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Original Article

The effect of preprocedure anxiety levels on postprocedure pain scores in women undergoing hysterosalpingography

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Abstract

Background: Hysterosalpingography (HSG) is an invasive, uncomfortable, and painful procedure. Patients often experience considerable anxiety and stress before the procedure. In this study, we aimed to evaluate the effect of preprocedure anxiety on postprocedure pain scores and clinical outcomes in women undergoing HSG.

Methods: This study was designed as a prospective randomized study. Women undergoing HSG were asked to complete the Beck Anxiety Inventory before the procedure. Patients were classified into two groups according to the anxiety score (Group 1: anxiety score ≤ 25; $n = 84$ and Group 2: anxiety score > 25, $n = 25$). All of the patients were asked to state the severity of their pain during the procedure using a visual analogue scale immediately after the procedure. Then, postprocedure pain scores and clinical features were evaluated. Data analyzed were: age, gravidity, parity, durations of marriage and infertility, body mass index, procedure time, amount of contrast media used, operator sex, history of surgery, educational level, and HSG results.

Results: A total of 109 women were enrolled into this prospective study. There was no statistically significant difference between the groups in terms of age, body mass index, durations of marriage and infertility, procedure time, amount of contrast media used, operator sex, history of surgery, educational level, and patency of the one and/or two fallopian tubes ($p > 0.05$). The median parity and pain scores after the procedure were lower in Group 1 ($p < 0.05$). There was also a positive correlation between anxiety scores and postprocedure pain scores ($r = 0.289$, $p = 0.002$). Receiver operator characteristics curve analysis demonstrated that operator sex was an important risk factor for postprocedure pain in patients with a preprocedure Beck Anxiety Inventory > 25. Logistic regression method demonstrated that higher parity, preprocedure anxiety score > 25, and male operator were risk factors for increased postprocedure visual analogue scale scores.

Conclusion: According to this study, preprocedure anxiety levels have an effect on postoperative pain scores in women undergoing HSG procedure. Multiparity, male operator, and higher preprocedure anxiety scores also may have an effect on postoperative pain scores.

Keywords: beck anxiety inventory; hysterosalpingography; multiparity; operator sex; visual analogue scale

1. Introduction

Hysterosalpingography (HSG) is a diagnostic procedure in the evaluation of infertile patients and considered to be the gold standard in the assessment of the patency of the fallopian tubes.[1] Due to reliability and cost effectiveness, HSG is the most commonly used method for the evaluation of the anatomy and patency of the uterus and fallopian tubes.[2] Although it is frequently used, the major disadvantage of HSG is pain. In a study, 85% of the patients complained of moderate to severe pain after HSG.[3] It is reported that HSG was a more stressful procedure for women than a mammography or abdominal ultrasonography.[4]

Conflicts of interest: The authors declare that there are no conflicts of interest related to the subject matter or materials discussed in this article.

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Patient comfort and pain perception directly affects the ability to safely complete a procedure. Factors known to cause pain and that have been linked to performance of this examination include nulliparity, dismenorea, emotional state, infertility type, procedure duration, amount of contrast used, chronic pelvic pain, presence of cystocele, and tubal obstruction.[5,6] However, pain perception during HSG is not only influenced by physical factors but also by psychological and social factors. Regardless of procedure type, anxiety, depression, and a woman's anticipation of the pain may be strong predictors of the pain experienced during office gynecologic procedures such as HSG.[7−9] Women undergoing HSG are found to experience considerable stress and anxiety which is correlated with the level of invasiveness before and during this examination[9]; additionally, infertility in itself is known to cause prolonged stress and anxiety for the couples involved.[10]

In this study, we designed a prospective randomized trial to assess preprocedure anxiety levels and to evaluate the association between anxiety and postoperative pain and clinical parameters in women undergoing HSG.

2. Methods

This prospective randomized study was conducted at the Department of Obstetrics and Gynecology, Division of Infertility and Gynecological Endocrinology, Zekai Tahir Burak Women's Health Research and Education Hospital, Ankara, Turkey from January 2014 to February 2014. This is a tertiary referral hospital, with the HSG procedure performed at our outpatient clinic. The study was designed according to the Helsinki declaration[11] and approved by the Ethics Research Committee of the hospital. A written informed consent was also obtained from all participants. Risk factors recorded for each woman were: age, gravidity, parity, body mass index (BMI), durations of marriage and infertility, infertility type (primary or secondary), educational level, employment status, procedure time, amount of contrast media used, history of surgery, operator sex, result of the procedure, Beck's Anxiety Inventory (BAI) score, and visual analogue scale (VAS) score. Primary infertility was defined as the absence of any pregnancy before, whereas pregnancy having occurred at least once was defined as secondary infertility. Women who insisted on being examined by a female doctor and those who had been diagnosed with psychiatric disorders were excluded from the study.

2.1. BAI

The BAI is a 21-item Likert scale self-reported questionnaire measuring common symptoms of clinical anxiety, such as nervousness and fear of losing control. Respondents indicate the degree to which they are bothered by each symptom. Each symptom is rated on a 4-point scale ranging from 0 to 3 according to severity. The total score can range from 0 to 63, with high scores corresponding to high levels of anxiety. The BAI has a maximum score of 63, 0−7: minimal level of anxiety, 8−15: mild anxiety, 16−25: moderate anxiety, and 26−63: severe anxiety.[12] Patients were asked to complete the BAI half an hour before the HSG procedure. They were classified into two groups, according to the anxiety score, as nonsevere and severe (Group 1: anxiety score $\leq$ 25 and Group 2: anxiety score $>$ 25) and postprocedure pain scores. The association between anxiety scores and clinical features was then evaluated.

2.2. HSG procedure

HSG was scheduled between the 6th day and the 11th day of the menstrual cycle to ensure that menstruation had ended and the women were not pregnant. Patients were randomly invited into the X-ray room without knowing the operator sex. After taking a complete history, including an obstetrical and gynecological history, patients were laid horizontally in the lithotomy position on the fluoroscopy table. A speculum was inserted into the vagina, and the cervix was visualized. Patients who had vaginal discharge, cervical and adnexal tenderness on vaginal examination, and who had acute or chronic pelvic pain were excluded from the study. No analgesic was given to patients before the procedure. The vagina and the cervix were cleaned with a povidon-iode solution. Afterwards, the uterine cervix was straightened with a wide mouthed tennaculum exercising a degree of pulling. A sterile Rubin's cannula was inserted into the cervix uteri by a single operator. A scout radiograph of the pelvis was obtained with the catheter in place before contrast material was instilled. Water-soluble contrast media (Omnipaque 350; Nycomed Ltd., Birmingham, UK) was then slowly instilled, with fluoroscopic images obtained intermittently to evaluate the uterus and fallopian tubes. We obtained two spot radiographs after the scout radiograph.

2.3. VAS

All of the patients were asked to state the severity of their pain during the procedure with VAS immediately after the procedure. A detailed explanation about the VAS and its application was given personally to each woman before the procedure. The VAS was a 10-cm line scaled from 0 to 10 (0 = no pain, 10 = severe pain). The VAS score was determined by measuring by a ruler. A VAS score of $\geq$ 6 was accepted as severe pain. The influence of patient characteristics such as age, gravidity, parity, sex of the clinician, and result of the procedure on the VAS pain scores was also determined.

2.4. Statistical analysis

Statistical analyses were performed using SPSS version 15.0 (SPSS Inc., Chicago, IL, USA). Normal distribution of data was assessed using Kolmogorov-Smirnov and Shapiro-Wilk tests. Continuous and normally distributed variables were presented as mean (standard deviation), and intergroup differences were investigated using Student *t* test. Continuous variables with non-normal distribution were expressed as