

Assessment of Pain Perception During Ophthalmic Surgical Procedures.

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Abstract

Background: There are many barriers to the uptake of ophthalmic surgeries ranging from financial, logistic, fear of loss of sight and fear of pain of surgery.

Aims: To find out the aspects of ocular surgeries that patients find most painful and the impact of preemptive medication on the pain experienced.

Methods: Using a semi-structured questionnaire, 103 patients were surveyed between July 2005 and September 2006. All patients had retro bulbar anaesthesia and facial nerve block by Van lint or O'brein method. Thirty three patients were given a preemptive analgesic and sedative. Pain experienced at 3 stages: {(the retro bulbar injection (RBI), the surgery proper (SGR), and the sub conjunctival injection of antibiotics (SCI)} of the procedure was assessed. Verbal descriptive pain assessment scale was used to grade the pain at each of the 3 stages to: 0 means no pain, 1-3, mildly painful, 4-6, moderately painful and 7-10 most painful.

Results: One hundred and three patients were studied (63 males). The age range was 20 to 99 years {(mean 61.5 years (S.D 16.5 years)}. The surgical procedures carried out were: Extra capsular cataract extraction (ECCE) with posterior chamber intraocular lens (PCIOL) implantation in 88 patients, trabeculectomy in 10 patients and 5 other procedures. Fifty two patients (50.5%) found RBI most painful, 43 patients (41.7%) found SCI most painful, 6 patients (5.8%) found SGR most painful and 2 patients found the Van lint facial nerve block most painful. Compared to those not given preemptive analgesia, (44.2%), (66%) and (14%) of those who were given found RBI, SGR and SCI most painful respectfully. $P>0.05$ for RBI, $P>0.05$ for SGR and $P<0.01$ for SCI.

Conclusion: Retro bulbar injection of an anaesthetic agent was the aspect that most of the ophthalmic surgical patients found to be most

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painful during their surgery. Preemptive analgesia has no significant pain-relieving effect on pain experienced during retro bulbar injection and surgery.

Key words: painful, retro bulbar, subconjunctival, preemptive analgesia ophthalmic surgery patients

Introduction

There are many barriers to the uptake of ophthalmic surgeries. These range from financial¹, logistic^{2,3}, fear of loss of sight from complications of surgery⁴ and fear of pain of surgery⁵. Although patients' sensitivity to pain varies, they all experience some degrees of pain at some stage of their surgery. Interaction between patients who have undergone ophthalmic surgery and those who are being scheduled to have such surgery may impact positively or negatively on the new patients depending on the experience of the operated patients about how painful they find their surgery to be^{3,6}.

Surgical patients have their expectations as to the degree of pain they will experience during surgery but studies have shown that the pain many of these patients experience is far more than they anticipated^{7,8}. An appraisal of perioperative pain management by all stake holders has shown that perioperative pain relief / management is suboptimal^{8,9,10}. This poor perioperative pain management range from inadequate analgesic prescription by doctors⁹ to incomplete dispensing or serving of prescribed analgesics by the nurses¹⁰ all resulting in patients rating their perioperative pain management as very low^{8,11}. Apart from this, the authors' observation of patients' reaction to pain induced by some procedures from retro bulbar anaesthesia in preparation for surgery to the routine subconjunctival injection at completion of surgery shows that they experience significant pain at various stages of the surgery. This prompted the study which aimed to find out the aspects of commonly performed ocular surgeries that patients find most painful. The impact of preemptive medication on the pain experienced was assessed, and ways of

ameliorating the pains was suggested.

Methods:

Using an interviewer administered semi-structured questionnaire, a cross-sectional survey of 103 consented patients was carried out between July 2005 and September 2006. The study was conducted at 3 different hospitals in Kwara state of Nigeria, consisting of the University of Ilorin Teaching Hospital, Ilorin (UIITH), and Comprehensive Health Centre, Esie and Kwara State Specialist Hospital, Offa. The same ophthalmic team worked in all the hospitals and the same interviewer administered the questionnaire during the study period. All the patients had retro bulbar anaesthesia and facial nerve block by Van lint or O' brein method. Thirty three patients (32.0%) were given an intramuscular injection of 50 100 mg tramadol hydrochloride and 5 10 mg of diazepam) on the table before the retro bulbar injection for preemptive analgesia and sedation respectively.

Information sought were those of age, sex, ethnicity, and the type of surgery the patients had. Three stages of the procedure were assessed. These were the retro bulbar injection (RBI) of Lidocain hydrochloride with 2% adrenaline in preparation for surgery, the surgery proper (SGR) (i.e. the stage from conjunctival incision to the closure of conjunctival wound), and the sub conjunctival injection of gentimicin and dexamethasone mixture (SCI) at the end of the procedure. They were also asked to indicate any other part of the surgery they found to be most painful apart from those listed. The verbal descriptive pain assessment scale of the University of Virginia Health System¹² was used to grade the pain experienced at each of the 3 stages to: 0 means no pain, 1 3, mildly painful, 4 6, moderately painful and 7 10 most painful. The records of "most painful" in each of the 3 stages were analyzed. Cataract extraction and trabeculectomy that formed the bulk of the surgeries took an average of 30 to 40 minutes. The data were collected and analyzed using SPSS 11.0. The test of significance was performed using chi square (χ^2) test. The statistical significant difference was taken at $p < 0.05$.

Excluded from the study were: Patients who had general anaesthesia, patients who refused consent, patients who had language barrier and children less than 15 years old.

Results.

One hundred and three patients were included in the study consisting 63 males (61.2%) and 40

females (38.8%). The age ranged from 20 years to 99 years with a mean of 61.5 and standard deviation of ± 16.5 years. All the patients were Nigerians.

The surgical procedures carried out were extracapsular cataract extraction (ECCE) with posterior chamber intraocular lens (PCIOL) implantation in 88 patients (85.3%), trabeculectomy in 10 patients (9.7%) and Intracapsular cataract extraction (ICCE) in 1 patient (1.0%). Other procedures are as shown in Table 1.

Fifty two patients (50.5%) found RBI to be the most painful aspect of the surgery. Forty three patients (41.7%) found the SCI most painful, while 6 patients (5.8%) found SGR most painful. Two patients (2%) found the Van lint method of facial nerve block to be the most painful aspect.

The effect of preemptive medication on the pain experienced by the patients during the various aspects of the surgery was further analyzed by finding the percentage of those who found the various aspects most painful among those given preemptive medication and those not given. Out of those who found RBI most painful ($n = 52$), 44.2% were given preemptive medication Out of those who found SGR most painful ($n = 6$), 66.6% were given preemptive medication Out of those who found SCI most painful ($n = 43$), 14.0% were given preemptive medication. The 2 patients that found Van lint procedure most painful were not given preemptive medication. Fig. 1.

Discussion

Preemptive analgesia means that an analgesic intervention is started before the noxious stimulus arises in order to block peripheral and central nociception. This afferent blockade of nociceptive impulses is maintained throughout the intra-operative and post-operative period. Owing to this 'protective' effect on the nociceptive system, pre-emptive analgesia has the potential to be more effective than a similar analgesic treatment initiated after surgical trauma has been inflicted. The goals of preemptive analgesia are, first, to decrease acute pain after tissue injury, second, to prevent pain-related pathologic modulation of the central nervous system, and third, to inhibit the persistence of postoperative pain and the development of chronic pain¹³

There are conflicting reports about its relevance and efficacy. Several reports¹⁴ favour its administration, while few¹⁵ find it questionable.

All the patients in this study found one aspect of the surgery or the other most painful as shown by Figure 1. It shows that less of those given preemptive medication than those not given found (RBI) most painful. However the difference is not statistically significant. ($P > 0.05$). Another possible reason for its insignificant effect on RBI in this study is the short interval between the administration of the preemptive medication and the retro bulbar injection since the onset of action of tramadol hydrochloride is just a few minutes and its peak serum concentrations is about 2 hours¹⁶. At the stage of SCI however, though the maximum effect of the preemptive medication might not have been attained, it has commenced¹⁴. This is because despite the fact that the analgesic effect of RBI apply equally to those given and those not given preemptive medication, significantly less of those given preemptive medication found the SCI most painful. Table. 2.

Retro bulbar injection is still being widely practiced^{17, 18} although topical and sub tenon methods offer less painful alternatives due to their less invasive nature. It has previously been shown that, although all the 3 methods gave adequate analgesia for cataract surgery, the analgesic effects of RBI is superior to those of peribulbar and topical methods^{18, 19}. However, RBI has been reported to be more painful than the others¹⁹. This fact is corroborated by the findings of this study of about half of all the patients finding this aspect of their surgery most painful.

At the stage of surgery (SGR), much less number of patients 6 (5.8%) found this aspect to be most painful. This is in keeping with findings of previous workers^{18, 19} who found the analgesic effect of RBI superior to those of the other methods. The effect of preemptive medication at

Table: 1. surgical procedures carried out on the patients

Surgical Procedure	No	%
ECCE – PC IOL	88	85.3
Trabeculectomy	10	9.7
ICCE	1	1.0
Posterior Capsulotomy	1	1.0
ECCE+ PCIOL + Trabeculectomy	1	1.0
Secondary ACIOL insertion	1	1.0
Remnants of lens cortical matter washout	1	1.0
Total	103	100

Key: ECCE = Extra capsular cataract extraction
 ICCE = Intracapsular cataract extraction
 PCIOL = posterior chamber intraocular lens
 ACIOL = Anterior chamber intraocular lens

Fig. 1 Aspects of ocular surgery that patients found to be most painful

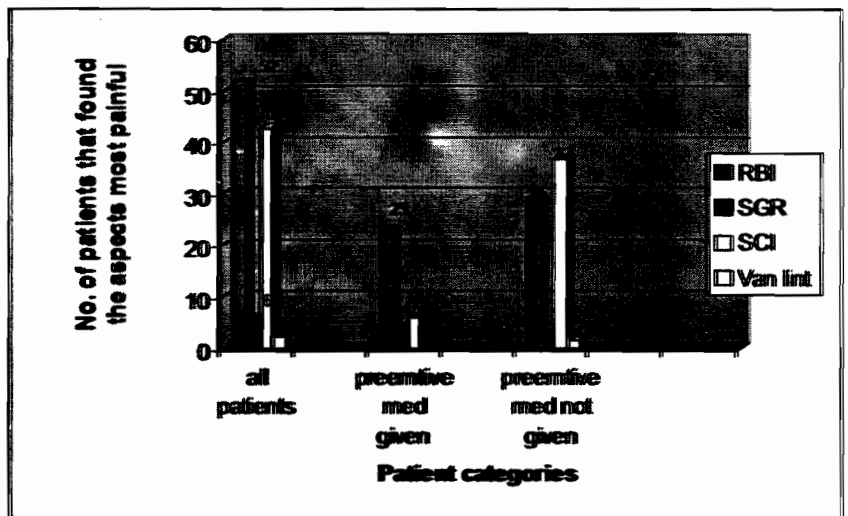


Table 2. Impact of Preemptive medication on Pain Experienced

all patients	Preemptive medication given		Preemptive medication not given		P - Values	Chi - squares
	No	%	No	%		
52	50.5	23	29	55.8	$P > 0.05$	1.92
6	5.8	4	2	33.3	$P > 0.05$	1.14
43	41.7	6	37	86.0	$P < 0.01$	42.86
2	2.0	0	2	100		
103	100	33	70	100		

Van lint Facial

this stage is rather paradoxical since preemptive medication is supposed to relieve or reduce the pain experienced during surgery. Though the effect is not statistically significant and the number of the patients involved (6) is very small, it may suggest that preemptive medication is rather anxiety-provoking than pain-relieving at this stage. Keiko et al²⁰ found that patients feel more pain if anxiety in the treatment environment

is higher.

Subconjunctival injection of antibiotics is one of the methods of providing prophylaxis against postoperative infections. Other methods are intracameral and preoperative topical antibiotics application. SCI is still being widely practiced^{21, 22, 23} even in developed countries where, due to their stricter adherence to principles of hygiene, there is less opportunity for wound contamination. Reports^{21, 22} indicated that SCI is superior as a prophylactic method against post operative endophthalmitis after cataract surgery than other methods. Intracameral injection of antibiotics has been reported to be effective and safe too^{23, 24}. However pre operative antibiotic therapy only was found to be infective in maintaining a pathogen-free conjunctiva after 48hrs of treatment.²⁵

To reduce the pain associated with SCI, it is suggested that topical anaesthetic drug be applied before it is carried out. For patient with low risk of endophthalmitis who has proven to be sensitive to pain at the early stages of the surgery, intracameral injection may be employed. Premedication rather than preemptive analgesia should be administered at an appropriate time prior to surgery taking cognizance of the pharmacokinetics of the drugs used so that it may reduce the pain of retro bulbar injection. Counseling of patient about what to expect and explanations of the procedures may alleviate anxiety and pain.

Conclusion: Retro bulbar injection of an anaesthetic agent was the aspect that most of the ophthalmic surgical patients found to be most painful during their surgery. Preemptive analgesia has no significant pain-relieving effect on pain experienced during retro bulbar injection and surgery.

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