

Effects of Comprehensive Care to the Psychological Status and the Eyesight Recovery of the Patients with Vitrectomy

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Received date: May 06, 2018; Accepted date: May 30, 2018; Published date: Jun 10, 2018

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Abstract

Aims and Objectives: To determine the effects of the comprehensive care to the psychological status and the eyesight recovery of the patients with vitrectomy.

Background: Vitrectomy is a routine clinical practice which was widely used to treat multiple eye diseases. However, due to the anatomic location of the vitreous body and the operational risk, patients tend to develop psychological disorders, which would negatively affect the therapeutic effects.

Design: 84 cases of the patients who had the vitrectomy operation in our hospital during the period of February 2015 to February 2017 were randomly divided into control group (n=42) and experimental group (n=42). The control group accepted the routine care during and after the operation, and the experimental group accepted the comprehensive care in addition to routine care.

Methods: The effects of comprehensive care were evaluated by comparing the psychological status of the patients and the extent of the eyesight recovery between the two groups.

Results: Both the self-rating anxiety scale (SAS) and the self-rating depressive scale (SDS) of the experimental group are significantly ($p < 0.01$) lower than the control group. The eyesight recovery efficiency in experimental group (92.86%) is significantly higher ($p < 0.05$) than control group (76.19%). The incidence of postoperative complications in experimental group is significantly lower ($p < 0.05$) than control group, and the average length of stay in hospitals in experimental group is significantly shorter ($p < 0.01$) than control group.

Conclusions: There were significant beneficial effects of the comprehensive care in patients with vitrectomy. Comprehensive care could effectively improve the psychological statuses of the patients and enhance their eyesight recovery.

Relevance to clinical practice: Comprehensive care in patients underwent surgery improve patient's recovery and make a difference in disease outcomes. This could potentially be applicable to most of the clinical practices.

Keywords: Vitrectomy; Comprehensive care; Psychological status; Eyesight recovery

Introduction

The vitreous body is the clear gel that fills the space between the lens and the retina of the human eyeball. It plays important role in refractive properties of the eye and helps to protect the retina. Dysfunction of vitreous body would affect the light-path, leading to blurred vision, vitreous flashes or floaters, and sometimes complete loss of eyesight [1]. Vitrectomy [2] is a surgery to remove some or all of the vitreous humor from the eye, to restore the light path and the eye function. It is now a routine clinical operation for various eye disorders such as diabetic eye disease (diabetic retinopathy) [3-5], retinal detachments [6-10], macular hole [11-13] and macular pucker [14,15]. However, due to the anatomical location of the vitreous body and the complexity of the operation, the patients tend to develop various

psychological disorders before and upon the operation, which would negatively affect the therapeutic effects and their eyesight recovery.

In order to improve the patient's psychological status and facilitate the recovery of the eyesight, we applied comprehensive care (CC) to patients who underwent vitrectomy, and compared the outcomes of patients who received CC to those received routine care (RC) only, by evaluating the their psychological statuses, the rate of eyesight recovery, the incidence of postoperative complications and the average length of stay in hospitals.

Background

Comprehensive care represents the basic approach of managed care with the overall objectives of improving patients' physical and psychological functions, reducing hospitalization and achieving better clinical outcomes [16]. This approach has been widely applied in

geriatric patients with medical problems such as hip fracture [17-19], resulting to low rates of major morbidity and mortality, short stay and acceptable functional outcomes [18]. Participants in the comprehensive care group had better self-care ability and less risk of depression [19], suggesting that patients benefit more from the comprehensive care program than from interdisciplinary care and usual care. CC was also applied to patients with cystinosis [20], representing a support tool for health professionals who take care of the patients. An action research project had been designed and evaluated to identified areas of care practice needing further development for patients undergoing vitreoretinal surgery to enhance the recovery [21,22], however, few studies further described the effects of comprehensive care in patients underwent vitrectomy.

Self-rating Depression Scale (SDS) and Self-rating Anxiety Scale (SAS) [23,24] were self-evaluation survey designed to quantify the depressed and anxious status of the patients. The reliability of the SDS and SAS has been validated and widely used all over the world. In this study, we adapted these two scales to evaluate the psychological status of the patients, before and after the comprehensive care.

Methods

Ethical issues

The study protocol was approved by the ethical review board of ZhouKou central hospital (ERB 2016-0061). Written consents were obtained from all patients.

Patients selection criteria

84 Patients undergone vitrectomy in our hospital from February 2015 to February 2017 were randomly divided into experimental group (n=42) and control group (n=42). After general examinations including the eye pressure measurement, eyesight examination, ultrasound, funduscopy and split lamp examination, patients with no surgical contraindication were selected. Patients with following conditions: other existing diseases which affect their eyesight; severer coagulation disorders; brain injury; neurological disorders; hepatorenal dysfunction; surgical contraindications; and those unaware of this study or refused to participate the research, were excluded from the study. All patients are aware of this study and gave the written form of consent.

General information of the patients in each group was listed in Table 1. There were no statistical significant differences in terms of the age, disease period between the two groups (p>0.05). Patients in experimental group accepted the comprehensive care while patients in control group received routine care.

	Control group	Experimental group	P value
Male (n)	24	25	N.A
Female (n)	18	17	N.A
Age (range, years)	26-66	28-68	>0.05
Age (average, years)	45.32 ± 3.57	45.67 ± 3.52	N.A
Right eye disease (n)	26	25	N.A
Left eye disease (n)	16	17	N.A

Diabetic retinal disease (n)	15	14	N.A
Vitreous haemorrhage (n)	11	12	N.A
Retinal detachment (n)	5	6	N.A
Macular degeneration (n)	7	6	N.A
Eye trauma (n)	4	4	N.A
Course of disease (years)	0.7-12	0.7-13	>0.05
Average course of disease (years)	7.72 ± 1.14	7.78 ± 1.16	N.A
N.A: not applicable, P value: >0.05, not significant			

Table 1: General information of the patients in each group.

Surgical methods

Surgical strategy was determined according to examination results of each individual before the surgery. Anti-blood glucose, anti-blood pressure and anti-infective procedures were given before surgery. Patients in both groups were locally anesthetized by retro-bulbar injection and standard 3-incision pars plana vitrectomy performed. For patients with simple vitreous haemorrhage, appropriate photocoagulation was applied to the newly formed blood vessels; for those with proliferative retinal abnormality or with the tendency of retinal detachment, combined gas or silicon oil filling; heavy water, photocatalytic applications, gas-liquid exchange, stripping or other surgical methods were applied; for patients with large retinal detachment, combined application of silicone oil filling, photocoagulation and heavy water were used.

Care

The control group received routine care before, during and after surgery. The routine care includes: routine examination, statue care, distribution of the medicine and management of the complications. The experimental group received comprehensive care in addition to the routine care. The comprehensive care was performed as followed:

Pre-surgery care

Reinforced pre-surgery communication between the nurses and the patients. The psychological statue of the patient was evaluated and the corresponding psychological treatment was performed.

Health education was performed on patients regarding to their disease, the important aspects of the surgery, and the routine care, reinforcing the awareness of the patients to the treatment;

Familiarize the patients with their surgeon by increasing communication between them, in order to decrease the surgical stress.

Intra-operational care

During the surgery, local anaesthesia was applied. Therefore the patients stayed conscious during the surgery. The nurses constantly communicated with the patients, emphasize the importance of the ordinance in the effects of the surgery, to reinforce the cooperation between the surgeon and the patients.

Post-operational care

Inform the patients about the surgical success immediately to help them to establish their confidence for recovery. Control the light and temperature of the ward, avoid noises, and build a good rehabilitation environment.

Monitor the intraocular pressure and surgical wound continuously. Guide the patients to maintain a correct body position for smooth breathing and maintenance of intraocular pressure within the normal range.

Management of complications: Give rapid intravenous injection of mannitol for patients with headache, nausea and eye pain. For patients with more severe complications such as possible infection, inform the doctor as soon as possible.

Guide the patients with appropriate diet supplemented with protein, vitamins, dietary fiber, and trace elements after the surgery. Preferentially the meal would be easy to chew, such as semi-liquid or soft food, and in small portions, to avoid excessive chewing which would potentially increase intraocular pressure.

After being discharged from the hospital, the patients were guided to avoid violent activities or manual labor before fully recovery. In addition, long-term eye medication, the daily sitting, lying position guidance, and regularly eye test were provided to ensure the steady recovery of the patients.

Evaluation

The psychological status of the two groups was evaluated before and after care, and the visual acuity of the two groups was measured and scored.

Mental status assessment: SAS and SDS scale were used to evaluate the anxiety or depression of the patients. The scores were negatively correlated with psychological status.

Vision recovery: After surgery, extent of the vision recovery higher than 0.3 or range from 0.1 to 0.3 were considered as effective, lower than 0.1 was regarded as invalid.

Statistical analysis

The data were analyzed using SPSS20.0 statistical software. s was used to show the numeric data, and compared using student t test. Percentage was used to show the category data, using chi square test. $P < 0.05$ means that the difference was statistically significant.

Results

Psychological status:

Before the care, the SAS scores of the control group and the experimental groups is 64.77 ± 5.34 (mean \pm SEM, $n=42$) and 64.95 ± 5.36 (mean \pm SEM, $n=42$), there is no statistical significant differences between the two groups ($p > 0.05$); the SDS scores of the control group and the experimental groups is 66.25 ± 4.18 (mean \pm SEM, $n=42$) and 67.05 ± 3.45 (mean \pm SEM, $n=42$), there is no statistical significant differences between the two groups ($p > 0.05$). After the care, the SAS scores of the control group and the experimental groups is 54.92 ± 4.32 (mean \pm SEM, $n=42$) and 46.78 ± 3.67 (mean \pm SEM, $n=42$), respectively, there is statistical significant differences between the two groups ($p < 0.001$); the SDS scores of the control group and the

experimental groups is 56.05 ± 3.17 (mean \pm SEM, $n=42$) and 47.69 ± 2.97 (mean \pm SEM, $n=42$), there is statistical significant differences between the two groups ($p < 0.001$).

The SAS and SDS scores of the control and experimental group were shown in Figure 1 and Table 2.

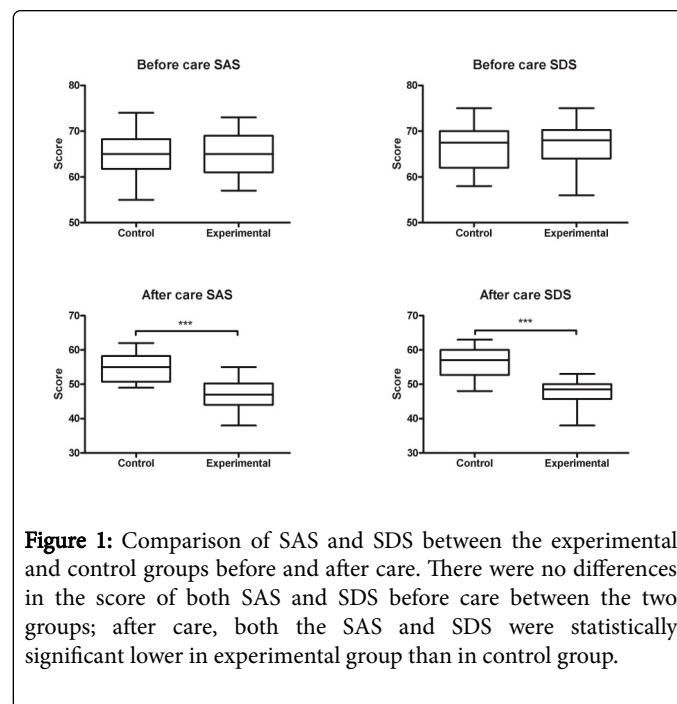


Figure 1: Comparison of SAS and SDS between the experimental and control groups before and after care. There were no differences in the score of both SAS and SDS before care between the two groups; after care, both the SAS and SDS were statistically significant lower in experimental group than in control group.

Group	Before care		After care	
	SAS	SDS	SAS	SDS
Control (n=42)	64.77 ± 5.34	66.25 ± 4.18	54.92 ± 4.32	56.05 ± 3.17
Experimental (n=42)	64.95 ± 5.36	67.05 ± 3.45	46.78 ± 3.67	47.69 ± 2.97
t	0.154	0.957	9.297	12.472
P	>0.05	>0.05	<0.001	<0.001

Table 2: Comparison of the SAS and SDS scores of the two groups (Mean \pm SEM)

Eyesight recovery

As shown in Table 3, after surgery, in control group, the number of patients whose eyesight improvement > 0.3 is 9 out of 42 (21.32%), and the number of patients whose eyesight improvement between 0.1 and 0.3 is 23 out of 42 (54.76%), the rate of effective eyesight recovery (> 0.1) in control group is 76.19%. In experimental group, the number of patients whose eyesight improvement > 0.3 is 22 out of 42 (52.38%), and the number of patients whose eyesight improvement between 0.1 and 0.3 is 17 out of 42 (40.48%), the rate of effective eyesight recovery (> 0.1) in experimental group is 92.86%, which was significantly higher ($p < 0.05$) that of control group.

Group	Corrected eyesight > 0.3	Corrected eyesight 0.1-0.3	Corrected eyesight < 0.1	Efficiency
Control (n=42)	9	23	10	76.19%
Experimental (n=42)	22	17	3	92.86%

	n%	n%	n%	
Control group (n=42)	921.43%	2354.76%	1023.81%	3276.19%
Experimental group (n=42)	2252.38%	1740.48%	37.14%	3992.86%
χ^2	-	-	-	4.459
P	-	-	-	0.05

Table 3: Eyesight recovery in two groups of patients.

The incidence of postoperative complications and the average length of stay in hospitals

After the surgery, in control group, there were 3 patients have glaucoma, 3 patients have corneal edema, 2 patients have sympathetic ophthalmia and 2 patients have cataract. The overall incidence of complications is 26.19% (11/42). In experimental group, after surgery, the incident of glaucoma, corneal edema, sympathetic ophthalmia and cataract is 1, 1, 1 and 1 out of 42, respectively. The overall incidence of complications is 9.52% (4/42). There were statistically significant differences between the two groups ($p < 0.05$).

The average length of stay in hospitals of experimental group (10.17 ± 2.63 day) is statistically shorter ($p < 0.01$) than that of control group (15.24 ± 3.82 day), as shown in Table 4.

Group	Incidence of postoperative complications [n (%)]	Average length of stay in hospitals
Control group n=42	1126.19	15.24 ± 3.82
Experimental group n=42	49.52	10.17 ± 2.63
χ^2/t	3.977	5.651
P	0.046	0.003

Table 4: The incidence of postoperative complications and the average length of stay in hospitals.

Discussion

Vitrectomy is a highly precise and complicated ophthalmic surgery, which involves removing the vitreous gel using small tools followed by the treatment of the accompanied eye problems. At the end of the surgery, an oil or gas bubble may be injected into the eye. It is highly effective at improving vision, symptoms, contrast sensitivity, and quality of life [25]. However, like all other surgery, vitrectomy has risks. They include: eye infection, bleeding in the eye, high or low eye pressure, cataract, retinal detachment, even loss of vision [26-29]. In addition, there were multiple factors which would affect the outcomes of the surgery. Thus the perioperative care needs to be strengthened to improve the eyesight recovery of the patients.

Our current study showed that, 1) the SAS score, SDS score, 2) the incident of the complications, and 3) the in-hospital period were all significantly lower in experimental group which received comprehensive care than the control group which only receive the routine care. Furthermore, 4) the eyesight recovery of the experimental group is significantly more effective than the control group. This indicates that in patients undergoing vitrectomy, implementation of

comprehensive care can effectively improve the patient's mental state and enhance the recovery of vision. This is due to the following reasons. The pre-operational and intra-operational mental care and health education given in the form of comprehensive care diminished the anxiety, depression, tension, fear and other adverse psychological changes of the patient, and reduce the operational stress. At the meantime, the comprehensive care ensured the awareness of the patient to the disease and the surgery, and helped them to gain the confidence of surgery.

Preoperational communication between the patient and the surgeon can effectively reduce the fear caused by unfamiliar emotions, which in turn mitigated the surgical stress on the patient, and enhance the surgical effects.

Postoperative psychological counselling can facilitate the rehabilitation of the patients and reduce their surgical pain and anxiety. Coordination between the nurse and the patients would reinforce the effect of care and reduce the risk of complications. Proper intervention and training can effectively maintain the intraocular pressure within a relatively normal range, to avoid complications caused by abnormal intraocular pressure. A balanced diet promotes the absorption of nutrition by the body [30,31], improves the wound healing and visual recovery. It is critical to control the eating speed and food intake, as excessive chewing might affect the patient's intraocular pressure and cause un-necessary complications. The health guidance given to patient after discharging from the hospital prevents the negative effects of the discontinuous of the care and the inappropriate medication.

Conclusion

In summary, there were significant therapeutic benefits in patients with vitrectomy receiving comprehensive care. The comprehensive care could effectively improve the psychological statuses of the patients and enhance their eyesight recovery.

Relevance to clinical practice

Comprehensive care can be applied to patients underwent vitrectomy to improve their psychological statuses and achieve better clinical outcomes.

Acknowledgement

This work was supported by the Medical Science and Technology Project of Henan Province (NO.201404056), the Foundation and Advanced Technology Research Project of Henan Province (NO. 142300410418), and key science and technology projects in Zhoukou City (No:20167812). We thank all the participated patients for their contribution to this study. FQ Z and YC conceived and designed the study, FQ Z, YH W, LL, SL W, KZ N, YZ Y, YP L, XY Z and JY L performed the study and collected the data. FQ Z and YC wrote and revised the manuscript.

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