

Research Article

Evaluation of quality of life in open angle glaucoma patients: A prospective study from a tertiary care centre of Madhya Pradesh

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Abstract: To evaluate the quality of life (QoL) of primary open angle glaucoma patients attending a tertiary eye centre. A total 60 patients were included in this study, which were divided into 3 groups i.e. primary open angle Glaucoma on medical treatment, primary open angle glaucoma that underwent surgery, 20 years age matched healthy volunteers. To assess quality of life National Eye Institute Visual Functioning Questionnaire-25 was used. The overall and subscale scores were compared in the three groups i.e. medical t/t, surgically t/t and control. There was significant differences in overall QoL score among these three groups. Glaucomatous patients had poor QoL than non-glaucomatous subjects and glaucomatous patients on medical treatment have better QoL score than the surgically treated patients. There is no difference in QoL of glaucoma patients on monotherapy with different antiglaucoma medications, while there is worsening of QoL as the number of antiglaucoma medications increases.

Keywords: quality of life, glaucoma patients, National Eye Institute Visual Functioning Questionnaire

INTRODUCTION:

Glaucoma, a progressive optic neuropathy, is the second leading cause of blindness next to cataract and affects approximately 60.5 million people worldwide [1]. In India, glaucoma accounts for 5.8% of the blindness [2]. Quality of Life (QoL) is a reflection of a person's overall wellbeing: their ability to pursue a happy and fulfilled life. It includes dimensions of physical ability, mental health, general health perceptions, social functioning and independence. Objective end points in the managements of patients with glaucoma include the level of intra ocular pressure (IOP), appearance of optic nerve and the status of visual field. In addition, over the past several years an increased awareness of effect of glaucoma on quality of life has developed. Patient's quality of life is an important concept in glaucoma management. Preservation of vision through glaucoma treatment is expected to help maintain a good quality of life, and treatment is enacted with this goal. Health-related QoL is an important outcome in glaucoma and it can be measured using either generic or vision-specific instruments. Generic instruments include the medical outcomes study short form-36, the sickness impact profile, the QoL health questionnaire, and utility values, among others. The most-used vision-specific instrument is the 25-question version of the National Eye Institute

Visual Functioning Questionnaire (NEI VFQ-25). Several studies have used this to investigate the correlation of the glaucoma visual function loss and its scores [3].

Glaucoma patients can lose quality of life for several reasons: the diagnosis itself, the functional loss, the inconvenience of the treatment, the side effects of the treatment and the cost of the treatment. Knowledge and information regarding the QoL of glaucoma patients could be useful in several aspects. It can help 'decision making' concerning customized disease management of individuals with glaucoma and promote alterations and guidelines regarding patients daily living and safety (i.e. adjustment of home environment), in order to avoid problems concerning adaptation to variable lighting conditions, avoiding obstacles, near activities, outdoor mobility/activities (walking, driving) and other tasks that glaucoma patients seem to give the greatest importance and are significantly correlated with their QoL. The diagnosis of glaucoma impacts individuals differently, with the majority of cases having little understanding of the need for adherence to their daily therapeutic regimen and the disease natural course and progress. Towards this direction, information gained from QoL studies could improve the education of newly diagnosed patients and help them realize the severity of

the disease and the importance of the adherence to daily treatment, despite the fact that symptoms are absent in early stages. This study is to compare and evaluate the QoL in glaucomatous and non glaucomatous subjects and to find out the impact of medical and surgical treatment on health related QoL in glaucoma patients.

MATERIAL AND METHOD:

This prospective study was conducted in the department of ophthalmology, Gajra Raja Medical College, Gwalior. All the 60 subjects were attended glaucoma clinic from Aug 2013 to Oct 2014. The patients were divided into 3 groups i.e. Group A- 20 cases of Primary open angle glaucoma (POAG) on medical treatment, Group B- 20 cases of Primary open angle glaucoma who underwent surgery. Group C-20 years age matched healthy volunteers. To assess quality of life National Eye Institute Visual Functioning Questionnaire (NEI VFQ)-25 was used [3]. All the patients were recorded in a predesigned proforma; that included demographic data and complete glaucoma work up. The associated relevant examinations including visual acuity, pupillary reaction, flashlight test, Van Herick test, slit lamp bio-microscopy, fundus examination, applanation tonometry and gonioscopy were also carried out.

Inclusion Criteria:

1. Diagnosed cases of POAG.
2. Having no other ocular or systemic diseases except glaucoma.
3. Individuals between 40 and 60 year of age.
4. Post operative cases of trabeculectomy, operated between past 3 to 12 months.
5. Individuals willing to sign an informed consent and able to comply with the requirements of the study.

To assess quality of life, NEI VFQ-25 was used, interview was performed by a single ophthalmologist. NEI VFQ-25 questionnaire addressed aspects of visual disability on 12 subscales, which include general health, general vision, ocular pain, near vision, distance vision, social function, mental health, role limitations, dependency, driving, color vision, and peripheral vision [3]. Each subscale had questions with five possible

answers ranging from 1 to 5 or 6. Each subscale was converted to a possible score ranging from 0 to 100, with a higher score indicating a better QoL. A composite score, which was the mean score of all subscales, was also calculated.

Statistical analysis:

The statistical analysis was performed using standard tests. Fisher's exact test was applied when two or more set of variables were compared. P value less than 0.05 was considered statistically significant.

RESULTS

In this study, Group A had 20 patients with mean age 53 years and sex ratio of 9:11. Group B and C also had 20 patients in each group with mean age of 52 and 51 years, sex ratio of 8:12 and 9:11 respectively. The overall and subscale scores were compared in the three groups i.e. medical t/t, surgically t/t and control. There was significant difference in overall QoL score among these three groups [Table.1].

The overall score, the subscale scores of NEI-VFQ 25 questionnaire significantly affected in glaucomatous subjects as compared to non-glaucomatous subjects were general health, near activities, mental health, peripheral vision, role limitations, dependency and driving.[Table.2]

Patients under medical treatment had better QoL performance than those subjected to surgery and the subscales most affected are near activities, mental health, dependency, driving and peripheral vision.($p < 0.05$) [Table 3].

There was no significant difference observed in the QoL score between the patients on different class of antiglaucoma medications used as monotherapy ($p = 0.45$) [Table 4].

There was worsening in QoL performance as the number of medication increases; monotherapy $< 3 < 4$ drug regimen. Patients on three drug regimen had similar QoL score as the patients on surgery. Further, QoL score is poorest in the patients on maximum antiglaucoma medication. [Table 5].

Table No. 1 : Comparison of Nei-Vfq score among each group

SI No.	Subscales	Group A	Group B	Group C
1.	GH	66.2	60.0	73.7
2.	GV	71.2	63.7	71.2
3.	OP	67.5	63.1	69.3
4.	NA	70.0	51.5	69.9
5.	DA	66.0	61.0	71.2
6.	SF	68.7	59.3	71.2
7.	MH	62.6	43.4	77.0
8.	RD	65.8	61.1	75.0
9.	Dependency	65.1	51.1	69.5
10.	Driving	65.4	38.6	76.3
11.	CV	71.2	63.7	90.0
12.	PV	66.2	50.0	76.2
13.	Overall score	67.2	55.5	74.2

Table No. 2 : comparison of nei-vfq scores among glaucomatous and non-glaucomatous

SI No.	Subscales	Glaucomatous	Non glaucomatous
1.	GH	63.1	73.7
2.	GV	67.5	71.2
3.	OP	65.3	69.3
4.	NA	58.5	69.9
5.	DA	68.5	71.2
6.	SF	64.0	71.2
7.	MH	53.0	77.0
8.	RD	63.4	75.0
9.	Dependency	58.1	69.5
10.	Driving	52.0	76.3
11.	CV	87.5	90.0
12.	PV	58.1	76.2
13.	Overall score	61.3	74.2

Table No. 3 : Comparison of Nei-Vfq score among medically and surgically treated glaucoma patients

SUBSCALES	GROUP A	GROUP B
1. GH	66.2	60.0
2. GV	71.2	63.7
3. OP	67.5	63.1
4. NA	70.0	51.5
5. DA	66.0	61.0
6. SF	68.7	59.3
7. MH	62.6	43.4
8. RD	65.8	61.1
9. Dependency	65.1	51.1
10. Driving	65.4	38.6
11. CV	71.2	63.7
12. PV	66.2	50.0
13. Overall score	67.2	55.5

Table No.4 : comparison of nei-vfq score for different medication

SUBSCALES	Beta blocker	PG Analogue	Alpha agonist	CA inhibitor
1. GH	75.0	75.0	75.0	75.0
2. GV	81.2	75.0	75.0	75.0
3. OP	68.7	71.8	75.0	75.0
4. NA	74.9	74.9	79.1	66.6
5. DA	72.8	68.7	79.1	66.6
6. SF	71.8	78.1	81.2	75
7. MH	64.4	78.0	70.8	62.6
8. RD	75.0	68.5	74.5	75
9. Dependency	76.2	79.0	63.3	71.6
10. Driving	74.9	76.9	63.3	66.6
11. CV	75.0	75.0	75.0	75.0
12. PV	81.2	75.0	87.5	75.0
13. Overall score	74.2	74.6	74.9	71.5

Table No. 5 : comparison of nei-vfq score among patients on different drug regime and surgically treated

SUBSCALES	Monotherapy	Dual	Triple drug	4drug regime	Surgery
1. GH	75.0	66.6	60.0	35.9	60.0
2. GV	75.0	66.6	63.7	56.2	63.7
3. OP	78.7	62.5	63.1	62.5	63.1
4. NA	82.4	66.6	61.6	61.6	61.6
5. DA	79.0	61.0	51.0	53.2	51.0
6. SF	76.1	75.0	59.3	46.8	59.3
7. MH	71.1	59.7	43.4	50	43.4
8. RD	72.5	53.8	61.1	62.5	61.1
9. Dependency	74.4	62.7	51.1	57.2	51.1
10. Driving	72.8	72.2	38.6	41.6	38.6
11. CV	75.0	66.6	63.7	62.5	63.7
12. PV	77.5	75.0	50.0	25.0	50.0
13. Overall score	73.9	65.6	55.5	41.2	55.5

DISCUSSION

Glaucoma not only affects the visual function and increases the cost of treatment, it also has a bearing on the overall health of the patients and their quality of life. This influence begins on the date of diagnosis of the disease, initially due to the patient's fear of blindness and subsequently due to the development of the disease which involves a progressive reduction of daily activities and loss of self-confidence [4]. Regarding the use of the NEI VFQ-25 for the QoL assessment, besides the fact that it is the only widely used ophthalmic QoL questionnaire, it is the most commonly used vision specific instrument and has been used in many studies around the world [5]. According to Brémond-Gignac D et al, it is the only instrument that is capable of providing information that is both sensitive and specific to eye problems while at the same time providing information on the general status of the patient. [6] A study by Sherwood et al using MOS-20 as a tool to compare the QoL of glaucoma patients and control subjects, also indicates that Glaucoma subjects

scored significantly lower than did the control subjects [7]. The studies using the NEI VFQ-25 indicate that the QoL in glaucomatous subjects is markedly compromised [8, 9]. In present study, we identified a composite score which was higher in non glaucomatous subjects as compared to glaucomatous subjects which is in accordance with other studies. However; the lower QoL score was recorded in present study than that recorded by American and Japanese workers. [8, 9]. In Indian scenario it may be attributed to poverty, illiteracy, poor personal hygiene, poor standard of living and poor medical facilities. Further, glaucomatous patients may have a social stigma attached to them which leads to depression; prohibiting them to have proper access to health care system.

In present study, the subscales most commonly influenced in glaucomatous patients were general health, near activities, mental health, peripheral vision, role limitations, dependency, and driving. The studies indicate that the domains affected greater in glaucoma

subjects are mainly general health, general vision, mental health, expectations, driving and near activities both for NEI VFQ and NEI-VFQ 25 questionnaires [10-13]. The attempt had been made to compare QoL in glaucoma and other ocular morbidities which revealed that glaucoma exerts a stronger impact on mental aspects of QoL rather than physical ones [13]. Subjects with glaucoma perceive more difficulty in driving than control subjects without glaucoma, and perceived difficulty increases with worsening VF damage in the better eye [14- 16]. A plausible mechanism for difficulty in driving among glaucoma patients is that they have more difficulty seeing peripheral objects. Indeed, one study found that subjects with glaucoma were less likely to see pedestrians on the side of the road during actual road tests, and were more likely to require an intervention by the driving evaluator [17]. Near vision tasks such as reading are also the most valued visual function amongst all subjects with or without glaucoma [18]. Difficulty in reading was noted in over 40% of the glaucoma subjects in a glaucoma focus group [19].

Among glaucomatous group, patients under medical treatment had better QoL performance than those subjected to surgery. The subscales most commonly affected are near activities, mental health, peripheral vision, dependency and driving. This is with regards to the surgical intervention in early stages of glaucoma; it has also been observed that in early-stage glaucoma, the subscales most influenced by the surgical treatment were mental health and peripheral vision, as measured by the NEI VFQ-25 [20]. However, the CIGTS showed no such difference except that there was evidence of slightly worst tolerability (localized eye symptoms) in trabeculectomy- treated patients [21, 22]. The mental health subscale summarizes the impact of the disease and/or its treatment on the patient's psychological state. The results suggest that diagnosing and performing glaucoma surgery in early-stage glaucoma can have a significant negative impact on the patient's psychological QoL state. [20] The peripheral vision subscale is more related to having glaucoma itself than to the therapy. Surgery influenced this subscale because surgery was more frequently used in more advanced cases, which is associated with more peripheral vision loss [20].

A study by Bhargava *et al.*; found that loss of vision is perceived as a threat by patients, and the conclusion of this study is that patients are concerned with their visual outcome and not their method of treatment [23]. We observed that the patients on monotherapy with different antiglaucoma medications have similar QoL performance. Paletta Guedes RA *et al.*; also found that, the presence of a given medication in the glaucoma regimen of a patient did not influence the overall NEI VFQ-25 score, except for 2 drugs [20]. It has been

observed in present study that there is worsening in QoL performance with multiple drugs. It may be due to increased exposure to preservatives such as benzalkonium chloride (BAK) that reduces tear film stability and promotes dry eye. Inconvenient dosage schedule, poor compliance and addition of side effects of drugs may also lead to poor QoL of the patients who are on multiple drugs. At the World Glaucoma Congress, Rossi and colleagues presented the results of their assessment of dry eye-related quality of life in patients with glaucoma [24]. The prevalence of dry eye syndrome increased from 5% of the control group to 39% and 40% of the patients with glaucoma who used 2 and 3 anti-glaucoma drops daily respectively. This increased trend in dry eye was associated with a parallel decrease in the patients' quality of life. Topical medication related ophthalmic squeeze dispenser (OSD) contribute to worse symptoms, poorer adherence, worse surgical outcome and reduced QoL in glaucoma patients [25, 26]. It has also been observed in present study that QoL performance of the patients on 3 drug regimen is similar to the patients where in surgery has been performed, further there is worsening in overall QoL score on adding fourth drug to the patients already on three drug regimen, which may be due to added side effects of multiple drugs, increased cost of multiple medication and poor compliance. Further adding another antiglaucoma medication to a regimen of two or three medications frequently does not achieve a significant ($> \text{ or } = 20\%$) fall in IOP [27].

A study found that compliance decreased as the frequency of drops and number of meds increased [28]. Fifty-one percent of patients using a drop one to two times a day admitted to poor compliance. That rose to 61 percent when drops were used more than two times a day. Among those taking multiple medications, non-compliance reached almost 70 percent. The reasons for this lack of compliance are forgetfulness and cost of medication.

CONCLUSION:

Glaucomatous patients have poor QoL than non-glaucomatous subjects, and glaucomatous patients on medical treatment have better QoL score than the surgically treated patients. There is no difference in QoL of glaucoma patients on monotherapy with different antiglaucoma medications, while there is worsening of QoL as the number of antiglaucoma medications increases.

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