

Original Article

Evaluation of the Effect of Oral Vitamin B1 on Pain Due to Corneal Neuropathy after Cataract Surgery

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Abstract

Purpose: Cataracts are the leading cause of low vision and blindness in the world, and the only effective treatment for cataract vision impairment is surgery, which has common complications such as eye pain and burning, inflammation, and postoperative headache. The aim of this study was to evaluate the effect of vitamin B1 on oral pain on corneal neuropathy after cataract surgery in Jiroft.

Patients and Methods This randomized clinical trial study was performed on cataract patients who were candidates for surgery and referred to Imam Khomeini Hospital in Jiroft in 2020. Demographic information was collected through a designed checklist and the Numerical Pain Scale (NRS) was used to measure postoperative severity in the eye. The collected data were analyzed using SPSS-V21 software.

Results: In this study, 130 patients with cataracts (intervention group: 65 and control group: 65) were studied. The intervention group consisted of 27 men (41.5 %) and 38 women (58.5 %) and the control group consisted of 25 men (38.5 %) and 40 women (61.5 %). On the third day and one week after surgery, there was no significant difference in the amount of eye pain and irritation caused by surgery in the intervention and control groups, and in the three months after surgery, the intervention group had mild eye pain and irritation.

Conclusion: The results of this study showed that taking vitamin B1 orally affects eye irritation and pain caused by corneal neuropathy after cataract surgery and reduces eye irritation and pain intensity during 3 months.

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Introduction

Over the past few decades, cataracts have been a major cause of low vision and vision loss in the world, and their prevalence is increasing in developed and developing countries ¹.

There are currently 16-20 million people with cataracts in need of surgery worldwide (vision 3/60 or worse) and the world population is projected to increase by about 30 % over the next 20 years and although some people with cataracts will die during this time, the number of people with cataracts at that time will still be around 40 million ^{2,3}

Aging (the most common cause), ionizing radiation (X-Ray), gamma rays from old TVs, prolonged exposure to sunlight (ultraviolet light), eye and lens exposure, diabetes, congenital malformations, and malnutrition are known to be effective in causing this disease.

Cataracts begin with the blurring of the lens of the eye and impair vision by increasing the opacity of the lens. Diplopia and blurred vision, darkness and milky whitening of the pupils are common symptoms of this disease ^{4,5}

Various studies have shown that surgery is the only effective treatment for cataract vision impairment. Cataract surgery has the highest number of eye surgeries in the world and is the most common eye surgery. The prevalence of cataract surgery is still increasing due to the association of this disease with age ⁶.

According to a study conducted on 8000 patients who underwent cataract surgery in 28 ophthalmology centers in Iran between 2000 and 2005, it was shown that the highest rate of cataract surgery in Iran is in the age group of 71 to 80 years and its prevalence was 32.76 % ^{7,8}.

The most common complications of this surgery are eye discomfort in various forms such as pain and burning of the eye and its

appendages, infection, inflammation, bleeding and increased intraocular pressure, as well as headache ^{7,9}.

In a study conducted in Labbafinejad Hospital in Tehran from 2000 to 2002, it was shown that uveitis after cataract surgery, which is accompanied by eye pain, decreased vision and photophobia, is one of the common complications of this surgery and its prevalence has been reported up to 30 % ¹⁰.

On the other hand, vitamin B1 is a water-soluble vitamin that plays an important role in various activities of the body including hematopoiesis, carbohydrate metabolism, central nervous system activities, nervous muscular system and muscle tonus ¹¹.

The results of previous research also show the effect of vitamin B1 on reducing postoperative pain and reducing the symptoms of dysmenorrhea. The aim of this study was to evaluate the effect of oral vitamin B1 on pain due to corneal neuropathy after cataract surgery in Jiroft, southeastern of Iran.

Methods and materials: This study was performed as a randomized clinical trial in 2020 on patients with cataracts referred to the ophthalmology clinic of Imam Khomeini Hospital in Jiroft, who were candidates for cataract surgery by phacoemulsification method. In this study, patients were randomly divided into two homogeneous groups. Using a table of random numbers, even samples were divided into intervention subjects and odd numbers were divided into non-intervention subjects. The randomization was performed based on variables such as age and sex. In the first group (intervention) after obtaining informed consent from patients, 300 mg, daily vitamin B1 (in the form of tablets) was indicated immediately after surgery and treatment continued for 3 months. The second group (control) did not receive oral vitamin

B1. convenience sampling method was used to select the samples so that by referring to the eye clinic of Imam Khomeini Hospital in Jiroft, people who needed cataract surgery and met the inclusion criteria were selected. Inclusion criteria included patients with cataract diagnosis referred to Imam Khomeini Hospital in Jiroft who were candidates for the phacoemulsification surgery method. Exclusion criteria included dissatisfaction and not cooperation of study participants, drug addiction, underlying diseases that disrupted the research results. The sample size was estimated by considering the error of the first type 5 % and the test power 90 % and considering the possibility of dropping the samples after placement in the following formula, 65 people in each group were estimated.

$$n_A = \frac{(\varphi+1)(Z_{1-\beta} + Z_{1-\alpha})^2 \sigma^2}{\varphi[(\mu_A - \mu_B) - d]^2} = \frac{(1+1)(1.28+1.96)^2 5^2}{1[(0)-3]^2} = \frac{524.88}{9} = 58.32 \square 59 \rightarrow n_A = 59 + 6 = 65$$

Patient information was collected through a pre-designed checklist through questions. In this checklist, demographic information of patients including age, sex, consumption of vitamin B1 and eye under surgery, drug addiction, underlying disease, history of eye surgery, and medications used were recorded. In addition, through a checklist designed to perform the intervention, respectively, in the first visit (three days after surgery), second visit (one week after surgery), third visit (three weeks after surgery), and fourth visit (three months, after surgery) pain intensity was assessed using the Numerical Rating Scale for Pain (NRS), eye irritation, foreign body sensation in the eye, photophobia and tearing. This scale is obtained according to the questionnaire so that according to the patient's opinion, a number of pain intensity was reported and the number zero means never, one to three mild, three to six moderate

and seven to ten severe. After entering the questionnaire data into spss-v21 software, first, statistical indicators related to descriptive statistics such as mean, standard deviation, frequency, and frequency percentage were calculated. Kolmogorov-Smirnov test was used to check the normality of the data. Then, to test the hypotheses, parametric tests such as independent two-sample t-test, analysis of covariance, and analysis of variance with duplicate measures or their non-parametric counterparts such as Mann-Whitney test, non-parametric analysis of covariance, and Chi-square test were used. This study was approved by IR.JMU.REC number in the ethics committee of Jiroft University of Medical Sciences. The participants were also assured that the information was confidential and informed consent was obtained from them.

Results

In this study, 130 patients with cataracts referred to the eye clinic of Imam Khomeini Hospital in Jiroft were examined, of which 65 cases were treated with vitamin B1 (intervention group: 65 patients and control group: 65 patients).

Table 1 shows the frequency distribution of demographic variables in patients under study. In the intervention group, 27 men (41.5 %) and 38 women (58.5 %) and in the control group, 25 men (38.5 %) and 40 women (61.5 %) were studied.

In the intervention group, most of the patients were in the age group of 80-85, and in the control group, most of the patients were in the age group of 75-80 years. There was no statistically significant relationship between the ratio of patients in terms of age and sex in the intervention and control groups ($P > 0.05$).

Table 2 shows the Frequency distribution of patients based on the effect of oral vitamin B1 consumption on pain due to corneal neuropathy after cataract surgery (at three days, one week, three weeks and three months after cataract surgery). At the third day and one week after surgery, patients in the intervention group (n = 45 and percentage = 69.2 %) and patients in the control group (n = 46 and 70 = 70.8 %) had severe pain intensity. There was no statistically significant relationship between the effect of vitamin B1 consumption on pain intensity in the intervention and control groups in visits after three days (P = 0.88). There was no statistically significant relationship between the effect of vitamin B1 consumption on pain intensity in the intervention and control groups in visits after three weeks (P = 0.668). Three months after surgery, in the intervention group, most patients had mild pain intensity, which is the same in the control group, and in general, three months after cataract surgery, most patients (N = 61, percentage = 46.9) had mild pain

intensity.

Finally, there was a significant relationship between the effect of oral vitamin B1 on the pain of corneal neuropathy after three months after cataract surgery in the intervention and control groups (P = 0.02).

Table 3 shows frequency distribution of patients based on the effect of taking oral vitamin B1 on eye irritation due to cataract surgery (at three days, one week, three weeks and three months after cataract surgery). Three months after surgery, in the intervention group, most patients had no or mild eye irritation (number = 28 and percentage = 43.1), which is the same in the control group (number = 22 and percentage 33.8) and in general, three months after cataract surgery, most patients (number = 50 and percentage = 38.5) had mild eye irritation.

Finally, there was a significant relationship between the effect of oral vitamin B1 on eye irritation due to corneal neuropathy after three months after cataract surgery in the intervention and control groups (P = 0.018).

Table 1: Frequency distribution of demographic variables of the subjects by gender and age

variables	Intervention Number (percentage)	Control Number (percentage)	Significance level
Sex			
Male	27 (41/5)	25 (38/5)	0/85
Female	38 (58/5)	40 (61/5)	
Age			
60-55	2 (3/1)	0 (0)	
65-60	1 (1/5)	7 (10/8)	
70-65	10 (15/4)	9 (13/8)	0/13
75-70	12 (18/5)	15 (23/1)	
80-75	17 (26/2)	21 (32/3)	
85-80	20 (30/8)	12 (18/5)	
90-85	3 (4/6)	1 (1/5)	

Table2: Frequency distribution of patients based on the effect of oral vitamin B1 consumption on pain due to corneal neuropathy after cataract surgery (at three days, one week, three weeks and three months after cataract surgery)

Visits after the surgery	Group		Never	Mild	Moderate	Severe	P Value	Significance level
Three days	Intervention	Number	0	3	17	45	0.88	Not-significant
		Percentage	0	4.6	26.2	69.2		
	Control	Number	1	1	17	46		
		Percentage	1.5	1.5	26.2	70.8		
	Total	Number	1	4	34	91		
		Percentage	0.8	3.1	26.2	70		
One week	Intervention	Number	1	2	25	37	0.239	Not-significant
		Percentage	1.5	3.1	38.5	56.9		
	Control	Number	0	8	25	32		
		Percentage	0	80	50	46.4		
	Total	Number	1	10	50	69		
		Percentage	0.8	7.7	38.5	53.1		
Three weeks	Intervention	Number	2	18	32	13	0.668	Not-significant
		Percentage	3.1	27.7	49.2	20		
	Control	Number	4	15	28	18		
		Percentage	6.2	23.1	43.1	27.7		
	Total	Number	6	33	60	31		
		Percentage	4.6	25.4	46.2	23.8		
Three months	Intervention	Number	26	33	5	1	0.02	Significant
		Percentage	40	50.8	7.7	1.5		
	Control	Number	20	28	11	6		
		Percentage	30.8	43.1	16.9	9.2		
	Total	Number	46	61	16	7		
		Percentage	35.4	46.9	12.3	5.4		

Table 3: Frequency distribution of patients based on the effect of taking oral vitamin B1 on eye irritation due to cataract surgery (at three days, one week, three weeks and three months after cataract surgery)

Visits after the surgery	Group		Never	Mild	Moderate	Severe	P Value	Significance level			
Three days	Intervention	Number	3	4	20	38	0.609	Not-significant			
		Percentage	4.6	6.2	30.8	58.5					
	Control	Number	5	4	19	37					
		Percentage	7.7	6.2	29.2	56.9					
	Total	Number	8	8	39	75					
		Percentage	6.2	6.2	30	57.7					
	One week	Intervention	Number	4	4	22			35	0.702	Not-significant
			Percentage	6.2	6.2	33.8			53.8		
Control		Number	7	3	19	36					
		Percentage	10.8	4.6	29.2	55.4					
Total		Number	11	7	41	71					
		Percentage	8.5	5.4	31.5	54.6					
Three weeks		Intervention	Number	5	10	37	13	0.841	Not-significant		
			Percentage	7.7	15.4	56.9	20				
	Control	Number	7	10	29	19					
		Percentage	10.8	15.4	44.6	29.2					
	Total	Number	12	20	66	32					
		Percentage	9.2	15.4	50.8	24.6					
	Three months	Intervention	Number	28	28	8	1			0.018	Significant
			Percentage	43.1	43.1	12.3	1.5				
Control		Number	21	22	18	4					
		Percentage	32.3	33.8	27.7	6.2					
Total		Number	49	50	26	5					
		Percentage	37.7	38.5	20	3.8					

Table 4: Frequency distribution of patients based on the effect of taking oral vitamin B1 on foreign body sensation in the eye due to cataract surgery (at three days, one week, three weeks and three months after cataract surgery)

Visits after the surgery	Group		Never	Mild	Moderate	Severe	P Value	Significance level
Three days	Intervention	Number	6	6	25	28	0.524	Not-significant
		Percentage	9.2	9.2	38.5	43.1		
	Control	Number	8	6	26	25		
		Percentage	12.3	9.2	40	38.5		
	Total	Number	14	12	51	53		
		Percentage	10.8	9.2	39.2	40.8		
One week	Intervention	Number	6	9	33	17	0.559	Not-significant
		Percentage	9.2	13.8	50.8	26.2		
	Control	Number	8	9	33	15		
		Percentage	12.3	13.8	50.8	23.1		
	Total	Number	14	18	66	32		
		Percentage	10.8	13.8	50.8	24.6		
Three weeks	Intervention	Number	10	8	37	10	0.844	Not-significant
		Percentage	15.4	12.3	56.9	15.4		
	Control	Number	7	14	32	12		
		Percentage	10.8	21.5	49.2	18.5		
	Total	Number	17	22	69	22		
		Percentage	13.1	16.9	53.1	16.9		
Three months	Intervention	Number	16	39	6	4	0.914	Not-significant
		Percentage	24.6	60	9.2	6.2		
	Control	Number	19	33	8	5		
		Percentage	29.2	50.8	12.3	7.7		
	Total	Number	35	72	14	9		
		Percentage	26.9	55.4	10.8	9.6		

Table 5: Frequency distribution of patients based on the effect of oral vitamin B1 consumption on photophobia due to cataract surgery (at three days, one week, three weeks and three months after cataract surgery)

Visits after the surgery	Group		Yes	No	P Value	Significance level
Three days	Intervention	Number	60	5	0.546	Not-significant
		Percentage	92.3	7.7		
	Control	Number	58	7		
		Percentage	89.2	10.8		
	Total	Number	118	12		
		Percentage	90.8	9.2		
One week	Intervention	Number	56	9	0.796	Not-significant
		Percentage	86.2	13.8		
	Control	Number	57	8		
		Percentage	87.7	12.3		
	Total	Number	113	17		
		Percentage	86.9	13.1		
Three weeks	Intervention	Number	41	24	0.46	Not-significant
		Percentage	63.1	36.9		
	Control	Number	45	20		
		Percentage	69.2	30.8		
	Total	Number	86	44		
		Percentage	66.2	33.8		
Three months	Intervention	Number	13	52	0.671	Not-significant
		Percentage	20	80		
	Control	Number	15	50		
		Percentage	23.1	76.9		
	Total	Number	28	102		
		Percentage	21.5	78.5		

Table 6: Frequency distribution of patients based on the effect of taking vitamin B1 orally on tearing caused by cataract surgery (at three days, one week, three weeks and three months after cataract surgery)

Visits after the surgery	Group		Never	Mild	Moderate	Severe	P Value	Significance level			
Three days	Intervention	Number	0	3	28	34	0.935	Not-significant			
		Percentage	0	4.6	43.1	52.3					
	Control	Number	0	4	26	35					
		Percentage	0	6.2	40	53.8					
	Total	Number	0	7	54	69					
		Percentage	0	5.4	41.5	53.1					
	One week	Intervention	Number	0	6	34			25	0.495	Not-significant
			Percentage	0	9.2	52.3			38.5		
Control		Number	0	11	28	26					
		Percentage	0	16.9	43.1	40					
Total		Number	0	17	62	51					
		Percentage	0	13.1	47.7	39.2					
Three weeks		Intervention	Number	2	17	42	4	0.084	Not-significant		
			Percentage	3.1	26.2	64.6	6.2				
	Control	Number	3	17	38	7					
		Percentage	4.6	26.2	58.5	10.8					
	Total	Number	5	34	80	11					
		Percentage	3.8	26.2	61.5	8.5					
	Three months	Intervention	Number	31	27	7	0			0.359	Not-significant
			Percentage	47.7	41.5	10.8	0				
Control		Number	37	22	6	0					
		Percentage	56.9	33.8	9.2	0					
Total		Number	68	49	13	0					
		Percentage	52.3	37.7	10	0					

On the other hand, according to the results of the study, there wasn't seen a statistically significant relationship between the effect of oral vitamin B1 consumption on foreign body sensation, photophobia, and tearing after surgery in three days, one week, three weeks, and three months after cataract surgery in the two intervention and control groups.

Discussion

The aim of this study was to evaluate the effect of oral vitamin B1 on the pain of corneal neuropathy after cataract surgery in Imam Khomeini Hospital in Jiroft, 2020.

In this study, 130 patients with cataracts referred to the eye clinic of Imam Khomeini Hospital in Jiroft were examined, of which 65 were treated with vitamin B1 (intervention group: 65 and control group: 65).

Age is a cumulative factor in the factors that lead to cataracts over time, and vitamin B1 deficiency is one of the most common nutrient deficiencies in the world, especially among middle-aged people. The results of this study showed that most of the patients with cataracts referred to the eye clinic of Imam Khomeini Hospital in Jiroft were elderly and female and were in the age range of 75 to 85 years.

In Sehat et al.'s study of age-related cataract surgery and the proportion of second eye cataract surgeries, the number of men and women was almost equal ¹².

Also, the mean age of patients in first eye surgery was 78.46 ± 11.3 and 77.84 ± 11.6 years in the second eye surgery. There was no significant difference between these two values.

In their study, Rouhani et al. Concluded that most patients with cataracts were middle-aged (60-80 years old) and that 58 % of the study population were male ⁹.

Results of Rahimi et al, Showed that there

was no significant difference between the study groups at a significant level of 5 % of the average age demographic index and gender frequency distribution. In the study of Abbaszadeh et al., There was no significant difference between healthy and sick people in the age groups studied, however, a slight but significant difference was observed for those over 70 years of age. Also, in their study, the number of women was more than men ¹³.

Other findings of the study indicate that there is not a significant relationship between the effect of vitamin B1 consumption on the severity of pain due to corneal neuropathy after three days, one week and three weeks of cataract surgery in the intervention and control groups ($P = 0.668$) However, there was a significant relationship between the effect of oral vitamin B1 on the pain of corneal neuropathy after three months after cataract surgery in the intervention and control groups ($P = 0.02$) In their study, Ozen et al. Showed that vitamin B1 deficiency was directly related to neuropathic eye pain ¹⁴.

The results also showed that there was no significant relationship between the effect of vitamin B1 consumption on eye irritation due to corneal neuropathy after three days, one week and three weeks of cataract surgery in the intervention and control groups ($P > 0.05$). However, there was a significant relationship between the effect of oral vitamin B1 on eye irritation due to corneal neuropathy after three months after cataract surgery in the intervention and control groups ($P < 0.05$).

Ren et al. found a significant relationship between dry eye in different groups after two months of treatment with vitamin B1 ¹⁵. This significance may be due to the larger sample size in each group in the study by Ren et al. Another study found that some eye problems, such as burning and itching of the eyes and

exacerbation of these complications, are closely linked to vitamin B1 deficiency¹⁶.

The results show that there is no statistically significant relationship between the effect of vitamin B1 consumption on foreign body sensation after three days, one week, three weeks and three months after cataract surgery in the intervention and control groups ($P > 0.05$). While the findings of this study contradict the findings of Shetty et al. Their results showed that there was a significant relationship between vitamin B1 intake, 1 to 2 months after treatment, and foreign body sensation¹⁵.

Findings showed that there was no significant relationship between the effect of oral vitamin B1 consumption on photophobia after three days, one week, three weeks, and three months after cataract surgery in the intervention and control groups ($P > 0.05$). These findings also, contradict the findings of Shetty et al. Their results showed that there was a significant relationship between vitamin B1 intakes, 1 to 2 months after treatment with photophobia¹⁵. Finally, the results showed that there was no

statistically significant relationship between the effect of vitamin B1 consumption on tears caused by three days after, one week, three weeks, and three months of cataract surgery in the intervention and control groups ($P > 0.05$). A limitation of this study is the relatively small sample size. It is suggested that in future studies, which will be similar, this be done using a larger sample size.

Conclusion

The results of this study showed that oral vitamin B1 consumption affects eye irritation and pain caused by corneal neuropathy after cataract surgery and reduces eye irritation and pain intensity during 3 months. Our results also showed that vitamin B1 intake had no effect on foreign body sensation, photophobia, and tears.

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References:

1. Gimbel HV, Dardzhikova AA. Consequences of waiting for cataract surgery. *Current opinion in ophthalmology*. 2011;22(1):28-30.
2. Allen D, Vasavada A. Cataract and surgery for cataract. *Bmj*. 2006;333(7559):128-32.
3. Lamoureux EL, Fenwick E, Pesudovs K, Tan D. The impact of cataract surgery on quality of life. *Current opinion in ophthalmology*. 2011;22(1):19-27.
4. Hashemi H, Alipour F, REZVANI F, Khabazkhoob M, Alaeddini F, Fotouhi A. Intraoperative complications of cataract surgeries in Iran: 2000-2005 Iranian cataract surgery survey. 2011.
5. Porela-Tiihonen S, Kaarniranta K, Kokki M, Purhonen S, Kokki H. A prospective study on postoperative pain after cataract surgery. *Clinical ophthalmology (Auckland, NZ)*. 2013;7:1429.
6. Gil-Gouveia R, Fonseca A. Cluster headache after cataract surgery. *The Clinical Journal of Pain*. 2013;29(11):e19-e21.
7. Jabalameli M, Safavi M, Honarmand A, Saryazdi H, Moradi D, Kashefi P. The comparison of intracapsular injection

- tramadol, pethidine and bupivacaine on postcesarean section pain relief under spinal anesthesia. *Advanced biomedical research*. 2012;1.
8. Mohtadi A, Nesioonpour S, Salari A, Akhondzadeh R, Rad BM, Aslani SMM. The effect of single-dose administration of dexamethasone on postoperative pain in patients undergoing laparoscopic cholecystectomy. *Anesthesiology and pain medicine*. 13;4(3):e17872.
9. Rouhani M, BORJIAN D, ERFANIAN SR. Preoperative clonidine in preventing ocular hypertension. 2003.
10. Rahimi M, Farsani DM, Naghibi K, Alikiaii B. Preemptive morphine suppository for postoperative pain relief after laparoscopic cholecystectomy. *Advanced biomedical research*. 2016;5.
11. Bobrow J, Beardsley T, Jick S, Rosenburg L, Wiggins M, Reich E, et al. Lens and cataract, basic and clinical science course. *American Academy of Ophthalmology*. 2012;2013:39-41.
12. Sehat M, Katibeh M, Moein H, Eskandari A, Talebian P, Ziaei H, et al. Time Trend and Prevalence of Second-Eye Cataract Surgery in Labbafinejad Hospital. 2012.
13. Samadi Aidenloo N, Abbaszadeh M, Motarjemizadeh Q, Talaahmari P. Association between Serum Vitamin C Levels and Nuclear Cataract. *Journal of Medical Council of Iran*. 2017;35(3):270-5.
14. Ozen S, Ozer MA, Akdemir MO. Vitamin B12 deficiency evaluation and treatment in severe dry eye disease with neuropathic ocular pain. *Graefe's Archive for Clinical and Experimental Ophthalmology*. 2017;255(6):1173-7.
15. Shetty R, Deshpande K, Ghosh A, Sethu S. Management of ocular neuropathic pain with vitamin B12 supplements: a case report. *Cornea*. 2015;34(10):1324-5.
16. Talaei A, Siavash M, Majidi H, Chehrei A. Vitamin B12 may be more effective than nortriptyline in improving painful diabetic neuropathy. *International Journal of Food Sciences and Nutrition*. 2009;60(sup5):71-6.

Footnotes and Financial Disclosures

Conflict of interest:

The authors have no conflict of interest with the subject matter of the present manuscript.