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VISUAL ACUITY AND DEPRESSIVE SYMPTOMS BEFORE AND AFTER FIRST EYE CATARACT SURGERY IN ELDERLY PATIENTS

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VIDNA OŠTRINA I DEPRESIVNI SIMPTOMI PRE I POSLE PRVE OPERACIJE KATARAKTE KOD STARIJIH PACIJENATA

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ABSTRACT

Aim. The aim of this research is to determine the potential impact of visual acuity on the occurrence of depressive symptoms in elderly patients before and after first eye cataract surgery, using the method of phacoemulsification.

Methods. The study lasted from May 2015 until May 2016 in the Eye Clinics, Clinical Centre "Kragujevac", Serbia. The total number of patients was 435, 234 men and 201 women. The patients who participated in the study were required to complete the GDS-15 scale. The GDS-15 scale was filled out twice, two weeks prior to surgery and four weeks after surgery.

Results. Statistical analysis showed that a significant difference exists in the level of visual acuity before and after surgery ($p<0.001$). The results of the GDS-15 scale before and after cataract surgery indicated a significant difference ($p<0.003$). Further group testing of depressive symptoms before and after surgery has shown: without symptoms ($p<0.003$), mild symptoms ($p<0.002$), moderate symptoms ($p<0.001$) and severe symptoms ($p<0.004$). The visual acuity in the non-operated eye has an important role in depressive symptoms before ($p<0.002$) and after ($p<0.001$) cataract surgery.

Conclusions. The study found that a statistically significant difference exists between the loss of visual acuity and the occurrence of depressive symptoms before and after first eye cataract surgery. Visual acuity is a very important factor in reducing depressive symptoms in older patients.

KEY WORDS: *cataract, visual acuity, depressive symptoms*

SAŽETAK

Cilj. Cilj istraživanja je da se determiniše potencijalni uticaj vidne oštrine na pojavu depresivnih simptoma kod starijih pacijenata pre i posle prve operacije katarakte metodom fakoemulzifikacije.

Metode. Studija je trajala od maja 2015. do maja 2016. godine. Studija je sprovedena na očnoj klinici Kliničkog centra Kragujevac. Ukupan broj pacijenata bio je 435, i to 234 muškarca, a 201 žena. Participanti studije popunjavali su GDS-15 upitnik nakon dve i nakon četiri nedelje posle prve operacije katarakte.

Rezultati. Statistička analiza pokazala je da postoji signifikantna razlika između nivoa vidne oštrine pre i posle operacije katarakte ($p<0.001$). Rezultati GDS-15 skale pre i posle operacije katarakte ukazuju na signifikantnu značajnost ($p<0.003$). Dalje testiranje GDS-15 skale obavljeno je poređenjem različitih grupa depresivnih simptoma pre i posle operacije katarakte, i to: bez simptoma depresije ($p<0.003$), blagi simptomi ($p<0.002$), umereni simptomi ($p<0.001$) i ozbiljni simptomi depresije ($p<0.004$). Analiziran je i uticaj vidne oštrine neoperisanog oka. Neoperisano oko ima značajnu ulogu u pojavi depresivnih simptoma pre ($p<0.002$) i nakon ($p<0.001$) operacije katarakte.

Zaključak. Studija je ustanovila signifikantnu povezanost između gubitka vidne oštrine i pojave depresivnih simptoma pre i posle prve operacije katarakte kod starijih pacijenata. Vidna oštrina može da bude značajan faktor u redukovanju pojave depresivnih simptoma kod pacijenata operisanih od katarakte.

KLJUČNE REČI: *katarakta, vidna oštrina, depresivni simptomi*

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INTRODUCTION

Vision loss among the elderly is a major health care problem. Approximately one person in three has some form of vision-reducing eye disease by the age of 65 (1). Senile cataract continues to be the main cause of visual impairment and blindness in the world (2,3). Cataract prevalence increases with age. The prevalence of cataracts also increases with age in developing countries (4).

Cataracts are a common cause of vision impairment among the elderly, but surgery is effective in restoring vision (5). Cataracts typically progress slowly to cause vision loss, and are potentially blinding if untreated (6). Depending on the type of cataract, and its progression, during the 6-12 month waiting period for surgery patients need to continually adapt to the loss of visual acuity (5,7,8).

Phased loss of vision and complete loss can have a major impact on patients who are diagnosed senile cataract. Depression symptoms are present in patients from the time of intraocular lens blur (gradual loss of visual acuity) to the surgical intervention (1).

Recent studies have shown a close correlation between a patient's level of visual acuity and depressive symptoms before and after cataract surgery (9–13).

The level of visual acuity of the non-operated eye is an important element in the level of depressive symptoms (14–16).

The aim of this research is to determine the potential impact of visual acuity on the occurrence of depressive symptoms in elderly patients before and after first eye cataract surgery.

METHODS

Sample

Of the 435 patients participating in this study, 234 were men (53.8%) and 201 women (46.2%). The age structure ranged from 62 years to 95 years.

To obtain power level of 0.8 at minimum significance level of 0.05 and a large effect size (Cohen's d = 0.3), each group would required at least 139 patients for one-tailed and for two-tailed at least 176 patients (17).

The criteria for selection of the participants were based on the following: diagnosed with senile cataracts; first cataract surgery; without other ocular and systemic disease (18–20). This study did not take into consideration patients who already had an operation for cataracts and were awaiting for further cataract surgery.

Procedures

The study lasted from May 2015 until May 2016 in the Eye Clinics, Clinical Centre "Kragujevac", Serbia.

Before any information was collected, informed written consent was obtained from each participant. Participation was entirely voluntary and patients were informed that they could withdraw from the study at any time without consequence for their cataract treatment. Patients who agreed to be part of the research, with the help of researchers, completed a Geriatric Depression Scale. The GDS scale was filled out twice, two weeks prior to surgery and four weeks after surgery. A similar procedure was used in the previous studies (9,11).

Instruments

In the research we used a short Geriatric Depression Scale with 15 questions (GDS-15) that derived from the 30-item GDS and is one of the most widely used instruments for screening for depression among older adults (21–26). The GDS-15 has been translated into 27 languages. In the translation from English to Serbian, the person who translated the GDS was Emilija Dubljanin Raspopovic, MD, Clinical Center of Serbia, Clinics for Physical Medicine and Rehabilitation, Belgrade, Serbia (27). The short scale is more easily used by ill patients, and mildly to moderately demented patients, who have short attention spans and/or feel easily fatigued. It takes about 5 to 7 minutes to complete (28–30). The GDS scale is significantly successful in differentiating depressed from non-depressed adults (31–34).

Statistical analysis

All statistical analyses were performed using the SPSS 20.0 software. Descriptive statistics were used to summarize all variables of interest. The Shapiro-Wilk test of normality in all tested variables was $p<0.05$, which indicates that non-parametric tests should be used in further comparative statistical analysis. In this study we used the following comparative statistical procedures: the Wilcoxon rank-sum test, Mann-Whitney test and Kruskal-Wallis test. We used in this research Cohen's d 0.3 and statistical power level of 0.8 and probability level 0.05.

RESULTS

From the total number of patients (435) visual acuity before surgery was sorted in the range: 0.1 - 0.3 (387 patients, 88.9%) and 0.4 - 0.6 (48 patients, 11%). After surgical intervention there was an increased level of visual acuity in the range: 0.1 - 0.3 (12 patients, 2.8%), 0.4 - 0.7 (90 patients, 20.7%) and most of the patients after the intervention had a visual acuity ranged 0.8 - 1.0 (333 patients, 76.6%). Presented in Fig. 1.

The level of visual acuity on the non-operated eye was in the range: 0.1 - 0.5 (246 patients, 56.6%) and 0.6 - 1.0 (189 patients, 43.5%).

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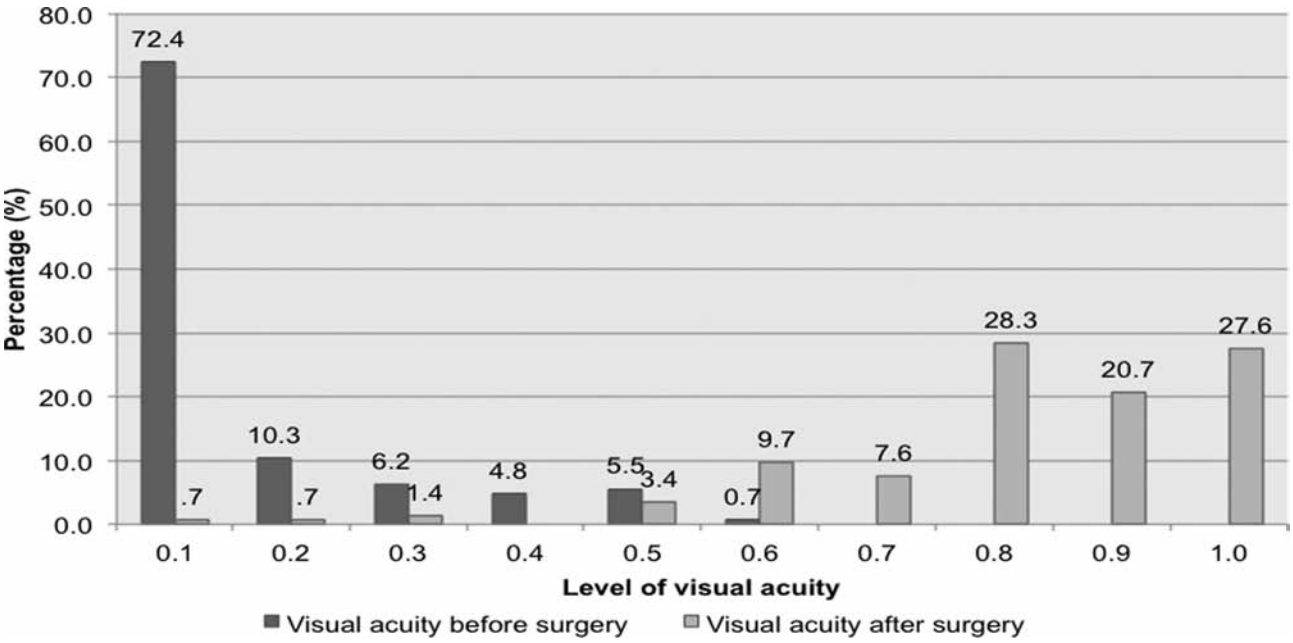

Figure 1 – Visual acuity before and after surgery

The GDS-15 scale before surgery showed a high level of mild (197 patients, 45.29%) and moderate (94 patients, 21.61%) depressive symptoms, and also showed the relative number of patients without depressive symptoms (105 patients, 24.14%). After surgical intervention the GDS-15 scale results were a decreasing tendency for mild (108 patients, 24.83%) and moderate (38 patients, 8.74%) depressive symptoms and a significant increase of non-depressive symptoms (278 patients, 63.91%). Presented in Fig. 2.

The Wilcoxon rank-sum test showed a significant difference in visual acuity before and after cataract surgery ($p<0.001$).

The result of the GDS-15 scale before and after cataract surgery, by applying the Wilcoxon rank-sum test, determined a statistically significant difference ($p<0.003$). Observing the individual groups of depressive symptoms based on GDS-15 scales revealed statistical significance before and after cataract surgery. With further testing of depressive symptoms (before and after surgery) in groups, we came to the following results: without symptoms ($p<0.003$), mild symptoms ($p<0.002$), moderate symptoms ($p<0.001$) and severe symptoms ($p<0.004$).

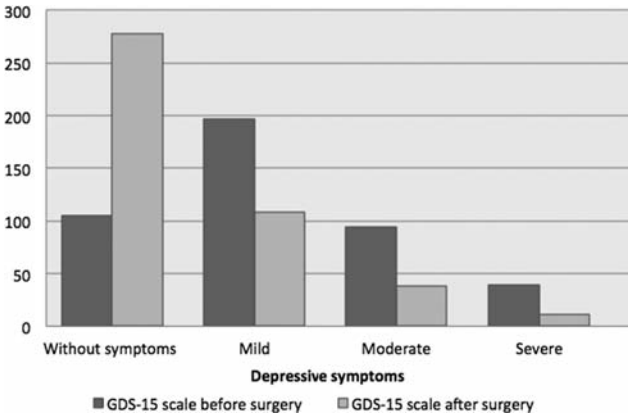

Figure 2 – Depressive symptoms before and after surgery

The Kruskal-Wallis test indicated that the level of visual acuity in the non-operated eye has an important role in depressive symptoms before ($p<0.002$) and after ($p<0.001$) cataract surgery.

Further statistical analysis established that there was no significant difference between the gender of patients and their level of visual acuity nor between gender and depressive symptoms before and after cataract surgery.

A comprenhensive view of all statistical analyses is presented in table 1.

DISCUSSION

This study found that a significant difference exists between the loss of visual acuity and the occurrence of depressive symptoms before and after first eye cataract surgery in elderly patients. Also previous studies have found a link between depressive symptoms and level of visual acuity (9–12,14,15,24,35–43).

Our study also found that a significant difference exists between the level of depressive symptoms before and after cataract surgery, and in this way that the level of depressive symptoms was significantly increased before surgical intervention and significantly decreased after.

An analysis of the impact of the visual acuity of the non-operated eye on the symptoms of depression showed that the level of visual acuity of the non-operated eye significantly affects odepressive symptoms before and after cataract surgery.

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Table 1. A comprehensive view of all statistical analyses

Examined variables	Examined groups	Z	P	R
Visual acuity before vs. after surgery	visual acuity before and after surgery	18.083	<0.001	0.613
GDS-15 before and after surgery	GDS-15 before and after surgery	13.032	<0.003	0.451
GDS-15 between groups	without symptoms before and after surgery	9.552	<0.003	0.323
	mild symptoms before and after surgery	8.187	<0.002	0.277
	moderate symptoms before and after surgery	5.140	<0.001	0.174
	severe symptoms before and after surgery	5.477	<0.004	0.185
Visual acuity non-operated eye vs. depression symptoms	non-operated eye vs. depression symptoms before surgery	$c^2 = 43.095$	<0.002	
	non-operated eye vs. depression symptoms after surgery	$c^2 = 48.944$	<0.001	

Cataracts remain as one of the main causes of visual impairment in the world, and the associated visual impairment has been shown to have significant impact on quality of life (44,45).

Therefore, visual acuity is a very important factor in reducing depressive symptoms in older patients.

ABBREVIATIONS:

GDS-Geriatric Depression Scale

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