Medicine®

OPEN

Perioperative holistic care more significantly reduces levels of anxiety and depression of pituitary tumor patients versus conventional care

Yu-Huan Xie, MM[a,*], Hai-Tong Xie, MM[b], Tian-Shu Wang, MM[a], Yi-Ping Shu, MM[a], Xing-Liang Dai, MD[a]

Abstract

To compare the effect of perioperative holistic care versus conventional care on the levels of anxiety and depression of pituitary tumor patients at a single tertiary care center in China.

We enrolled 100 patients who underwent transnaso-sphenoidal microsurgical resection of pituitary tumor at our institution between January 2017 and December 2017. The patients were assigned to the conventional care group (n = 50) and the holistic care group by the order of admission. Patients were evaluated by staff nurses at admission and upon discharge from the hospital using the self-rating anxiety scale (SAS), and the self-rating depression scale (SDS). QoL was assessed using EORTC QLQ-C30.

The 2 groups were comparable in the demographic and baseline variables including baseline SDS and SAS scores ($P > .05$). A significantly greater reduction in SAS score was observed in the holistic care group versus the conventional care group (−19.14% vs −11.60%; $P < .05$). Moreover, we observed a significantly greater reduction in SDS score in the holistic care group versus the conventional care group (−40.4% vs -18.79%, $P < .05$). The QoL functional domain scores at discharge were significantly higher in the holistic care group than the conventional care group ($P < .05$).

Perioperative holistic care significantly alleviates the levels of anxiety and depression and improves QoL of pituitary adenoma patients.

Abbreviations: QoL = quality of life, SAS = self-rating anxiety scale, SDS = self-rating depression scale.

Keywords: anxiety, depression, holistic care, pituitary adenoma, quality of life quality

1. Introduction

Pituitary tumor is a common intracerebral tumor and has an incidence of 1 per 10,000 persons. It accounts for10% to 15% of intracerebral neoplasms and has a predilection for young adults.[1] Transnaso-sphenoidal microsurgery for pituitary tumor resection is minimally invasive, safe, and has a very few complications and as a result has been widely applied clinically.[2] However, pituitary tumor patients may experience affective disorders before surgery because of severe endocrine disturbance and compressive effects of the tumor such as obesity, acromegaly,

infertility, amenorrhea, male impotence, and visual field changes, which greatly impact on the psychosomatic health of pituitary tumor patients.[3]

Ongoing disease-related symptoms, affective disorders such as anxiety and depression and treatment-related complications can also affect the quality of life (QoL) of pituitary tumor patients. Recently, increasing attention has been paid to the psychometric status of pituitary tumor patients. Holistic nursing care has recently emerged as a novel approach to provide team-based care for patients. The holistic care mode requires the team work of physicians, nurses and patients based on the novel management concept that is "patient-centered, need-initiated, and satisfaction-oriented", emphasizing cooperation among team members and patients to achieve the goal of treatment.[4] Conventional care confines itself to simple implementation of physician orders and does not pay sufficient attention to psychosomatic health and QoL of patients.[5] In the current prospective study, we compared the effect of perioperative holistic care versus conventional care on the levels of anxiety and depression of pituitary tumor patients at a single tertiary care center in China.

2. Patients and methods

2.1. The study population

This study was approved by The Institutional Review Board of Ethics Committee of The First Affiliated Hospital, Anhui Medical University. We enrolled 100 patients who underwent transnaso-sphenoidal microsurgical resection of pituitary tumor at the Department of Neurosurgery, the First Affiliated Hospital, Anhui Medical University, Hefei, Anhui, China between January 2017 and December 2017. Major inclusion criteria were: patients were

diagnosed with pituitary tumor; patients understood and were cooperative with the study instructions. Major exclusion criteria were: patients were mentally disoriented or had mental illnesses; patients had other severe diseases;[3] patients had other factors that interfered with their psychological evaluation.

The study protocol was approved by the local ethics committee at the authors' affiliated institution. Patients or their legal surrogates provided written informed consent to the study.

2.2. Study interventions

The patients were assigned to the conventional care group (n = 50) and the holistic care group (n = 50) by the order of admission. The conventional care group received conventional care by staff nurses including assistance for patients to complete laboratory studies, education on possible complications, diet guideline, and health education. Meanwhile, the holistic care group received the following interventions apart from conventional care: holistic care by an integrated team consisting of head nurse, treatment team leader, attending physician and staff nurses; attending physician educated patients and their family members on the disease and treatment plan while staff nurses provided information on preoperative preparation, dietary precautions and preventive measures, so that patients gained an overall picture of the entire treatment and nursing care process, became familiar with treatment plan and hospital environment and free of fear; nurses observed the entire surgical procedure to have a detailed understanding of the intraoperative condition of the patient, which guided subsequent nursing care; physicians and nurses attended ward rounds and reported patient's condition together, and jointly developed individualized treatment plan, and nursing care measures; physicians and nurses jointly developed individualized health education pathways for patients, and provided psychological support, and for patients with particularly high psychological stress, psychologists were asked to provide intervention and guidance; physicians and nurses jointly developed a personalized diet plan, and if necessary, a dietitian was consulted to ensure the nutritional needs of patients; to promote early recovery of the patient, physicians and nurses jointly developed a rehabilitation plan by using the rapid rehabilitation concept and based on the patient's condition; the ward maintained a relative humidity of 60% to 70% to increase patient comfort; patients were given a health education prescription upon discharge, and received comprehensive and continuous guidance via a social media WeChat group or via telephone call.

2.3. Psychometric evaluation

Patients were evaluated by staff nurses at admission and upon discharge from the hospital using the self-rating anxiety scale (SAS),[6] and the self-rating depression scale (SDS).[7] Each scale consists of a self-completion questionnaire with 20 items rating four common characteristics of depression or anxiety. The questionnaires have been validated for use in Chinese populations.[8–10] Scores for each question range from 1 to 4. The scores were counted and multiplied by 1.25 to reach a standardized score, according to the scale instructions. Higher scores represent more severe anxiety or depression. In accordance with the Chinese norm, patients were considered to have anxiety with a score of 50 or more on the SAS, and depression with a score of more than 53 on the SDS.

2.4. QoL assessment

QoL was assessed by staff nurses at admission and upon discharge from the hospital with the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire-Core 30 (EORTC QLQ-C30).[7] The Chinese version of the EORTC QLQ-C30 has been validated in Chinese populations.[11] The scale has 30 questions and 5 functional domains (physical, role, cognitive, emotional, and social), 3 symptom domains (fatigue, pain, and nausea and vomiting), one global health, and QoL scale, and 6 symptom items (dyspnea, insomnia, appetite loss, constipation, diarrhea, and financial difficulties). The scores of the items range from 0 to 100. Higher scores represent higher QoL for the functional domains and the global health scale and worse health for the symptom scales and items.

2.5. Survey of satisfaction with nursing care

A nursing care satisfaction questionnaire was distributed to the patients upon discharge from the hospital. The questionnaire includes 24 items and the scores of the items range from 0 to 100. A score of 91 to 100 indicates full satisfaction; a score of 76 to 90 indicates satisfaction; a score of 61 to 75 indicates partial satisfaction and score less than 60 represents dissatisfaction.

2.6. Study outcomes

The primary outcome was the level of anxiety and depression as assessed by the SAS and SDS, respectively. The secondary outcomes were QoL and nursing care satisfaction by patients.

2.7. Statistical analysis

Statistical analysis was performed using SPSS17.0 software (SPSS Inc., Chicago, IL). Quantitative data were expressed as mean ± SD. Student's t test was used for comparison between groups. Enumeration data were expressed by relative numbers. Chi-square test was used for comparison between groups. $P < .05$ was statistically significant difference.

3. Results

3.1. Patient demographic and baseline characteristics

Around 50 pituitary tumor patients were assigned to the conventional care group and 50 patients were assigned to the holistic care group. Patient demographic and baseline characteristics are shown in Table 1. The mean age of the study population was 36.3 ± 12.3 and 61% of the patients were male. The 2 groups were comparable in the demographic and baseline variables ($P > .05$).

3.2. Primary outcome

The mean baseline SDS score was comparable between the 2 groups (holistic care: 59.4 ± 8.8 vs conventional care: 56.4 ± 6.9; $P > .05$) (Table 2). In addition, the mean baseline SAS score was comparable between the 2 groups (holistic care: 60.1 ± 3.4 vs conventional care: 61.2 ± 2.9; $P > .05$). A significantly greater reduction in SAS score was observed in the holistic care group versus the conventional care group (−19.14% vs −11.60%; $P < .05$). Moreover, we also observed a significantly greater reduction in SDS score in the holistic care group versus the conventional care group (−40.4% vs −18.79%, $P < .05$) (Table 2).

Table 1

Patient demographic and baseline characteristics.

Variables	The holistic care group	The conventional care group	x^2/t	P
No.	50	50		
Male gender, n (%)	34 (68)	27 (54)	1.513	.219
Mean age, years	36.3±12.3	37.1±13.0	0.46	.628
Education				
Primary school or under	18	19	0.171	.918
Middle school	21	19		
High school and above	11	12		
Marriage, n (%)				
Yes	39 (78)	37 (74)	0.055	.815
Tumor types				
Functioning, n (%)	32 (64)	31 (62)		
Prolactin	15	12	0.472	.925
Growth hormone	8	9		
ACTH	9	10		
Nonfunctioning, n (%)	18 (36)	19 (38)		
Tumor size, n (%)				
Microadenoma	18 (36)	16 (32)	0.184	.912
Macroadenoma	21 (42)	22 (44)		
Giant adenoma	11 (22)	12 (24)		

Table 2

SAS and SDS scores of the study population (mean ± SD).

Groups	No.	SAS		SDS	
		Baseline	At discharge	Baseline	At discharge
Holistic care	50	60.1±3.4	48.6±3.8	59.4±8.8	35.4±5.2
Conventional care	50	61.2±2.9	54.1.±3.7	56.4±6.9	45.8±6.3
T		0.33	−2.43	0.309	−3.282
P		.750	.038	.764	.009

3.3. Secondary outcomes

3.3.1. QoL. There was no statistically significant difference in baseline QoL scores between the 2 groups ($P > .05$) (Table 3). The QoL functional domain scores at discharge were significantly higher in the holistic care group than the conventional care group ($P < .05$). Furthermore, except financial difficulties, the holistic care group had significantly lower QoL scores in the symptom domains than the conventional care group ($P < .05$).

3.3.2. Nursing care satisfaction scores. A significantly higher proportion (52%) of patients in the holistic care group were fully satisfied with nursing care than that (26%) of the conventional

Table 3

QLQ-C30 scores of the study population (mean ± SD).

Items	Baseline				At discharge			
	Holistic care	Conventional care	t	P	Holistic care	Conventional care	t	P
Function domains								
Overall health	78.9±15.1	77.8±13.6	0.596	.618	62.8±14.2	54.1±13.2	3.08	.006
Emotion function	81.2±15.2	82.4±11.5	0.248	.768	65.3±13.4	63.6±12.3	3.045	.003
Somatic function	65.8±12.9	66.3±11.8	0.256	.768	55.3±12.8	54.3±12.6	2.086	.008
Role function	61.2±15.8	56.9±14.2	1.798	.059	55.8±15.4	49.8±11.8	3.68	.003
Cognition function	64.7±11.8	63.6±7.9	1.268	.203	60.8±8.6	54.1±7.6	6.798	<.001
Social function	52.1±10.9	54.9±8.9	−1.378	.159	43.9±11.8	39.1±9.9	3.198	.001
Symptom domains								
Fatigue	32.9±18.1	34.1±15.6	−0.458	.636	40.9±14.6	43.1±15.9	3.21	.001
Pain	27.8±15.8	30.6±17.8	−1.286	.189	36.2±15.5	41.2±18.8	−2.69	.003
Insomnia	41.3±24.9	40.4±23.8	−0.429	.659	50.6±19.8	58.1±21.6	−2.216	.028
Constipation	45.9±22.7	47.6±24.5	−0.628	.517	55.8±22.4	62.7±24.6	−1.846	.031
Diarrhea	34.9±16.8	37.9±19.1	−0.786	.428	39.9±11.3	44.2±10.8	3.210	.001
Anorexia/vomiting	16.9±18.6	17.1±18.5	−1.038	.899	54.8±10.6	59.9±12.3	3.139	.002
Dyspnea	47.1±20.9	44.8±19.8	0.556	.567	54.1±19.2	59.8±11.9	3.096	.002
Loss of appetite	43.8±19.7	44.9±18.8	−0.978	.336	51.1±19.9	58.3±21.9	−2.218	.028
Financial hardship	48.6±38.9	47.9±26.8	−0.334	.781	58.4±29.8	57.9±27.8	0.156	.882

Table 4

Nursing care satisfaction scores of the study population, N (%).

Groups	No.	Full satisfaction	Satisfaction	Partial satisfaction	Dissatisfaction
Holistic care	50	26 (52.0)	22 (44.0)	2 (4.0)	0 (0.0)
Conventional care	50	13 (26.0)	27 (54.0)	8 (16.0)	2 (4.0)
Chi-square test			10.44		
P			.015		

care group ($P < .05$) (Table 4). No patient in the holistic care group was dissatisfied with nursing care while 2 (4.0%) patients were dissatisfied with nursing care

4. Discussion

The current study investigated the effects of holistic care on anxiety, depression, and QoL of pituitary tumor patients and found that compared to conventional care, holistic care significantly alleviated anxiety and depression of these patients and also markedly improved their QoL.

Affective disorders such as depression may be present in pituitary tumor patients before surgery.[12] D'Angelo et al[13] showed that pituitary tumor patients also frequently experienced affective disorders and may develop a depressive state post-surgery. Our baseline psychometric assessment of the study population showed that depression and anxiety were present in the patients. Severe endocrine changes and visual disturbance may induced psychosomatic reduce the levels of anxiety and depression in pituitary tumor patients, especially those with anterior pituitary tumors.[12] Consistently, we also observed significant decline in the levels of anxiety and depression in our patients following surgery. We further showed that holistic care could result in significantly lower levels of anxiety and depression versus conventional care, indicating that perioperative holistic care could effectively reduce affective disorders such as anxiety and depression. In our holistic approach, we documented changes in SDS and SAS scores before and after surgery in pituitary tumor patients, and the psychometric assessment allowed us to assess the effect of our holistic care on affective disorders in the patients. We demonstrated that our holistic care approach significantly improved psychometric performance of our patients, indicating that holistic care could reduce the severity of anxiety and depression in pituitary tumor patients. Bunevicius[14] found that emotional stability and openness of pituitary tumor patients are associated with lower depressive/anxiety symptom severity of low-grade/benign brain tumor patients. The holistic care approach could improve patient outcome by providing psychological support and attending to affective needs of pituitary tumor patients.

Pituitary tumor patients experience significantly lower levels of physiological functions, emotions, and social interaction and have increased levels of fatigue, and sleep problems.[15] Xie and Zhang[16] showed that depression also compromises the QoL[17] of pituitary tumor patients. The 2 groups of patients had comparable baseline QoL scores. Following surgery, patients receiving holistic care exhibited markedly improvement in QoL versus conventional care. These findings indicate that apart from alleviating depression and anxiety, holistic care could also improve QoL of pituitary tumor patients. Moreover, we demonstrated that patients receiving holistic care had a significantly higher rate of full satisfaction than patients receiving conventional care, which is consistent with previous findings.

The study has several limitations. First, this is a single center study conducted at a tertiary care institution. The findings may not be applicable to other care settings. Furthermore, the study population is small. In addition, the study did not analyze clinical variables that contribute to the improvement in SDS and SAS scores. Pituitary Macroadenoma patients were found to have markedly reduced QoL following surgical treatment.[17] Therefore, studies with a larger population size and longer duration of follow-up are required to confirm our findings.

In conclusion, our findings demonstrate that perioperative holistic care significantly alleviates the levels of anxiety and depression and improves QoL of pituitary adenoma patients.

Author contributions

Conceptualization: Yu-Huan Xie.
Data curation: Yu-Huan Xie.
Formal analysis: Hai-Tong Xie.
Investigation: Hai-Tong Xie, Tian-Shu Wang.
Methodology: Hai-Tong Xie, Xing-Liang Dai.
Project administration: Tian-Shu Wang.
Resources: Yi-Ping Shu, Xing-Liang Dai.
Software: Tian-Shu Wang.
Supervision: Tian-Shu Wang.
Validation: Yi-Ping Shu.
Visualization: Yi-Ping Shu, Xing-Liang Dai.
Writing – original draft: Yu-Huan Xie.
Writing – review & editing: Yi-Ping Shu, Xing-Liang Dai.

References

[1] Simpson J, Heath J, Wall G. Living with a pituitary tumour: a narrative analysis. Psychol Health 2014;29:162–76.
[2] Merz WA, Ballmer U. Demographic factors influencing psychiatric rating scales (Zung SDS and SAS). Pharmacopsychiatry 1984;17:50–6.
[3] Fayers P, Bottomley A. Group EQoLQuality of Life U. Quality of life research within the EORTC-the EORTC QLQ-C30. European Organisation for Research and Treatment of Cancer. Eur J Cancer 2002;38 (suppl 4):S125–33.
[4] Qiu B, Su Y, Wang P. The application of healthcare integration model in patients with mammary gland. Chin J Nurs Manag 2015;151:1–4.
[5] Yao S, Liang C, Sheng Y. Effect of continuous quality improvement PDCA management mode on health knowledge acquisition mastering and the quality of life of patients with Chinese. J Dis Convent Care Prevent 2016;208:843–6.
[6] Zung WW. A rating instrument for anxiety disorders. Psychosomatics 1971;12:371–9.
[7] Zung WW. A self-rating depression scale. Arch Gen Psychiatry 1965;12:63–70.
[8] Liang T, Liu EW, Zhong H, et al. Reliability and validity of addiction severity index in drug users with methadone maintenance treatment in Guizhou province, China. Biomed Environ Sci 2008;21:308–13.
[9] Li A. Analyses on the rate and epidemic characteristics of anxiety and depression among cancer patients in Yangpu District in Shanghai. Asian Pac J Cancer Prev 2009;10:895–8.
[10] Guo Z, Tang HY, Li H, et al. The benefits of psychosocial interventions for cancer patients undergoing radiotherapy. Health Qual Life Outcomes 2013;11:121.

[11] Zhao H, Kanda K. Testing psychometric properties of the standard Chinese version of the European Organization for Research and Treatment of Cancer Quality of Life Core Questionnaire 30 (EORTC QLQ-C30). J Epidemiol 2004;14:193–203.

[12] Mainio A, Hakko H, Niemela A, et al. Depression and functional outcome in patients with brain tumors: a population-based 1-year follow-up study. J Neurosurg 2005;103:841–7.

[13] D'Angelo C, Mirijello A, Leggio L, et al. State and trait anxiety and depression in patients with primary brain tumors before and after surgery: 1-year longitudinal study. J Neurosurg 2008;108:281–6.

[14] Bunevicius A. Personality traits, patient-centered health status and prognosis of brain tumor patients. J Neurooncol 2018;137:593–600.

[15] Wu Y. Symptom Distress and Health Status for Post-surgical Patients with Pituitary Tumor. Taipei: National Taiwan University; 2008.

[16] Xie K, Zhang X. Analysis on the quality of life in type 2 diabetes accompanying with depression in hospitalized patients. Chin J Dis Convent Care Prevent 2014;186:515–7.

[17] Dekkers OM, van der Klaauw AA, Pereira AM, et al. Quality of life is decreased after treatment for nonfunctioning pituitary macroadenoma. J Clin Endocrinol Metab 2006;91:3364–9.