful and expressed less anxiety before and after amniocentesis. **Conclusions:** Pre-amniocentesis counseling should emphasize that the actual pain and anxiety experienced during the procedure are low in intensity and significantly lower than expected.

Key words: Amniocentesis; Pain; Anxiety; Perception; Prenatal diagnosis.

Introduction

Midtrimester amniocentesis is often associated with a high degree of anxiety. Previous studies have shown that most women exhibit great anxiety before the procedure and the anxiety level reduces only when the karyotype results turn out to be normal. There is strong evidence that the anxiety with amniocentesis is related to both the procedure and perceived likelihood of an abnormal result. The women mostly worry about miscarriage, fetal injury due to the procedure and waiting for the test results [1-5].

As every invasive procedure, midtrimester amniocentesis causes pain. In the literature, although various factors that modulate anxiety have been investigated, the association between perceived pain and maternal anxiety during amniocentesis has been examined in few studies [6, 7]. In these studies, a strong association between perceived pain and anxiety was reported. This issue needs further study.

The aim of this study was to investigate maternal perception of both pain and anxiety before amniocentesis and the actual pain and anxiety reported immediately after the procedure.

Methods

The study was conducted prospectively at the Perinatology Unit of Ankara Maternity and Women's Health Teaching Hospital of the Social Security Institute between March and December 2002. All women who had singleton pregnancies and

underwent midtrimester genetic amniocentesis were eligible for the study. Patients were excluded from the study if a major structural abnormality was detected on ultrasound (US), if either parent was carrying a balanced translocation, or if the patient was illiterate.

The patient and her partner were given verbal information by the physician performing the amniocentesis procedure. The information concerned philosophy of the screening, fetal karyotyping in general, and included the risks and benefits of the procedure. The women were informed that there was an increased risk of miscarriage of 1% for amniocentesis and that the probability of an abnormal result was around 1:40. She was also informed that the probability of an incorrect result after amniocentesis was around 0.01%. Afterwards the subject was asked to complete a data collection form before and after amniocentesis. The form did not include any personal information that could identify participants and consisted of two parts: a questionnaire and visual analog scale (VAS). The questionnaire included socio-demographic information and amniocentesis-related questions: age, gestational age, gravidity, parity, educational history, history of previous invasive prenatal procedures, indication for amniocentesis and source of information regarding amniocentesis. Patients were asked about their perception of the anxiety and pain related to amniocentesis using VAS to evaluate changes before and soon after amniocentesis. The VAS score was measured by a 10-point Likert-type scale from "not at all" to "extremely high". Higher scores imply higher levels of perception of pain and anxiety. Amniocentesis was performed under US and a 20 G 15 inch needle was inserted through the abdominal wall. Two well trained perinatologists performed all procedures. Informed consent was obtained before amniocentesis. Finally the level of difficulty of amniocentesis was evaluated by the physician conducting the procedure on a 5-point Likert-type scale from "not at all" to "extremely difficult". Neither the patients nor physician were aware of each other's perception regarding the procedure. A nurse stored the data forms and when the study was completed all forms were evaluated together.

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Data were analyzed by the SPSS 9.0 statistical package program (SPSS Inc. IL). The Wilcoxon signed rank test and Mann-Whitney test were used for non-parametric comparisons. Associations of variables were analyzed by Spearman's Rho test.

Results

During the study period, 328 eligible women underwent amniocentesis, and 292 women participated in the study. Median maternal age was 35 (range 18-44) and median gestational week was 18 (range 16-22). Maternal age was under 35 years in 133 women (45.5%). Sixty-three women (21.4%) were nulliparous. Thirty-three women (11.3%) were college graduates, 103 (35.3%) high school graduates, and 156 (53.4%) attended only elementary school. Indications for amniocentesis was advanced maternal age in 159 cases (54.5%), abnormal triple test results in 92 cases (31.5%), soft markers in 27 cases (9.2%) and a previous child with chromosomal abnormalities in 14 cases (4.8%). One hundred and twenty-seven women (43.5%) were unaware of amniocentesis. Of the remaining 165 women, the main source of information regarding amniocentesis was a physician or nurse in 104 cases (35.6%), family or friends in 13 cases (4.5%), media (written or electronic) in 28 cases (9.6%) and 20 cases (6.8%) had undergone amniocentesis in a previous pregnancy.

All amniocentesis procedures were performed with a single needle insertion. Most of the procedures (90.8%) were described by the performing physician as "not at all difficult" whereas 27 (9.2%) were reported to be "somewhat difficult".

The actual pain after amniocentesis was significantly lower compared with the perceived pain before the procedure (3 [0-10] vs 5 [0-10], $p < 0.001$, respectively). When comparing women's expectations, 64% expressed less actual pain whereas 13% a higher level of pain. Twenty-three percent of women expressed no change in their perception. Perceived anxiety before amniocentesis was significantly higher than perceived anxiety immediately after amniocentesis (7 [0-10] vs 5 [0-10], $p < 0.001$, respectively). When comparing women's expectations, 55% expressed less actual pain whereas 24% a higher level of pain. Twenty-one percent of women expressed no change in their perception. VAS scores of perceived anxiety and pain before amniocentesis were not significantly different ($p < 0.001$) whereas after amniocentesis, perceived anxiety was higher than actual pain ($p < 0.001$).

Perception of pain and anxiety was found to be significantly and positively correlated before (Spearman's rho = 0.60, $p < 0.001$) and after (Spearman's rho = 0.60, $p < 0.001$) amniocentesis. Perceived pain before amniocentesis was not associated with actual pain (Spearman's rho = 0.10, $p = 0.09$). There was a weak correlation with perceived pain and actual pain (Spearman's rho = 0.18, $p = 0.18$, $p = 0.002$). Amount of change in pain or anxiety after amniocentesis was not related to any variable.

There was no correlation between age, education, parity and indication for amniocentesis with pain or anxiety scores. Information status about amniocentesis prior to the procedure was positively correlated with anxiety and pain before (Spearman's rho = 0.19, $p = 0.001$, Spearman's rho = 0.33, $p < 0.001$, respectively) and after the procedure (Spearman's rho = 0.17, $p = 0.003$, Spearman's rho = 0.16, $p = 0.006$, respectively). Patients who were informed about the procedure for the first time had lower VAS scores of anxiety and pain than those had some information about the procedure before (8 [0-10] vs 6 [0-10], $p = 0.001$; 7 [0-10] vs 5 [0-10], $p < 0.001$, respectively) and after (5 [0-10] vs 4 [0-10], $p = 0.003$; 4 [0-10] vs 3 [0-10], $p = 0.007$, respectively) the procedure. When only women who had some information about the procedure were analyzed, the information source was not associated with pain or anxiety. History of previous amniocentesis was correlated with perceived anxiety (Spearman's rho = 0.20, $p = 0.001$) and pain (Spearman's rho = 0.22, $p < 0.001$) before the procedure. Patients who underwent amniocentesis previously had lower anxiety (8 [0-10] vs 4 [0-10], $p < 0.001$) and pain (6 [0-10] vs 4 [0-10], $p < 0.001$). Difficulty in amniocentesis was correlated with actual pain. However, neither anxiety nor pain scores were different between women who had a difficult amniocentesis or who had not.

Discussion

The major outcome of the study was that amniocentesis was a painless procedure as reported previously [6-9]. Some reported both actual pain and anxiety at very low levels after the procedure in contrast to the current study. That controversy might depend on differences in populations studied. When a procedure gains public acceptance, behavior and response may change.

We found that pain levels were well correlated with anxiety before and after the procedure and both decreased after amniocentesis. It is out of the scope of this study to evaluate the causes of anxiety-related amniocentesis. However, it seems that fear of pain makes a considerable contribution to perceived anxiety. In the current study, anxiety was still at a medium level after amniocentesis and higher than perceived pain. It is well known that most women are concerned about risk of abnormality and abortion as well as awaiting results.

Previously two studies investigated the association between maternal anxiety and perceived pain during amniocentesis. Both Ferber *et al.* and Harris *et al.* reported that perception of pain and anxiety before and after amniocentesis were positively correlated [6, 7]. In contrast to the current report, Harris *et al.* also reported that maternal anxiety and actual pain during amniocentesis was correlated [6].

It seems that perceived risk of an abnormal outcome exceeds real risk. Serious complications of amniocentesis are infrequent and the probability of an abnormal test result or abortion after amniocentesis is very low. The procedure causes pain at a very low intensity. Perceived

anxiety and pain levels could be decreased by counseling before amniocentesis [4]. The way women are informed might be an important issue. In the current study, women who were informed about the procedure for the first time before undergoing it perceived the procedure to be less painful and expressed less anxiety before and after amniocentesis. Women who had had amniocentesis in a previous pregnancy also expressed lower pain and anxiety before the procedure. During counseling, patients may be reassured to know that most women find the procedure to be only mildly painful.

Conclusion

Pain during amniocentesis is low in intensity. When a woman is counseled for amniocentesis, it should be emphasized that the actual pain experienced during the procedure is significantly lower than that expected.

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