CASE SERIES

Frequency of anxiety and depression in patients of urtolithiasis undergoing Extracorporeal Shock Wave Lithotripsy in Diyarbakir, Turkey

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Abstract

Extracorporeal shock wave lithotripsy (ESWL) can cause depression and anxiety for patients with urolithiasis. We evaluated the frequency of anxiety and depression in patients of urolithiasis undergoing ESWL.

Thirty patients scheduled for ESWL were enrolled in Diyarbakir State Hospital, Turkey. VAS-A, APAIS, BDS and BAS scores were recorded.

The patients comprised 23 males and 7 females (M/F: 3.3/1 with a mean age of 31.03 ± 10.84 years. The mean VAS-A were 5.46 ± 1.71. The pre-procedural anxiety were 100% (VAS-A>0) and depression of 56.6% of patients. The statistically significant difference was observed in total APAIS scores betweeen male and females. (p=0.41) There was no significant difference between the groups in terms of gender and marital status (p< 0.05), Positive and statistically significant correlation was found between anxiety level (APAISa) and requirement of knowledge (APAISk) (p< 0.05).

We found that depression and anxiety rates were high in patients with ESWL procedure.

Keywords: The Amsterdam Preoperative Anxiety and Information Scores, Anxiety, Beck depression scale, Urolithiasis, Extracorporeal shock wave lithotripsy, Depression.

Introduction

Anxiety is the physiological response as well like fear, apprehension, worry, restlessness, irritability that occurs when an individual does not feel safe due to undefined danger or an unknown threat. Studies have shown that patients are anxious at high rates of 60-80% before interventional procedures or surgery.[1] Patients' anxiety levels are influenced by a variety of factors; including previous experience, type of hospital admission, gender, age, and type of operation or procedure to be performed.[2] The increased anxiety in procedures or surgery may cause negative psychological and physiological consequences, negatively effecting quality of life, work motivation as well as increase in postoperative pain, analgesic consumption, prolonged recovery and length of hospital stay.[3,4]

Urinary tract stone disease is a common disease and the incidence in developed countries varies between 1-13%.[5] The prevalance was 14.8% in Turkey.[6] The therapeutic urological procedures for urinary system stone diseases are incresing[7] Extracorporeal shock wave lithotripsy (ESWL) has completely changed the treatment of urolithiasis after entering clinical practice, and it has become the preferred first-line treatment approach. ESWL is the breaking up of a stone by converting the sound waves to shock waves from a source outside the body and sending it to the stone. It is a simple, safe, non-invasive, effective and widely used treatment method.[8] ESWL offers a highly advantageous treatment option with shorter hospital stay, shorter recovery and lower complication rates when compared to surgical treatments. The success of ESWL depends on the quality of the machine used, the user's experience, the localization of the stone, the anatomy of the urinary system, and more importantly on the patient's compliance.[9] It has been shown that the pain caused by the high energy waves and the sound of the device may cause anxiety in patients.[10] This negatively affects the adaptation of patients to ESWL procedure. So, it is aimed to decrease patient's pain and anxiety in order to achieve the adaptation to ESWL.

The aim of our study was to evaluated the frequency of anxiety and depression in patients of urolithiasis undergoing ESWL.

Case Series

Approval for this cross-sectional study was granted by the Institutional Ethical Committee. The patient's consent for participating in the study was obtained from all patients. This observational study included 30 patients (the number of patients admitted to ESWL in one month and compliant with inclusion criteria described) who were to undergo ESWL procedure in Diyarbakir State Hospital, Turkey. The detailed medical

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and physical examination was asssesed by urology department. Inclusion criteria for the study were patient aged between 18-85 years, not diagnosed with any neurological or psychiatric disorders, no psychiatirc drug or chronic alcohol use. Patients unable to evaluate pain scores on a visual anxiety scale (VAS-A), nonsteroidal antiinflammatory allergy or intolerance, and contraindications of SWL like neurogenic bladder, urethral stricture, bladder stone, overactive bladder, chronic prostatitis, acute urinary system infection, haemostasis troubles, and pregnancy) were excluded.

After recording the general characteristics of the patients (age, gender, education level, smoking, alcohol use, etc.), we used the face-to-face interview method to measure preoperative anxiety level before the patients were taken to the operating room. The study duration was planned as one month after the approval of ethical committee between January 2017 to February 2017. The VAS-A (Visual Analogue Scale for - Anxiety), Amsterdam Preoperative Anxiety and Information scale (APAIS),[11] Beck depression and anxiety scale were used to measure the anxiety level of the patients. Despite the scales are self reported by patients, some patients used Kurdish and Zazaish languages. The translation was made by their relatives who understood the scales in Turkish language and confirmed by the professional translator. So the questionnaires were read to the patients by the translator and the answers were marked by the researcher with the appropriate correspondence to the level of situational anxiety on the questionnaire.

The Visual Analogue Scale for Anxiety (VAS-A) was performed to patients to assess the anxiety level.[11] (0 being no anxiety to 10 being the highest anxiety level). The APAIS is a 6-item questionnaire with 2 components: "need-for- knowledge" (2 questions, range: 2 to 10) "preoperative anxiety" (4 questions, range: 4 to 20).[12]

Beck depression scale is a questionaire that consists of 21 questions in total, to obtain a score ranging from 0 to 63. It measures the cognitive (11 questions), somatic (5 questions), emotional (2 questions), behaviours (2 questions), somatic interpersonal indications (1 question). We divided the total score into groups according to scores. (0-9 = no/minimal depression, 10-18 = mild depression, 19-29 = moderate depression, and 30-63= severe depression). The validity and reliability study in Turkish society was tested by Hisli.[13]

Beck depression scale was developed in 1988 to separate the depression from the anxiety. It consists of 21 items that ranges from 0-63 scores, increasing total scores indicates the higher intensity of anxiety. Ulusoy et al. Performed the reliability and validity for Turkish society.[14] We divided the total score into groups accoding to scores (0-9 = normal/no anxiety, 10-18 = mild to moderate anxiety, 19-29 = moderate to severe anxiety, 30-63=severe anxiety).

Statistical Analysis

Sample size calculation was based on assumption that the incidence of anxiety of 50%[9] among patients with urolithiasis compared with those without urolithiasis according to the study of Lien et al. with a relative 50% change of anxiety considered to be clinically significant and as such a sample size of 29 patients was required. (Statistical power 80% and $\alpha^{\circ} < 0.05$). However, to enable detection of potential variations and avoid potential errors, 30 patients were included.

The Statistical Package for the Social Sciences (SPSS) version 15.0 for Windows (SPSS Inc., Chicago, IL) was used for statistical analysis. The data were summarized using the mean and standard deviation. The Shapiro-Wilk test was used to test the normal distribution of continuous variables. If variables were normally distributed, central tendency was expressed as the mean (SD). Means were compared using independent or paired Student's t-test. The Mann-Whitney U test was used for non normal variables. To analyze the APAIS knowledge scores according to need for information. The analysis of variance (ANOVA) was used. Spearman correlation analysis was used to find out a correlation between non-normally distributed independent variables. Differences were considered significant if $p<0.05$.

Results

Thirty patients were included in study. The patients comprised 23 males and 7 females with a mean age of 31.03 ± 10.84 years (range, 17-60 years). Average body mass index was 25.53 ± 4.34 (range, 18.69 - 37.50) kg/m^2. The marital status of patients were 16 (53.33 %) married and 14 (46.67%) single. The education level of participants were grouped as 9(30.0%) patients with university, 4(13.3%) patients with high school, 12(40%) patients with primary school and 5(16.6%) patients with none educational level. Most of the patients were not consuming alcohol. (96.6%) The demographic data of the patients are shown in Table-1.

The mean, standard deviation of the APAIS questions and scores are given in Table-2. The mean scores of all patients

Table-1: Demographic data of the patients.

Characteristic	
Age (years)	31.03 ± 10.84 (17-60)
Gender (M/F) (%)	23 /7
Height (cm)	169.08 ± 8.97 (150 – 188)
Weight (kg)	68.96 ± 13.07 (49 – 102)
BMI (kg/m^2)	24.11 ± 4.03 (18.69 – 34.42)
Marital status	
Married	16
Single	14
Education level	
None	5
Primary school	12
High school	4
University	9
Work Status	
Unemployed	9
Employed	15
Student	5
Retired	1
Alcohol consumption	
Yes	1
No	29
Cigarette smoking	
Yes	8
No	22
Total	30

Mean ± standard deviation; n: Patient number.

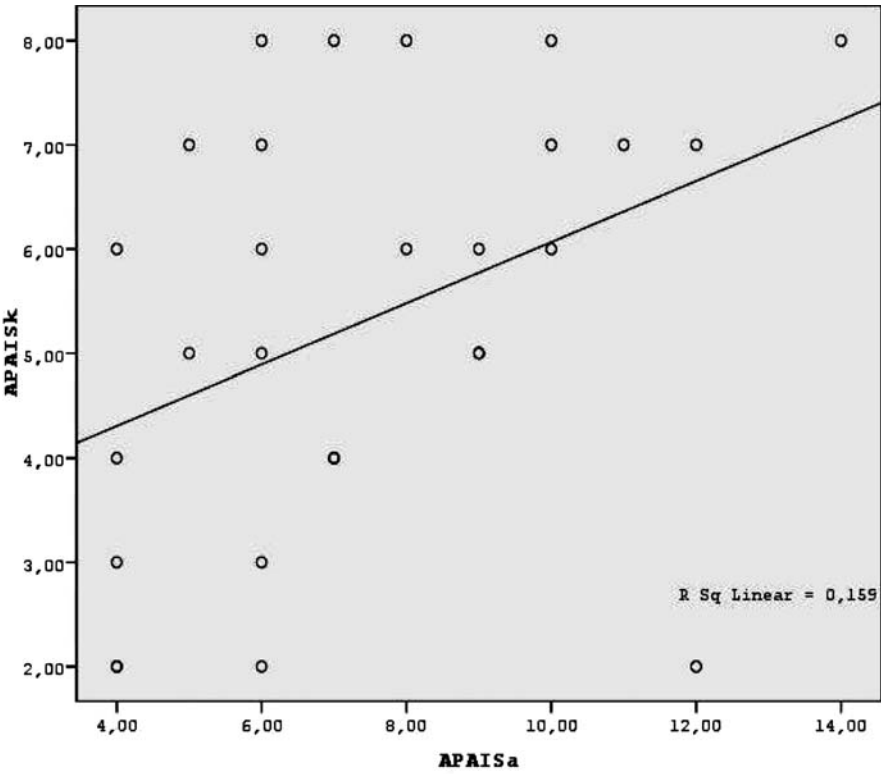

Figure-1: Correlation between APAISa (The Amsterdam Preoperative Anxiety and Information-anxiety) and APAISk (The Amsterdam Preoperative Anxiety and Information-knowledge) p<0.05.

Table-2: The Amsterdam Preoperative Anxiety and Information Scores.

Questions	Male	Female	p	Married	Single	p
1. Worried about anaesthesia	1.60±0.83	1.85 ± 0.89	0.505	1.56 ± 0.81	1.78 ± 0.89	0.480
2. Thinking about anaesthesia	1.52 ± 0.79	1.85 ± 0.89	0.349	1.62 ± 0.88	1.57 ± 0.75	0.861
3. Wants information about anaesthesia	2.34± 0.93	3.14 ± 1.06	0.067	2.31 ± 0.94	2.78 ± 1.05	0.205
4. Worried about surgery	2.21 ± 1.27	2.71 ± 0.95	0.352	1.93 ± 1.12	2.78 ±1.18	0.054
5. Thinking about surgery	1.82 ± 1.11	2.14 ± 0.89	0.499	1.87 ± 0.95	1.97 ± 1.20	0.893
6. Wants information about surgery	2.60 ± 1.26	3.42 ± 0.97	0.129	2.31 ± 087	3.35 ± 1.39	0.019*

Table-3: The Anxiety and Knowledge Scores within APAIS for anaesthesia and surgery scores for gender and marital status.

	Anxiety score			Knowledge score		
Questions	Male	Female	p	Male	Female	p
Anaesthesia	3.13±1.39	3.71 ± 1.38	0.274	2.34 ± 0.93	3.14± 1.06	0.11
Surgery	4.04± 2.05	4.85 ± 1.77	0.349	2.60 ± 1.26	3.42± 0.97	0.113
Total	7.17± 2.85	8.57 ± 1.90	0.237	4.95± 1.98	6.57 ± 1.51	0.063

APAIS: The Amsterdam Preoperative Anxiety and Information Scores.

Table-4: Beck Depression Scale, Beck Anxiety Scale and Visual Analog Scale-Anxiety.

Scales	Male	Female	p	Married	Single	p	Total
Beck Anxiety scale	8.30 ±7.96	13.71 ± 6.87	0.117	10.50±8.74	8.50±7.13	0.50	9.55± 7.95
Beck depression scale	13.60 ±11.50	9.57 ± 5.88	0.556	15.31±2.76	9.64±6.33	0.38	12.66 ±10.5
VAS	5.21 ±1.75	6.28 ± 1.38	0.153	5.18±1.83	5.78±1.57	0.35	5.46± 1.71

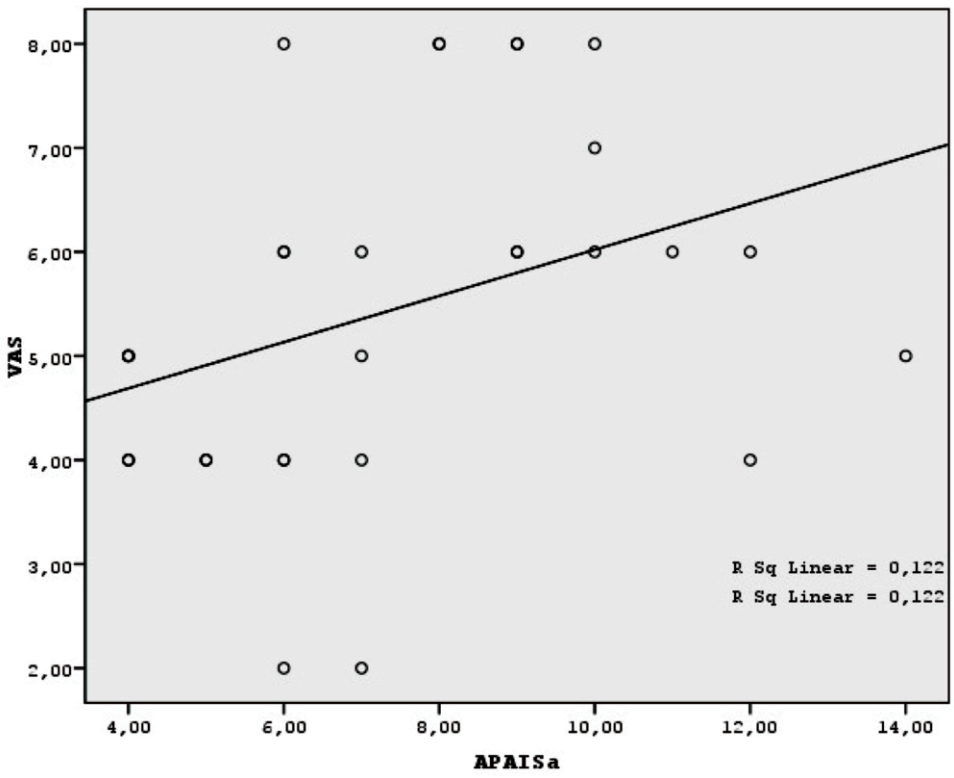

Figure-2: Correlation of the VAS-A (Visual analog scale- Anxiety) and APAISa (The Amsterdam Preoperative Anxiety and Information-anxiety) ($p<0.05$).

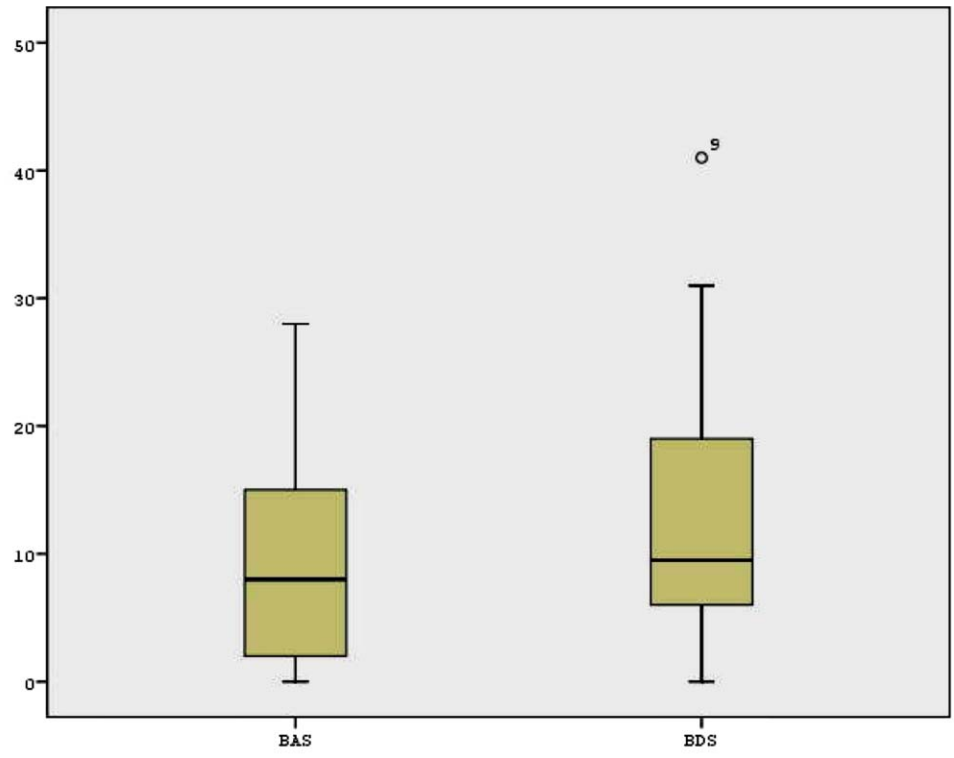

Figure-3: The Beck Anxiety Scale and Beck Depression Scale.

were 12.83 ± 3.93 (6.0-22.0). The scores of male and female were 12.13 ± 4.15 (6.0-22.0), 15.14 ± 1.86 (14.0-19.0), respectively. The statistically significant difference was observed in total APAIS scores betweeen male and females. ($p=0.41$) We observed each APAIS questions with respect to gender and marital status. No statistically significant difference was identified between groups ($p>0.05$) except $p<0.05$ in sixth question between married and single marital status.

In Table-3, the anxiety and knowledge components of the APAIS scores were separated into scores for both anaesthesia and surgery and gender. The mean total APAISa and APAISk were 7.5 ± 2.7 (4.0-14.0) and 5.33 ± 1.98 (2.0-8.0), respectively. No statistically significant difference was identified between gender and marital status.

Positive and statistically significant correlation was found between anxiety level (APAISa) and requirement of knowledge (APAISk). ($p< 0.05$) (Figure-1) There was statistically significant difference between APAISa scores (6.6 ± 2.8, 7.4 ± 3.3, and 8.7 ± 4.2) according to APAISk levels (low=2-4, medium=5-7, high=8-10), respectively. (ANOVA, $p=0.029$). Weak positive correlation was observed between APAISa and VAS-A (Figure-2) ($p=0.058$).

The mean Beck depression and anxiety scores was shown in Figure-3. The mean Beck depression score of the patients was found to be 12.66 ± 10.5 (0-41). According to the results, 13 (43.3%) of the patients were

normal, 10(33.3%) patients had mild, 4(13.3%) patients had moderate and 3(10%) patients had severe depression. No significant difference was found between genders and marital status groups (p> 0.05) (Table-4).

The mean Beck anxiety score of the patients was 9.56 ± 7.95 (0-28). According to the results, 16(53.3%) of the patients were normal, 10(33.3%) were mild and 4 (13.3%) had moderate anxiety. No significant difference was found between genders and marital status groups (P> 0.05) (Table-4).

The mean preoperative anxiety (VAS-A) was 5.46 ± 1.71 (2.0-8.0). The VAS-A was significantly higher for females. In the interview, preoperative anxiety was observed in thirty (100%) of the patients (VAS-A > 0), in seven (23.3%) of patients with high anxiety levels (VAS-A ≥ 7) (Table-4).

Discussion

In this study in which we evaluated the anxiety and depression values of ESWL patients, the pre-procedural anxiety ratios of the patients were 100% (VAS-A > 0). The rate of patients with high anxiety was 23.3% (APAISa > 10). The mean VAS-A values due to preoperative anxiety were 5.46 ± 1.71. The Beck anxiety value of the patients was 9.55 ± 7.95, Beck depression value was 12.66 ± 10.5. Depression was detected in 56.6% of the patients. There was no significant difference between the groups in terms of gender and marital status, except significant difference observed in unmarried related to surgical information anxiety.

Since the FDA approved ESWL device in 1984, it became an effective method for the treatment of renal and ureteric stones because of its simple, effective and safe method.

The anxiety during ESWL was shown to be a pain-enhancing factor.[15] The VAS scoring has become popular because of its ability to be simple, fast applied, and quickly interpreted in the measurement of transient and subjective physiological states.[16,17] VAS-A values were found to vary between 2.9 and 5.2 in preoperative patients in different surgical patient groups.[18,19] In our study, the mean VAS score was 5.46 ± 1.71 in order to be consistent with the other studies before the procedure. According to VAS-A score, 23.3% of the patients had high anxiety. This ratio varies between 20-37% in different studies.[20,21]

In our study, we used the APAIS scoring system in assessment of the pre-procedural anxiety. APAIS scales were validated according to STAI (The State-Trait Anxiety Inventory) and VAS-A anxiety scales in preoperative anxiety assessment.[22,23] Boker ve ark. Boker et al. showed a significant and positive correlation between VAS and total APAIS and STAI and APAISa (anxiety component[23] APAISa showed a sensitivity of 53-75% and a specificity of 79-97%) in clinical anxiety states.[23,24] In our study, it was shown that there was a positive correlation between pre-procedural anxiety level and information need. In addition, no significant difference was found between anaesthetic procedure anxiety and surgical procedure anxiety. The reason for this is that our procedures were ambulatory procedures. We think that anxiety level can be reduced by sufficient evaluation and pre-procedural education.[25]

Patients with urolithiasis were shown to have a higher degree of depression compared to the general population. In addition, patients with urolithiasis, which may be a recurring character, may increase depression by adversely affecting quality of life as it turns into a chronic condition. Lien et al. found that patients who were followed for 10 years with urolithiasis showed an incresed risk of 50% anxiety and 26% depression than patients with no urolithiasis.[26] In addition, patients treated with ESWL showed more anxiety than PCNL (Percutaneous Nephrolithotomy) and URSL (Ureteroscopic Lithotripsy) patients. Conversely, depression rates were higher in patients with PCNL treatment than ESWL and URSL. Moeover, Vergnolles et als, study showed that patients with high depression and anxiety had more pain perception during ESWL procedure.[11] We measured Beck depression and anxiety scales to assess patients' pre-ESWL status. BAI (Beck Anxiety Inventory) which is easy and simple with powerful psychometric properties. It is a well-known test used by clinicians for evaluating anxiety. Since we did not have cutoffs for specific diagnoses for BAI, we found 46.6% of patients with anxiety, and 56.6% of patients with depression. Depression and anxiety values did not differ between demographic parameters like education level, marital status and age.

The study has some limitations. First, the sample group was relatively small and heterogeneous according to ureter stones location (calyx, upper, lower ureter, calyx, pelvis stones). So it may cause low statistical power of the study. Second, because of the single center study, the outcomes of the study may not be generalized to all patients having lithotripsy and ESWL units. Other limitations of the study was that we did not have any control group to compare the depreessive and anxiety results. Also we did not have any records that the patients suffered urolithisis for the first time or recurrent episodes that may affect the rates of depression or anxiety.

In conclusion, we found that depression and anxiety rates

were high in patients with ESWL procedure in our study like the results of other studies. It must be aimed to reduce the anxiety of the patients by detailed information about method of application, need for additional procedures and complications.

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Conflict of Interest: None declared.

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