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Research Article

Assessment of Pain and Anxiety Related to Cataract Surgery

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Abstract

Purpose: List and analyze the factors related to anxiety and pain related to cataract surgery under loco regional anesthesia in Lomé.

Methods: We carried out a cross-sectional study, over a period of 7 months from January to July 2020, on patients undergoing cataract surgery. The Amsterdam preoperative anxiety and information scale (APAIS from 6 to 30) assessed preoperative anxiety before each intervention. The visual analogic scale (VAS from 0 to 10) measured the Postoperative pain.

Results: We considered 105 patients, including 50 men and 55 women, i.e. a sex ratio (M/F) of 0.91. The mean age was 61.71 ± 14.14 [22-88] years. The average duration of surgery was 22.52 ± 6.73 minutes. The mean global preoperative anxiety score was 7.22 ± 3.14. Women had an average global anxiety score of 8.04 versus 6.32 for men. The mean global preoperative anxiety score for the first eye was 6.75 versus 8.72 for the second eye. The most anxiety-provoking preoperative factor was the feeling of postoperative pain (19.05%) followed by probable losing of the operated eye (9.52%). Over 105 patients, 5 (4.76%), reported immediate postoperative pain equal to 4 according to the VAS for the first eye versus 8 (10.26%) for the second eye. Immediate postoperative period revealed 12.73% of women expressing pain at 4 according to the VAS compared to 12% of men.

Conclusion: The management of anxiety and pain related to cataract surgery involves informing the patient about anesthesia, surgery, postoperative follow-up, and the expected visual result. The contribution of music to the theater in reducing preoperative anxiety needs exploring in a subsequent study.

Keywords: Anxiety; Pain; Cataract Surgery; Lomé

Abbreviation

WHO: World Health Organization; APAIS: Amsterdam Preoperative Anxiety and Information Scale; VAS: Visual Analogic Scale; APAIS: Spielberger State-Trait Anxiety Inventory

Introduction

Blindness is a world public health concern, and even more in developing countries. According to the World Health Organization [1] (WHO), in 2020, at least 2.2 billion people worldwide face visual impairment affecting near or distance vision. For at least 1 billion of these people, almost half of them, visual impairment could have been avoided or has not yet been treated. Nearly 90% of those with visual impairment live in developing countries where 80% of visual impairment is preventable or curable [2]. The prevalence of visual impairment in many low or middle income regions is estimated to be four times higher than in high-income regions [1,2].

Cataract is the total or partial opacification of the lens. It is the first cause of curable blindness in the world, and represents 50%

of all causes of blindness [3-5]. The treatment of cataract is surgical and several techniques exist [3], whose reference is phacoemulsification. However, its practice is not widespread in developing countries because of its cost. Manual small incision cataract surgery (MSICS) gives results comparable to phacoemulsification [6,7]. Any surgery is likely a source of anxiety for the patient [8]. Pain, along with anxiety are the major predictors of postoperative dissatisfaction [9]. The aim of our study is to analyze the factors related to preoperative anxiety and postoperative pain of cataract surgery by MSICS.

Materials and Methods

We carried out a cross-sectional, multicenter study over a period of 7 months from January to July 2020. We included patients aged 20 and over in our study, operated for cataract in one of two centers (one public and one confessional) in Lomé during the study period. The technique used is MSICS under peribulbar anesthesia, based on 2% lidocaine with adrenaline. Patients under 20 years old, those with no light perception, those with proven ocular comorbidity were not included in our study. Preoperative anxiety was assessed using the Amsterdam preoperative anxiety and information scale [10] (APAIS) rated from 6 to 30 (Table 1). Each item is scored from 1 to 5 depending on the adherence to the sentence by the patient. Items 1, 2, 4, 5-rate anxiety. To obtain the anxiety score, we put the four items together. An anxious patient scores greater than 11. Items 3 and 6 rate the desire for information. We added these two items to obtain the score of desire for information. A score of 2 to 4 would indicate a "refusal of information", a score between 5 and 7 a "moderate desire for information", and a score greater than 7 a "greedy desire for information". The visual analogic scale (VAS) rated from 0 to 10 according to the intensity of the pain measured the postoperative pain.

		1	2	3	4	5
1	I'm worried about the anesthetic					
2	The anesthetic is on mind continually					
3	I would to know as much as possible about the anesthetic					
4	I am worried about the procedure					
5	The procedure is on my mind continually					
6	I would like to know as much as possible about the procedure					

Table 1: Amsterdam Preoperative Anxiety and Information Scale (APAIS) score [10].

The variables studied were age, sex, operated side, the number of bilateral cataract surgery patients, the duration of the procedure, the level of preoperative anxiety, and postoperative pain.

We collected data on a pre-established tested and validated survey form. We performed statistical analysis using R 4.0.3 software (R Core Team, Vienna). For the comparison of proportions, we used Chi 2 and Fisher tests.

This study was carried out in compliance with the rules of professional conduct and medical ethics governing clinical research in Togo and respectful to the tenets of Declaration of Helsinki.

Results and Discussion

Results

We operated 130 cataracts during the study period, of which 105 met the inclusion criteria, i.e. 80.77%. The average age of the patients was 61.71 ± 14.14 years with extremes of 22 and 88 years. There was a female predominance with a sex ratio (M/F) of 0.91 (50/55).

Right-handed patients represented 95.2% of the sample (100 cases). The left eye was the most operated in 78 cases (74.3%). The intervention of the first eye was the most performed in 80 cases (76.2%). There were 6 cases (94.3%) of intraoperative complications. The average duration of surgery was 22.52 ± 6.73 minutes with extremes of 15 to 50 minutes.

The mean global anxiety score was 7.22 ± 3.14 [4-18]. The mean anxiety score related to anesthesia was 3.72 ± 1.67 [2-8], that related to surgery was 3.49 ± 1.57 [2-8] and that related to need for information was 3.07 ± 1.51 [2-6]. According to sex, women were more anxious than men were, and there was no significant difference between the need for information and sex (Figure 1). The average global preoperative anxiety score before the second eye intervention was 8.72 ± 3.10 and 6.75 ± 3.02 before the first eye intervention with a statistically significant difference (p = 0. 0081). The preoperative factors of anxiety were the fear of experiencing postoperative pain (19.05%) followed by the probable loss of the operated eye (9.52%). Depending on the operated eye, 40% of patients feared postoperative pain during the second operation. The difference between the anxiety factors and the operated eye was statistically significant (p = 0.0004). Table 2 shows the anxiety factors and scores.

Figure 1: Anxiety score according to genre.

Figure 2: Visual Analogic Score of postoperative pain according to follow up.

	First eye	Second eye	p value
Anxiety score			
Link to anesthesia	3,40 ± 1,52 (2 à 8)	4,76 ± 1,74 (2 to 6)	0,0012
Link to surgery	3,35 ± 1,52 (2 à 8)	3,96 ± 1,67 (2 to 6)	0,1120
Link to need of information	3,45 ± 1,50 (2 à 6)	3,84 ± 1,62 (2 to 4)	0,0028
Global score	6,75 ± 3,02 (4 à 18)	8,72 ± 3,10 (4 to 14)	0,0081
Factors link to anxiety			
Surgery failure	5 (6,25%)	5(20,0%)	
Pain	10(12,50%)	10(40,0%)	P = 0,0004
Nothing	65(81,25%)	10(40,0%)	

Table 2: Preoperative anxiety according to the operated eye and factors link to surgery.

Among the 105 patients, 13 (12.86%) reported immediate postoperative pain equal to 4 according to the VAS. On Day 1 and Day 7, no patient declared postoperative pain equal to 4 according to the VAS (Figure 2). Eight patients (10.26%) over 13 patients declared a postoperative pain at 4 during the intervention of the second eye. The difference between the level of postoperative pain and the operated eye was statistically significant (p = 0.0006). Table 3 shows the level of immediate postoperative pain according to the operated eye and gender.

	First eye N = 80 n (%)	Second eye N = 25 n (%)	Female N = 55 n (%)	Male N = 50 n (%)
0	5(18,52%)	0(0,00%)	3(5,45%)	2(4,00%)
1	12(44,44%)	39(50,00%)	26(47,27%)	25(50,00%)
2	0(0,00%)	12(15,38%)	7(12,73%)	5(10,00%)
3	5(18,52%)	19(24,36%)	12(21,82%)	12(24,00%)
4	5(18,52%)	8(10,26%)	7(12,73%)	6(12,00%)

Table 3: Immediate postoperative pain (VAS) according to the operated eye and genre.

Discussion

Our study showed that the average global preoperative anxiety score was 7.22 ± 3.14. Women were more anxious than men, and the score was higher for the second eye compared to the first eye. The most anxiety-provoking preoperative factors were the fear of experiencing postoperative pain (19.05%) followed by the possibility of losing the operated eye (9.52%). Among the 105 patients, 5 (4.76%) reported immediate postoperative pain equal to 4 according to the VAS against 8 (10.26%) during the intervention of the second eye. In the immediate postoperative period, 12.73% of women expressed pain at 4 according to the VAS compared to 12% of men.

In our series, the mean age of the patients was 61.71 years. These figures are similar to those of Koffi., *et al.* [11] who reported 62 years. This result is explained by the fact that senile cataracts are the most frequent and the age being the main risk factor for cataracts.

We noted a female predominance with a sex ratio of 0.91. Guirou., *et al*. [12] found also a female predominance, contrasting with the results of Diallo., *et al*. [7] who found a male predominance. We could explain this by the fact that our study population was predominantly urban where women have more economic power than in rural areas.

The Amsterdam Preoperative Anxiety and Information Scale [10] (APAIS) is the only self-assessment scale for anxiety in adults that is easy to use in everyday practice. The anglo-saxon gold standard for the evaluation of preoperative anxiety is the Spielberger State-Trait Anxiety Inventory [13] (STAI) of two groups of 20 questions, but it is more complex to perform.

Our results indicate that most patients were not highly anxious. The APAIS score relating to global anxiety was on average 7.22 and the score relating to the need for information was 3.07. Batta., *et al*. [14] had found an average overall anxiety of 6.5 and a score relating to the need for information of 3.2, close to ours. Women had higher anxiety scores than men (8.04 versus 6.32), these results are consistent with the literature [9,15]. Anxiety is a stress coping mechanism, when it is low to moderate. When the patient's adaptation capacities exceed, the surgical conditions become more complicated. In women, a link is more often between reactive (situational) and background (temperament) anxiety, and between anxiety and postoperative pain [9].

The average global anxiety score was significantly higher before the intervention of the second eye than before the intervention of the first eye (respectively 8.72 and 6.75). On the other hand, Jiang., *et al*. [16] reported less preoperative anxiety before surgery on the second eye. We can explain by the fact that cataract surgery is not performed exactly the same way each time, although highly codified; and the patient having already global knowledge of the procedure can also be aware of this reality. This could increase the feelings of anxiety during the second eye procedure.

In our study, the most anxiety-provoking factors are the feeling of experiencing postoperative pain followed by the possibility of losing the operated eye. Ramirez., *et al*. [17] reported failure of surgery and loss of eye function in their study. The management of anxiety and its factors requires a good doctor-patient relationship, a detailed explanation of the stages of anesthesia and surgery, postoperative follow-up and the expected visual result. The involvement of each patient's beliefs as well as social support also contribute to minimize preoperative anxiety.

In our study, 100% of patients reported a higher pain score during second eye surgery in the immediate postoperative period compared to 96.15% on postoperative day 1. Ursea., *et al*. [18] reported that 40% of patients reported higher pain scores on the day of second eye surgery. Our results differ from the Sharma., *et al*. [19] in which the mean pain score was not significantly different between the two interventions. However, in the study of Sharma., *et al*. [19], the patients are submitted to local anesthesia and intravenous sedation and the surgery was performed by different surgeons. Short-term pain memory is an explanation for the greater pain experienced during a second surgical procedure, especially if the two procedures are close in time.

Several authors have described an inverse relationship between preoperative anxiety and postoperative pain. During the first intervention, patients expect a higher level of pain than it actually is, reflecting the high anxiety scores. Postoperatively, they tend to underestimate their pain. During the second intervention, patients are less anxious since they know that the intervention is not very painful. They are then more attentive to intraoperative sensations and tend to overstate their pain [16].

Music is a credible therapy and can be a reliable alternative to the administration of sedatives and anxiolytics in many areas of health care [20]. Moreover, this has been the subject of studies in ophthalmology by Guerrier., *et al*. [21], who has concluded that music was effective in reducing anxiety and pain in cataract surgery patients.

The limit of this study is the direct interview method used which has the disadvantage of under-evaluation and subjectivity of the answers given because of the patient's natural tendency to please the doctor.

Conclusion

Cataract surgery is anxiety provoking and our study showed that female sex and second eye surgery increase this anxiety. To reduce preoperative anxiety, one should put more emphasis on the doctor-patient relationship that builds patient confidence by giv-

ing him the benefit of well-adapted information. The key to the prevention of post-operative pain lies in the management of patient expectations, good anesthesia, the smooth running of surgery and good post-operative follow-up. A subsequent study seems appropriate to us in order to evaluate, in our work context, the contribution of music in reducing the preoperative anxiety of our patients.

Conflit of Interest

The authors don't declare any conflict of interest in relation with this manuscript.

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