PROTOCOL

The effects of cognitive bias modification for attention and interpretation on the postoperative psychological resilience and quality of life of patients with pituitary adenoma

Patient selection

Adopting the convenience sampling approach, we enrolled 100 patients with pituitary adenoma who were admitted to the Affiliated Hospital of Nantong University between December 2018 and January 2020 into this study. Participants included in this study have provided written informed consent and were divided into 2 groups according to a random number table, an experimental group and a control group, with each group comprising 50 cases.

All enrolled patients met the following criteria: (I) aged ≥18 years old; (II) a diagnosis of pituitary adenoma (prolactin-secreting, growth hormone–secreting, adrenocorticotropic hormone-secreting, and thyrotropin-secreting tumors) by biopsy; (III) treated with surgery. Patients participating in other clinical trials were excluded, as were patients who refused to sign a written informed consent form.

This study complied with the ethical principles of the Declaration of Helsinki (as revised in 2013) and received approval from the ethics committee of the Affiliated Hospital of Nantong University.

Procedure

Routine training for patients mainly includes dietary advice, infection prevention, medication guidance, disease-related education, and hormone level monitoring. After the operation, a patient exchange meeting was held once a week, for 8 weeks. In addition to routine training, the experimental group received extra CBM training. All patients began their training 1 week after the operation; training sessions lasted for 45 minutes and were held twice a week, for 8 weeks.

CBM for attention

CBM for attention (CBM-A) was programmed using E-Prime software, and consisted of a dot-probe task. First, a cross pattern appeared on the screen for 1,000 ms. After that, threatening words appeared on the screen 1 by 1 for 750 ms. Then, the words disappeared, and an arrow appeared in the screen, pointing left or right at random.

Participants were instructed to press the F key when the arrow pointed left and the J key when the arrow pointed right. Each test was performed at an interval of 1,000 ms. All words used were obtained from the Chinese Affective Words System.

CBM for interpretation

CBM for interpretation (CBM-I) was programmed using E-Prime software, based on Brosan. In the training, a word, such as "approving", and a sentence, such as "Your supervisor is discussing your future", would be shown on the screen for 1,000 ms. The combinations could have a positive or negative meaning. Patients judged the relationship between the word and the sentence. A response was considered correct when patients identified positive combinations as being related or negative combinations as being unrelated. The attentional and interpretive training included a range of threatening stimuli covering the major domains of generalized social anxiety. All words and phrases used were obtained from the Chinese Affective Words System.

Assessment of psychological resilience

Patients' psychological resilience was assessed using the Connor-Davidson Resilience Scale (CD-RISC). This 25-item scale covers self-confidence, tenacity, and optimism. Each item is scored from 0–4, with a score of 0 representing "not true at all" and a score of 4 representing "true all the time". Patients are then given an aggregate score out of 100 points. The higher the score, the better the patient's psychological resilience. In 2017, Wu et al. devised a modified, Chinese version of the scale, which yielded a Cronbach α coefficient of 0.91.

Assessment of negative emotion

The Self-rating Anxiety Scale (SAS) and the Self-rating Depression Scale (SDS) were used to assess patients' anxiety and depression levels. The SAS and SDS each contain 20 items, and each item is given a score from 1–4 as follows: "none/insignificant" =1 point, "mild/some of the time in frequency" =2 points, "moderate/a good part of the time in frequency" =3 points, and "severe/most or all of the time in frequency" =4 points. An SAS score ≥50 points indicates anxiety, and an SDS score ≥53 points indicates depression. The higher the score, the more severe the anxiety or depression.

Assessment of QoL

The QoL of the patients was assessed using the European Organization for Research and Treatment of Cancer QoL Questionnaire (EORTC QLQ-C30) within 3 months after discharge from hospital. The EORTC QLQ-C30 comprises 30 items, dividing into 5 functional scales (physical, role, emotional, cognitive, and social function). Patients are then given an aggregate score out of 100 points. The higher the overall score, the better the patient's QoL. In the present study, a total score of 75 points was set as the critical value; a total score of <75 points indicated a poor QoL, or a score >75 points indicated a satisfactory QoL.

Statistical analysis

Statistical analyses were performed using SPSS (version 22.0, SPSS Inc., Chicago, IL, USA). Continuous variables were reported as means ± standard deviations, and the *t* test was used for comparisons between the 2 groups. Categorical variables were reported as numbers and percentages, and the chi-square test was used for comparisons between the 2 groups. The paired t test was used to compare the scores of both groups before and after intervention. For all analyses, P<0.05 was considered to show a significant difference.