

Impact of synergistic professional nursing on clinical efficacy and quality of life of tubercular meningitis patients.

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Abstract

Objective: To evaluate the effect of synergistic mode of professional nursing upon the clinical efficacy and quality of life of patients diagnosed with tubercular meningitis.

Methods: In total, 120 adult patients with tubercular meningitis admitted to Hebei Chest Hospital between June 2014 and December 2015 were randomly assigned into the observation and control groups (n=60). Clinical data were matched and retrospectively analyzed. In the control group, patients received conventional nursing care, and their counterparts were subject to synergistic mode of professional nursing care. All participants were followed up for 1 y. Clinical efficacy and quality of life was statistically compared between two groups.

Results: Statistical analysis demonstrated that the overall effective rate in the control group was 66.7%, significantly lower when compared with 86.7% in the observation group. The scoring of multiple parameters related to the quality of life in the observation group was significantly higher when compared with that in the control group (all P<0.05).

Conclusion: The synergistic mode of professional nursing service integrates health education, psychological consultation, diet guidance and nursing measures after hospital discharge. Implementation of this mode can significantly enhance the clinical efficacy and quality of life of patients diagnosed with tubercular meningitis.

Keywords: Clinical efficacy, Synergistic nursing, Tubercular meningitis, Cerebrospinal fluid, Quality of life.

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Introduction

At present, the diagnosis of tubercular meningitis is determined by analyzing the cerebrospinal fluid sampled *via* lumbar puncture. Tubercular meningitis is manifested with long duration of treatment, slow recovery course and severe progression. Cooperative efforts from the patients, physicians and family members should be delivered to enhance the compliance towards relevant therapy, which can improve the clinical efficacy and prognosis [1-3]. At present, conventional mode of nursing care fail to meet the clinical requirement of patients diagnosed with tubercular meningitis. In 1992, the concept of synergistic mode of professional nursing was first proposed [4].

Based upon the fundamental principle of bringing the potential to nurses to full, collaborative strength from the patients, family members, physicians and nurses has been gathered to

collectively accelerate the early rehabilitation and enhance the quality of life of tubercular meningitis patients.

Existing evidence suggests that relational patterns of coordination should improve the performance in settings which are highly interdependent, uncertain and time-constrained [5]. Besides, relational coordination should also enhance the job satisfaction by supporting the employees to accomplish their work more effectively and efficiently and by serving as a source of positive connection during teamwork.

In this investigation, 120 adult patients diagnosed with tubercular meningitis were recruited and the clinical efficacy between the conventional and synergistic modes of professional nursing was statistically compared.

Materials and Methods

Inclusion criteria

All enrolled patients complied with the clinical diagnostic criteria of tubercular meningitis; the final diagnosis was validated by demonstration of tubercle bacilli in cerebrospinal fluid. One of the following conditions should be met: First, mycobacterium tuberculosis was detected in the cerebrospinal fluid; Second, active pulmonary tuberculosis was observed by x-ray imaging; Third, the outcomes were validated by relevant clinical signs and symptoms (fever and headache lasting for more than 14 d as mandatory); Vomiting, alteration of sensorium or focal deficit as optional; those aged <60 y; those who complete the 1 y follow-up.

Exclusion criteria

Those with cerebral hernia, virus meningitis, fungal meningitis, acute purulent meningitis, meningitis-type cerebral cysticercosis; those complicated with vital organ dysfunction, consciousness disorder, nervous system disease and hypertension; pregnant women were excluded from subsequent analysis.

Methods

After admission, all patients received anti-tuberculosis and expectant treatment based upon individual conditions. In the control group, vital signs of each patient were monitored. The variation of patient's condition was intimately observed. Patients were reminded of sufficient resting. The nurses actively communicated with the patients to mitigate psychological pressure and strengthen diet nursing. Patients were required to quit smoking and alcohol. The drug-induced adverse events were closely recorded. Patients were required to receive physical examination on a regular basis. The nurses were responsible for answering questions raised by the patients. In the observation group, the physical conditions of the patients were evaluated before nursing care delivery. A professional nursing team consisting of one chief nurse and two nurses were established to intimately monitor the patients' vital signs. The incidence of consciousness disorder, vomiting and elevated intracranial pressure should be immediately reported to the chief physician to avert the risk of cerebral hernia. Patients were subjected to nasal feeding *via* gastric catheter to avoid the incidence of choking, cough or gastroesophageal reflux. Bladder irrigation was carried out at least twice daily to maintain the bladder function.

Synergistic nursing care

The nurses were responsible for offering health education to the patients, especially the knowledge related to tubercular meningitis. Manual handbooks were distributed to each patient and family members. Patients were encouraged to raise questions and confusion, which could be resolved by the physicians and nurses in a timely manner. In addition, the nurses delivered evaluation upon the understanding of this

disease by the patients and their family members every week. The nurses educated the patients how to handle the common complications, such as pressure ulcer and constipation. Moreover, the nurses should held regular meetings with the patients and their family members to enhance the understanding of tubercular meningitis. Based upon the individual conditions of each patient, nasal feeding approach was implemented. Parenteral nutrition was given if necessary. The nurses were responsible for delivering psychological guidance to the patients who suffered from consciousness disorder.

After being conscious, the psychological health of the patients was evaluated. The nurses should actively communicate with the patients and their family members to understanding the psychological issues and provide effective measures to resolve these problems in a timely manner. Follow-up upon hospital discharge, the physical conditions of the patients were evaluated. Comprehensive home nursing regime was established. Monthly follow-up was carried out by telephone. The patients were instructed to take functional exercises. The patients were required to pay a subsequent visit under circumstances.

Evaluation parameters

Assessment criteria of clinical efficacy: Healing is defined when the symptoms and signs related to tubercular meningitis are completely mitigated. All laboratory parameters are normal. Improvement is defined when the tubercular meningitis-induced symptoms are alleviated to certain extent. All laboratory parameters are almost normal. Inefficacy is defined when clinical symptoms are aggravated and even cause death. Overall efficacious rate=(the quantity of patients who were healed+the quantity of patients who have improvement)/the total quantity of patients × 100%.

Assessment of quality of life: During 12-month follow-up, the quality of life between two groups was evaluated by using the MOS item short form health survey (SF-36). The SF-36 consists of eight scaled scores, which are the weighted sums of the questions in their section. The eight sections included vitality, physical functioning, bodily pain, general health perceptions, physical role functioning, emotional role functioning, social role functioning and mental health. The lower the score the more disability, and the higher the score the less disability. A score of zero is equivalent to maximum disability and a score of 100 is equivalent to no disability.

Statistical analysis

SPSS 19.0 software package was utilized for statistical analysis (SPSS Inc., Chicago, USA). Enumeration data were statistically analyzed by χ^2 test. Measurement data were analyzed by mean ± standard deviation (mean ± SD).

Comparison between two groups was conducted by t-test. $P < 0.05$ was considered as a statistical significance.

Results

Baseline data

In total, 120 adult patients diagnosed tubercular meningitis, admitted to Hebei Chest Hospital between June 2014 and December 2015 were recruited in this clinical trial. All patients were accompanied by varying degree of persistent headache, fever and vomiting, etc. Written informed consents were obtained from all patients. The study procedures were approved by the ethics committee of Hebei Chest Hospital (SZH77654). According to the numeration table method, all patients were randomly divided into the control and observation groups (n=60). In the control group, 40 were male and 20 female, aged 22-38 y, 25.1 ± 3.5 y on average. The course of diseases endured from 5 to 38 d, 21.3 ± 8.2 d on average. In the observation group, 42 were male and 18 female, aged 22-37 y, 26.2 ± 3.2 y on average. The course of diseases ranged from 4 to 62 d, 23.1 ± 8.1 d on average. Baseline data were matched between two groups with no statistical significance in terms of age, gender ratio and course of diseases (all $P > 0.05$).

Comparison of clinical efficacy between two groups

The overall efficacious rate in the observation group was 86.67%, significantly higher compared with 66.67% in the

control group ($P < 0.05$). The comparison of the patients who were healed, obtained improvement and untreated was illustrated in Table 1. During subsequent 1 y follow-up, two patients died in the control group and one in the observation group. The mortality rate did not significantly differ between two groups ($P > 0.05$).

Table 1. Comparison of clinical efficacy between two groups.

| Group | Healed (n/%) | Improved | Ineffective |
|--------------------------|--------------|-----------|-------------|
| Control group (n=60) | 22(36.7) | 18 (30.0) | 20 (33.3) |
| Observation group (n=60) | 36 (60.0)* | 16 (26.7) | 8 (13.3)* |

Note: *Denotes statistical significance compared with the control group.

Comparison of quality of life between two groups

In the observation group, the scores of all parameters and characteristics related to the quality of life were significantly higher compared with those in the control groups (all $P < 0.05$). Patients who received synergistic mode of nursing care reported higher satisfactory degree about the improvement and recovery of the diseases compared with their counterparts receiving conventional mode of nursing service in the control group, as illustrated in Table 2.

Table 2. Comparison of different parameters and characteristics between two groups (mean \pm SD).

| Group | Psychological function | Social function | Limb function | Limb pain | Mental health | Emotional function | Physical activity | Overall health |
|--------------------------|------------------------|-----------------|-----------------|-----------------|-----------------|--------------------|-------------------|-----------------|
| Control group (n=58) | 63.3 \pm 2.2 | 57.3 \pm 3.9 | 64.5 \pm 5.0 | 71.5 \pm 5.6 | 64.0 \pm 4.7 | 68.4 \pm 6.3 | 59.2 \pm 3.8 | 68.3 \pm 6.0 |
| Observation group (n=59) | 82.3 \pm 2.3* | 89.4 \pm 4.1* | 87.1 \pm 5.3* | 85.6 \pm 5.9* | 92.0 \pm 4.2* | 91.4 \pm 6.5* | 87.8 \pm 4.3* | 90.5 \pm 5.7* |
| t | 31.52 | 30.19 | 15.75 | 9.24 | 23.57 | 15.39 | 26.75 | 14.36 |
| P | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |

Note: *Denotes statistical significance compared with the control group.

Discussion

Tubercular meningitis is a chronic disease induced by *Mycobacterium tuberculosis* infection of the meninges, as the system of membranes which envelop the central nervous system. *Mycobacterium tuberculosis* of the meninges is the primary feature and the inflammation is mainly distributed at the base of the brain [6-8]. When the inflammation invades the brain stem subarachnoid area, cranial nerve roots might be affected. As one of the most serious tuberculosis diseases, the prevalence of tubercular meningitis is increasingly elevated due to the rising incidence of tuberculosis. Fever and headache are the primary symptoms, confusion and coma are commonly encountered during the advanced stage [9]. Patients may also have focal neurological deficits. All these symptoms require long time to be healed. Tubercular meningitis is healed if clinical symptoms are mitigated and the findings of cerebrospinal fluid examination are normal. Subsequently,

patients are advised to receive anti-tuberculosis for 1-2 y to avoid the incidence of recurrence or relevant complications affecting other vital organs. In recent years, along with the deepening understanding of health concept, clinical therapeutic regimes have evolved from saving life to enhancing the overall quality of life including the physiological, psychological and social functional aspects, etc., [10]. It is a challenging and time-consuming task for the tubercular meningitis patients to fully recover. Previous studies have demonstrated that coordinated efforts should be made from multi-disciplinary medicines to enhance the clinical efficacy and the quality of life of tubercular meningitis patients. After corresponding treatment, comprehensive and professional nursing service plays a pivotal role in the full recovery of tubercular meningitis patients. Conventional mode of nursing care has several limitations, which fail to completely satisfy the patient's needs [11,12]. In this study, patients in the observation group received synergistic mode of professional nursing care, and

their counterparts in the control group were subjected to conventional nursing service. Comparative analysis revealed that the overall clinical efficacy in the observation group was significantly higher compared with that in the control group. In addition, the scores of relevant parameters included in the SF-36 in the observation group were considerably higher compared with those rated in the control counterparts, suggesting that application of synergistic mode of professional nursing care can increase the clinical therapeutic effect and enhance the quality of life of tubercular meningitis patients. Synergistic mode of professional nursing care has the following advantages. First, the central content of this novel mode of nursing care is the responsibility system. Different tasks are allocated to individual nursing staff. In this mode, the quality of nurse service can be maintained. Besides, the physical conditions of the patients can be monitored in a dynamic pattern. It has been estimated that approximately 80% of tubercular meningitis patients die from cerebral hernia or bacterial infection [13]. The risk of bacterial infection and the mortality rate can be considerably reduced through the nursing mode of responsibility system. Second, pressure ulcer and constipation are the primary complications of tubercular meningitis, which severely affect the clinical efficacy and the quality of life of the patients. In this investigation, synergistic mode of health nursing care is implemented to offer education on the physical health and diet. Application of this novel mode of nursing service is able to enhance the cooperation of the patients and reduce the incidence of postoperative complications.

Tubercular meningitis patients have to rest in bed for a long period of time, which significantly elevates the risk of pressure ulcer [14,15]. Application of this novel mode of nursing care can provide rational risk assessment and deliver nursing measures, aiming to significantly decrease the incidence of pressure ulcer in patients diagnosed with tubercular meningitis. Third, abnormal behaviour is regarded as one of the vital factors influencing the quality of life of tubercular meningitis patients, which is intimately correlated with the cognitive understanding of this illness, negative emotion and life status, etc. During the period of hospitalization, the nurses can offer nursing care in a synergistic mode, which provide nursing guidance to the patients and their family relatives. Patients are subject to long-term follow-up after hospital discharge, which can effectively prevent the occurrence of negative events and greatly reduce the incidence of abnormal behaviour. Taken together, synergistic mode of professional nursing service integrates multiple perspectives including health education, psychological consultation, dietary guidance and nursing measures after hospital discharge. Implementation of this novel mode of nursing service can significantly enhance the clinical efficacy and quality of life of patients diagnosed with tubercular meningitis.

Conflict of Interests

None.

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