

Preoperative anxiety and postoperative pain associated with cataract surgery under local anesthesia

Anxiété préopératoire et douleur postopératoire associées à la chirurgie de la cataracte sous anesthésie locale

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ABSTRACT

Introduction: Although cataract surgery is a routine outpatient surgery, anxiety and pain remain two significant concerns seen in patients.

Purpose: To describe preoperative anxiety and postoperative pain related to cataract surgery under local anesthesia and identify the factors determining their occurrence.

Methods: This is a cross-sectional, descriptive and analytical, study which included patients who underwent cataract surgery for the first eye in the ophthalmology department of Habib Bourguiba University Hospital in Sfax-Tunisia. Preoperative anxiety was assessed using the Amsterdam Preoperative Anxiety and Information Scale. Postoperative pain was measured using the visual analog scale.

Results: A total of 203 patients were included with a sex ratio (M/F) of 0.79. The average age was 67.73±9.4 years. The mean overall preoperative anxiety score was 10.8±5.2. The average score for the need for information among patients was 3.45±1.5. The most anxiety-provoking factor was the possibility of surgery failure and loss of the operated eye. The determining factors for anxiety were young age and female gender. The average postoperative pain score in our patients was 3.51±1.8. A weakly positive correlation was noted between pain and duration of the procedure.

Conclusion: Managing anxiety and pain related to cataract surgery through preoperative education and adequate management is necessary to improve patient comfort and well-being.

Key words: cataract surgery, anxiety, pain, anesthesia

RÉSUMÉ

Introduction: Bien que la chirurgie de la cataracte soit une chirurgie ambulatoire de routine, l'anxiété et la douleur demeurent deux préoccupations importantes observées chez les patients.

But: Décrire l'anxiété préopératoire et la douleur postopératoire liées à la chirurgie de cataracte sous anesthésie locale et identifier les facteurs déterminants leur survenue.

Méthodes: Il s'agit d'une étude transversale, descriptive et analytique, qui a inclut des patients ayant subi une chirurgie de cataracte pour le 1er œil au service d'ophtalmologie du CHU Habib Bourguiba de Sfax-Tunisie. L'anxiété préopératoire a été évaluée à l'aide de l'Amsterdam Preoperative Anxiety and Information Scale. La douleur postopératoire était mesurée à l'aide de l'échelle visuelle analogique.

Résultats: Au total 203 patients ont été inclus avec un sex-ratio (H/F) de 0,79. L'âge moyen était de 67,73±9,4 ans. Le score moyen d'anxiété préopératoire globale était de 10,8± 5,2. Le score moyen du besoin d'information chez les patients était de 3,45± 1,5. Le facteur le plus anxiogène était la possibilité d'échec de la chirurgie et perte de l'œil opéré. Les facteurs déterminants de l'anxiété étaient l'âge jeune et le sexe féminin. Le score moyen de la douleur postopératoire chez nos patients était de 3.51±1.8. Une corrélation faiblement positive a été constatée entre la douleur et la durée de l'intervention.

Conclusion: La gestion de l'anxiété et de la douleur liées à la chirurgie de la cataracte par une éducation préopératoire et une prise en charge adéquate est nécessaire pour améliorer le confort et le bien-être du patient.

Mots clés: chirurgie de cataracte, anxiété, douleur, anesthésie

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INTRODUCTION

Cataract is the leading cause of blindness worldwide, and its removal is currently one of the most frequently performed surgical. The advent of phacoemulsification has considerably simplified the procedure, reducing the operating time, the perceived pain and providing earlier functional rehabilitation. These surgical advances were also accompanied by an evolution in anesthesia techniques. Currently, adult cataract surgery is performed under local anaesthesia: retrobulbar, peribulbar, and sub-Tenon's blocks or topical anaesthesia (1).

However, preoperative anxiety around cataract surgery affects many patients, despite advances in operative technique and anesthesia. Likewise, the pain felt after cataract surgery under local anesthesia represents, with anxiety, the major predictive factors of postoperative dissatisfaction (2,3).

Thus, assessing anxiety and pain levels before and after phacoemulsification under local anesthesia is important to improve the comfort and well-being of the patients and ensure rapid recovery (4). To the best of our knowledge, anxiety and pain on the course of cataract surgery has yet to be reported in tunisian population. We proposed in this study to evaluate preoperative anxiety and postoperative pain associated with phacoemulsification under local anesthesia and identify the determining factors in their occurrence.

METHODS

Study design and participants

This is a cross-sectional, descriptive and analytical, study carried out in the Ophthalmology Department of Habib Bourguiba University Hospital in Sfax over a period of three months from February 2023 to April 2023. The medical ethics committee approved the research proposal, and all patients presented an informed consent before inclusion in the study. We included patients aged 20 years and over, who had their first eye cataract surgery by phacoemulsification under peribulbar locoregional anesthesia, and who completed both the pre- and postoperative questionnaire. We excluded from this study patients suffering from severe deafness, psychiatric or neurological disorders, Cushing's syndrome, Addison's disease, or dysthyroidism ; those with an ocular comorbidity that could affect the sensation of pain such as keratitis ; those who had taken corticosteroids, nonsteroidal anti-inflammatory drugs, or anxiolytic drugs ; those operated on for a traumatic cataract ; and those who had an intraoperative complication.

Data gathering

We recorded, on a pre-established data sheet, the anamnestic and clinical data of the patients (sex, age, education level, habitation, habits, medical history, ocular comorbidity, cataract etiology, cataract type, and operated side) and we used two different questionnaires :

- A self-assessment questionnaire for anxiety and the need for preoperative information based on the Amsterdam Preoperative Anxiety and Information Scale (APAIS, six questions) (5) (Table 1) completed the day of the surgery in the waiting room. An anxiety score greater than or equal to 11 corresponds to a high level of anxiety; below this score the anxiety level is classically considered adapted to the situation. For the score relative to the need for information, it is possible to distinguish three groups of patients (from 2 to 4: none or little need for information; from 5 to 7: average need for information; beyond 7: high need for information). We also asked patients to name the most anxiety-provoking factor (failure of surgery and loss of the operated eye, feeling pain postoperatively, or none).

- A questionnaire to assess pain during cataract surgery is based on the visual analog scale (VAS) (6) completed immediately after surgery in the recovery room. VAS is made up of a 10 cm line on which patients must position a cursor to situate their pain, ranging from the absence of pain to the maximum imaginable pain (between 1 and 3: pain of mild intensity; between 4 and 5: pain of moderate intensity; between 6 and 7: intense pain; greater than 7: very intense pain).

We noted for each patient the time and duration of the intervention.

Table 1. The Amsterdam Preoperative Anxiety and Information Scale (APAIS)

Agreement with each statement should be graded on a five-point Likert scale from 1 = not at all to 5 = extremely

A1 I am worried about the anesthetic
A2 The anesthetic is on my mind continually
A3 I would like to know as much as possible about the anesthetic
C1 I am worried about the procedure
C2 The procedure is on my mind continually
C3 I would like to know as much as possible about the procedure
Average scores calculated from the Amsterdam scale
A1 + A2 : Anxiety related to anesthesia
C1 + C2 : Anxiety related to surgery
A1 + A2 + C1 + C2 : Global anxiety
A3 + C3 : Need for information

Anesthetic and surgical procedures

All our patients had the same anesthetic protocol. A drop of contact anesthetic (Cebesine 0.4%) was instilled into the lower fornix. A peribulbar anesthesia, which consisted of injecting a mixture of Lidocaine 2% and bupivacaine 0.5% into the extra conic space using a 25 gauge needle followed by a globe massage, was performed.

Our patients were all operated on using the same surgical procedure. A 2.2 mm corneal incision was made. Viscoelastic was injected, followed by 5.5 mm continuous curvilinear capsulorhexis, hydrodissection, nuclear rotation, and phacoemulsification. A folded monofocal intraocular lens was implanted with the dedicated injector. The residual viscoelastic was then aspirated and the incision was hydrated with normal saline.

Statistical analysis

The description of the qualitative variables was made by the numbers observed and the frequencies (%). For quantitative variables, the study of the distribution of the data was carried out using the skewness and kurtosis coefficients and normality tests. The description of these variables was made by means and standard deviations in the case of normal distribution and by medians and interquartile ranges otherwise.

For the analysis of the association between two qualitative variables, we used the Pearson chi2 test for the comparison of two frequencies in the case of verified application conditions and the Fischer test otherwise. For the analysis of the association between a qualitative variable and a quantitative variable, we used the Student t test for the comparison of two means and the non-parametric Mann Whitney test for the comparison of two medians otherwise.

The study of the correlation between two quantitative variables was carried out using the Spearman correlation test.

We retained the significance threshold for $p \leq 0.05$.

RESULTS

A total of 203 patients were included in the study. The mean age of the patients was 67.73 ± 9.4 with extremes of 33 and 93 years. There was a female predominance with a sex ratio (M/F) of 0.79 (90/113). Table 2 summarises socio-demographic and clinical characteristics of the patients.

The mean overall preoperative anxiety score was 10.08 ± 5.20 . Seventy-eight patients (38.4%) had a score greater than or equal to 11 considered to be a high level of anxiety. The average preoperative anxiety score related to anesthesia was 4.78 ± 2.6 , that related to surgery was 5.19 ± 2.7 and that related to the need for information was 6.91 ± 2.7 . The majority of patients (57%) presented a high need for information with a score greater than seven. The failure of the surgery and losing the operated eye was the only anxiety-provoking factor in our patients. Patients suffering from anxiety before cataract surgery are on average younger than the others (65.71 years old vs 69 years old). In addition, among this population women were more anxious than men, respectively 49.6% versus 24.4%. We found no correlation between patients' preoperative anxiety and medical or ophthalmologic history, habitation, education level, habits, cataract etiology and subtype, timing of surgery and operated side (Table 3).

The average postoperative pain score in our patients was 3.51 ± 1.8 . Sixty percent (60.7%) of patients reported mild pain after cataract surgery; 25.7% moderate pain; 10.2% intense pain; and 3.4% very intense pain. We did not find a significant correlation between pain intensity and age, sex, medical history, educational level, and intervention timing ($p > 0.05$) (Table 4).

Table 2. Socio-demographic and clinical characteristics of the patients

Parameter	Value
Sex, n (%)	
Female	113 (56)
Male	90 (44)
Age, mean (SD)	67,73 (\pm 9,4)
Education, n (%)	
Illiterate	79 (39)
Primary	104 (51)
Secondary	13 (6)
High	7 (3)
Habitation, n (%)	
Urban	133 (66)
Rural	70 (34)
Habits, n (%)	
Tobacco	31 (15)
Neffa	6 (3)
Medical history, n (%)	
Yes	132 (65)
No	71 (35)
Ocular comorbidity, n (%)	
Yes	57 (28)
No	146 (72)
Cataract etiology, n (%)	
Senile	175 (86)
Pathological	16 (8)
Iatrogenic	7 (3)
Complicated	3 (1)
Congenital	2 (1)
Cataract type, n (%)	
Cortical	56 (28)
Nuclear	16 (8)
Posterior subcapsular	66 (33)
Cortical+nuclear	42 (20)
Nuclear+ Posterior subcapsular	23 (11)
Operated side, n (%)	
Dominant	105 (52)
Non dominant	98(48)
Intervention duration, mean (SD)	36 (\pm 11.5)
Intervention timing, n (%)	
Morning	85 (42)
Afternoon	118 (58)

A positive correlation, albeit a weak one, was present between postoperative pain (VAS) and duration of the intervention ($p=0.26$; $r=0.156$). No correlation was observed between the preoperative APAIS score and the intensity of postoperative pain measured by the VAS ($p=0.497$). No correlation was observed between the preoperative APAIS score and the intensity of postoperative pain measured in male patients ($p=0.681$) and female patients ($p=0.832$).

Table 3. Factors associated with preoperative anxiety

	Anxious (n=78)	Non anxious (n=125)	p	OR [CI _{95%}]
Age (years)	65,71±8,3	69±9,98	0,016	0,962 [0,932-0,993]
Sex				
Male	22 (24,4 %)	68 (75,6 %)	<0,001	0,329 [0,18-0,604]
Female	56 (49,6 %)	57 (50,4 %)		3,037 [1,657-5,566]
Medical history	51 (38,6 %)	81 (61,4 %)	0,932	-
Ocular comorbidity	25 (44,6 %)	31 (55,4 %)	0,261	-
Habitation				
Urbain	54 (40,6 %)	79 (59,4%)	0,379	-
Rural	24 (34,3 %)	46 (65,7%)	0,379	-
Education level				
Illiterate	31 (39,2 %)	48 (60,8 %)	0,849	-
Primary	37 (35,6 %)	67 (64,4 %)	0,393	-
Secondary	7 (53,8 %)	6 (46,2 %)	0,252	-
High	3 (42,9 %)	4 (57,1 %)	1	-
Habits				
Tobacco	8 (25,8 %)	23 (74,2 %)	0,117	-
Neffa	1 (14,3 %)	6 (85,7 %)	0,254	-
Cataract etiology				
Senile	67 (38,3 %)	108 (61,7 %)	0,92	-
Pathological	7 (43,8 %)	9 (56,3 %)	0,648	-
Complicated	1 (33,3 %)	2 (66,7 %)	1	-
Iatrogenic	2 (28,6 %)	5 (71,4 %)	0,71	-
Congenital	1 (50 %)	1 (50 %)	1	-
Cataract type				
Cortical	19 (33,9 %)	37 (66,1 %)	0,416	-
Nuclear	9 (56,3 %)	7 (43,8 %)	0,127	-
Posterior subcapsular	23 (34,8 %)	43 (65,2 %)	0,467	-
Cortical + Nuclear	18 (42,9 %)	24 (57,1 %)	0,507	-
Nuclear + Posterior subcapsular	9 (39,1 %)	14 (60,9 %)	0,941	-
Intervention timing				
Morning	28 (32,9 %)	57 (67,1 %)	0,173	-
Afternoon	50 (42,4 %)	68 (57,6 %)	0,173	-
Operated side				
Dominant	35 (33,3 %)	70 (66,7 %)	0,123	-
Non dominant	43 (43,9 %)	55 (56,1 %)		

Table 4. Factors associated with postoperative pain

	Mild/Moderate (n=176)	Severe/Very severe (n=27)	P
Age (years)	67,36±9,588	68,44±8,984	0,677
Sex			
Male	80 (88,9%)	10 (11,1%)	0,412
Female	96 (85%)	17 (15%)	
Medical history	116 (87,9%)	16 (12,1%)	0,5
Education level			
Illiterate	67 (84,8%)	12 (15,2%)	0,527
Primary	90 (86,5%)	14 (13,5%)	0,945
Secondary	12 (92,3%)	1 (7,7%)	1
High	7 (100%)	0 (0%)	0,597
Intervention timing			
Morning	76 (89,4 %)	9 (10,6 %)	0,334
Afternoon	100 (84,7 %)	18 (15,3 %)	

DISCUSSION

Cataract surgery under local anaesthesia is often accompanied by anxiety. The results of our study indicate that 38.41% of the patients were anxious. Older studies indicate that 32% of the patients experience increased emotional tension prior to first-eye cataract surgery (2). We found a mean APAIS score for overall anxiety of 10.8 ± 5.8. The average score for anxiety related to anesthesia was 4.78 ± 2.6, that related to surgery was 5.19 ± 2.7 and that related to the need for information was 6.91 ± 2.7. A study conducted in France by Gayadine-Harricham and Amzallag (7) found that the average overall anxiety score was 6 [5-10], the average anesthesia anxiety score was 3 [2-4.5], that linked to surgery was 3 [2-6] and that linked to the need for information was 3 [2-5]. Similarly, another study in the USA found an average overall anxiety score before first-eye cataract surgery of 5 [4-20]. Our study found higher scores for anxiety. We also noted that half of the population surveyed (57%) have a high information requirement. These results could be explained by a lack of information and communication with health personnel. The surgical procedure was more anxiety-provoking than anesthesia in our study and the main source of anxiety for patients before surgery was concern about the outcome of surgery, fearing loss of the operated eye. Similarly, in the literature, patients reported greatest anxiety around the operation itself and becoming blind (8). Regarding factors associated with preoperative anxiety, we found that anxiety was significantly associated with female gender and younger age of patients. A study of the determinants of surgery related anxiety in cataract patients found that women and patients with higher trait anxiety were more likely to experience higher levels of state anxiety (9).

Postoperative pain is relatively common during the first hours after surgery. According to the results of our study, 60.7% of patients reported mild postoperative pain after their operation, while 25.7% of patients reported moderate pain, 10.2% experienced severe pain and 3.4 % reported very severe pain. Furthermore, the mean VAS score among patients was 3.51 ± 1.8. The incidence of ophthalmic pain during the first postoperative hours varied significantly between 6% and 95% across the studies and the incidence of moderate or severe pain was 1% to 35% (10). The mean pain scores during the first hours after surgery ranged between 0.5 and 1.7. Although the median pain severity was slight, some patients experienced significant postoperative pain (10). In our study, a weakly positive correlation was noted between the intensity of postoperative pain and the duration of the surgical procedure (p = 0.26; r = 0.156). In addition to the intervention duration ; female patients, patients with a younger age, and patients with higher education level were likely to report more pain in the literature (11). Eye dominance, prior cataract surgery, and high myopia may also predispose patients to experience more pain (3). In another study, patients undergoing cataract surgery in the afternoon showed more preoperative anxiety which may have increased their relevant stress hormones and aggravated the perceived pain (12). Furthermore, we did

not demonstrate a significant correlation between anxiety and pain, since no correlation was observed between the preoperative APAIS score and the postoperative pain intensity measured by the VAS ($p= 0.497$). This could be compatible with other studies, which demonstrated that patients experienced lower anxiety in the surgery of the second eye than that of the first eye but more pain (13). However a prospective study of preoperative anxiety levels and pain during cataract surgery including 103 eyes has found that patients with severe anxiety were > 10 times more likely to experience severe pain (14).

In a systematic review, the most effective in reducing fear and tension is adequate preoperative education and counselling for patients (2). Combining a conversation with watching a video of cataract surgery, short massage administered immediately before surgery and music listened to by patients before and during surgery significantly lower anxiety (4). Apart from traditional anaesthesia of the eye, sedation and/or analgesia are sometimes used to minimise the patient's emotional discomfort. The administration of melatonin as a premedication for scheduled cataract surgery allow a better quality of intraoperative sedation-analgesia (15). Patients undergoing cataract surgery should also be provided high-quality nursing techniques and pain management after surgery (4,16).

The strength of this study is that it represents the first study in Tunisia focusing on the levels of anxiety and pain linked to cataract surgery. The results found were consistent with literature data. Limitations are that the time allocated to carry out this work was limited and the absence of comparative study between cataract surgeries of both eyes in the same patient.

CONCLUSION

This study allowed us to describe the levels of anxiety and pain perceived in patients undergoing cataract surgery by phacoemulsification under local anesthesia at the Habib Bourguiba University Hospital of Sfax-Tunisia and to analyze the associated factors. This will enable to raise awareness among health personnel about this problem influencing the experience and well-being of patients, and to put in place measures and actions to deal with it.

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