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Application Effect of "Case Management + Closed-Loop Management" Dual Nursing Management Mode in Patients with Chronic Hepatitis B in Clinical Cure Period

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Abstract

Objective: To explore the dual nursing management mode of "case management + closed-loop management" in chronic hepatitis B (CHB) clinical cure period, and the application value in patients provides practical basis for optimizing clinical nursing management strategy. **Method:** 60 cases admitted to our hospital from June 2024 to June 2025 were selected. Clinical cure of CHB period patients was randomly divided into observation group and control group with 30 cases in each group. The control group implemented the conventional management mode, while the observation group applied the dual nursing management mode of "case management + closed-loop management" on the basis of the conventional management. Medication compliance, nursing satisfaction, laboratory indicators and quality of life were compared between the two groups. **Results:** After the intervention, the good rate of medication compliance (83.3%) and nursing satisfaction (86.7%) in the observation group were significantly higher than those in the control group (56.7%, 63.3%). The ALT normalization rate (86.7%) and HBV-DNA negative rate (90.0%) in the observation group were higher than those in the control group (66.7%, 70.0%). The scores of all dimensions of the chronic liver disease quality of life scale (CLDQ) in the observation group were significantly better than those in the control group, and the above differences were statistically significant ($P < 0.05$). **Conclusion:** "Case management + closed-loop management" dual nursing management mode can effectively improve the clinical cure of CHB period patients' medication compliance, quality of life and nursing satisfaction, improving liver function and virol-

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ogy-related laboratory indicators of patients. The model is scientific and feasible, and has strong operability, which is worthy of clinical application.

Keywords

Chronic Hepatitis B, Clinical Cure Period, Case Management, Closed-Loop Management, Nursing Management

1. Introduction

Chronic viral hepatitis B is abbreviated as CHB. It is estimated that the global prevalence rate of CHB will reach 0.316 billion in 2019. It is cirrhosis and hepatocellular carcinoma (hepatocellular carcinoma, HCC) [1] in Chinese HCC patients. Hepatitis B virus (hepatitis B virus, HBV) infection is the primary cause, accounting for 86% [2]. In 2020, there were 906,000 new cases of HBV-related liver cancer worldwide, becoming the third leading cause of cancer death worldwide [3]. China is a region with high incidence of HBV infection [4], the management of related viral diseases started late, and the management system of diagnosis, treatment and follow-up is relatively lagging behind [5]. With the iterative update of the treatment concept of CHB, the 2019 and 2022 editions of "Guidelines for the Prevention and Treatment of Chronic Hepatitis B" in our country have clearly put forward that patients who meet the conditions should actively strive for clinical cure [6] [7].

"Oral nucleoside (acid) analogs (NAs) combined with peginterferon α (PEG-IFNα)" is one of the best treatment schemes recommended by the guidelines, there are many problems of adverse reactions. During treatment, patients are prone to lose confidence in treatment due to untimely response to demands and ineffective intervention of symptoms, and even give up treatment halfway, thus causing disputes between doctors and patients [7]. In order to promote the implementation of the clinical cure work of CHB, the hospital management institute of the National Health and Health Commission launched the "standardization construction and ability improvement project of hepatitis B clinical cure outpatient service", and our hospital was selected as the first construction unit in early 2024 [8]. However, there are still shortcomings in the management of patients in the clinical cure period of CHB in our hospital, such as low patient satisfaction, insufficient medication compliance and standardized treatment. These deficiencies and problems, including poor quality of life in patients, directly restrict the improvement of clinical management efficacy.

Previous studies have shown that Zhao Hongli and other scholars implement closed-loop management for CHB patients through the chronic liver disease management platform, while Weng Qiaofen and other scholars apply case management mode to intervene for all patients with CHB, achieving good results [9]-[11]. However, for NAs Federation clinical cure of PEG-IFNα therapy period for patients, the existing management mode still needs further optimization. Based on this, this study constructs the dual nursing management mode of "case management +

closed-loop management" to provide professional, continuous and full-course medical guidance for patients, aiming at cracking the pain points of existing management, providing professional, continuous and full-course medical guidance for patients' clinical cure of CHB period and providing a new practice path for patient management.

2. Materials and Methods

2.1. Subjects

Patients with CHB at the clinical cure stage hospitalized in our hospital from June 2024 to June 2025 were enrolled in this study. This study was approved by the Hospital Ethics Committee (approval No. KY2026-037-01), and all patients and their family members signed informed consent forms.

2.2. General Information

Clinical cure, that is, no HBV-DNA, negative hepatitis B e antigen (hepatitis B e antigen, HBeAg) and disappearance of hepatitis B surface antigen (hepatitis B surface antigen, HBsAg) can be detected, with or without the production of hepatitis B surface antibody (hepatitis B surface antibody, HBsAb), the immune cells of patients can effectively inhibit virus replication and remove virus infected hepatocytes, thus minimizing the occurrence of HCC [12]. This study included patients pursuing clinical cure and those accepting NAs in combination with PEG-IFNα treatment.

Inclusion criteria: In accordance with the guidelines for the prevention and treatment of chronic hepatitis B (2022 edition), diagnostic criteria of CHB; serum HBV-DNA and hepatitis B virus e antigen (HBeAg) are both positive; oral antiviral drug NAs combined injection patients treated with PEG-IFN*a*.

Exclusion criteria: Patients with severe underlying diseases, mental diseases, and other people infected with hepatotropic viruses.

In this study, a total of 68 patients were selected, of which 8 were excluded because they did not meet the inclusion criteria. Finally, 60 patients completed the whole process of admission and 6-month follow-up without any patients falling off, missing or excluded halfway. Patients were divided into control group and observation group by random number table method, with 30 cases in each group. There was no significant difference between the two groups regarding gender, age and disease course ($P > 0.05$), and the two groups were comparable.

2.3. Method

2.3.1. Control Group

Implement routine management mode: Doctors collect patients' basic information, complete health assessment, formulate and implement diagnosis and treatment plans, and record relevant diagnosis and treatment information; provide health guidance when patients consult, passively carry out follow-up and follow-up reminders through the hospital system, and do not have full-time personnel to actively intervene and follow up problems.

2.3.2. Observation Group

On the basis of routine management, implement "case management + closed-loop management" dual nursing management mode, specific measures are as follows:

Build case management team: it consists of 2 competent doctors, 2 full-time nurses and 1 administrator. The doctor in charge is responsible for the formulation and dynamic adjustment of patients' daily diagnosis and treatment plans; the full-time nurse is responsible for daily disease management, regular follow-up, maintenance of medical patients' WeChat group and implementation of personalized intervention measures; the administrator is responsible for the whole process of management quality monitoring, process optimization and statistical analysis of data.

Build a closed-loop management process: form a full-cycle closed-loop management system of admission/admission-treatment implementation-regular follow-up-problem feedback-scheme optimization.

1) Information collection: Full-time nurses integrate patients' diagnosis and treatment records and examination results, collect clinical information through telephone, WeChat and other channels, establish personalized health records and update them dynamically.

2) Health assessment: Analyze the archives data to identify the problems existing in patients' treatment coordination, daily activities, diet structure, medication implementation and psychological state.

3) Plan formulation: To formulate scientific, dynamic and continuous personalized management plans and intervention measures in conjunction with the medical team for the identified problems.

4) Scheme implementation: Implement intervention measures through on-site feedback, WeChat communication, telephone follow-up and other ways to accurately solve the treatment problems of patients: including PEG-IFN alpha injection guidance (video teaching or door-to-door assistance); drug delivery; assistance in handling medical insurance for chronic diseases; treatment of adverse reactions and complications, etc.

5) Effect evaluation: Regularly evaluate the progress of problem solving, and incorporate the unsolved problems or newly discovered demands into the next management cycle to realize continuous improvement.

2.4. Observation Indicators

1) Nursing satisfaction: Self-made satisfaction scale (Cronbach's $\alpha = 0.85$), from the management attitude, follow-up timeliness, problem-solving effect and other dimensions, the full score is 100 points, ≥80 points are satisfied.

2) Medication compliance: Morisky medication compliance scale (MMAS-8) evaluation, the total score is 8 points, ≥6 points indicate good compliance.

3) Laboratory indicators: Detection of serum ALT (Normal range: 0 - 40 U/L), HBV-DNA quantitative (lower detection limit < 20 IU/mL), calculation of ALT normalization rate, and HBV-DNA negative rate.

4) Quality of life: The chronic liver disease quality of life scale (CLDQ) is adopted to score from six dimensions of abdominal symptoms, fatigue, systemic symptoms, activity ability, emotional function and anxiety, with 1 - 7 points for each dimension. The higher the score, the better the quality of life.

2.5. Statistical Analysis

SPSS 26.0 software was used for data analysis. Measurement data ($x \pm s$) indicate that t is used for inter-group comparison. Inspection: Count data [n (%)] indicates that the comparison between groups is tested by χ, $P < 0.05$ indicates that the difference is statistically significant.

3. Results

3.1. Comparison of General Data between the Two Groups

There was no significant difference in gender, age, course of disease and other general data between the two groups ($P > 0.05$), and the two groups were comparable. See Table 1.

Table 1. Comparison of general data between the two groups [n (%)/($x \pm s$)]

Indicator	Control Group (n = 30)	Observation Group (n =30)	χ^2/t-value	P-value
Gender (male)	15 (50.0)	15 (50.0)	0.000	1.000
Age (years)	41.3 ± 10.5	41.7 ± 9.8	0.142	0.887
Course of disease (years)	8.0 ± 3.3	8.3 ± 3.5	0.387	0.700

3.2. Comparison of Nursing Satisfaction and Medication Compliance between the Two Groups

The nursing satisfaction and medication compliance rate of patients in the observation group were significantly higher than those in the control group, and the difference was statistically significant ($P < 0.05$). See Table 2.

Table 2. Comparison of nursing satisfaction and medication compliance between the two groups [n (%)].

Indicator	Control Group (n = 30)	Observation Group (n = 30)	χ-value	P-value
Satisfaction	19 (63.3)	26 (86.7)	5.963	0.015
Medication compliance (good)	17 (56.7)	25 (83.3)	6.667	0.010

3.3. Comparison of Laboratory Indicators between the Two Groups

ALT normalization rate and HBV-DNA negative rate in the observation group were significantly higher than those in the control group, and the difference was statis-

tically significant (P < 0.05). See Table 3.

Table 3. Comparison of laboratory indices between the two groups of patients [n (%)].

Indicator	Control Group (n = 30)	Observation Group (n = 30)	χ-value	P-value
ALT normalization rate	20 (66.7)	26 (86.7)	4.320	0.038
Negative rate of HBV-DNA	21 (70.0)	27 (90.0)	4.812	0.028

3.4. Comparison of Quality of Life between the Two Groups of Patients

The scores of abdominal symptoms, fatigue, systemic symptoms, activity ability, emotional function and anxiety in the CLDQ scale of the observation group were significantly higher than those in the control group, and the difference was statistically significant (P < 0.05). See Table 4.

Table 4. Comparison of quality of life between the two groups of patients [x ± s, minutes].

Indicator	Control Group (n = 3 0)	Observation Group (n = 30)	t-value	P-value
Abdominal symptoms	4.1 ± 1.0	5.5 ± 0.8	6.892	0.000
Lassitude	4.0 ± 1.1	5.4 ± 0.9	6.231	0.000
Systemic symptoms	4.2 ± 0.9	5.6 ± 0.7	7.125	0.000
Activity ability	4.3 ± 1.0	5.7 ± 0.8	6.543	0.000
Emotional function	3.9 ± 1.2	5.3 ± 1.0	5.876	0.000
Anxiety dimension	3.8 ± 1.1	5.2 ± 0.9	6.012	0.000

4. Discussion

4.1. Case Management Application Advantages of Double Nursing Management Mode of "Case Management + Closed-Loop Management"

The results of this study show that the observation group's nursing satisfaction, medication compliance, laboratory indicators and all dimensions of quality of life are significantly better than those of the control group. The core reason is that this dual mode accurately makes up for the deficiency of conventional management, and the dual effects of personalized empowerment and continuity guarantee are realized.

4.1.1. Personalized Empowerment of Case Management

Through the establishment of dynamic health records and high-frequency active follow-up, full-time nurses can accurately capture individual differences and personalized needs of patients. In the light of PEG-IFNα, make personalized rest and exercise plans for the adverse reactions caused by fatigue, fever, etc.; timely carry out targeted psychological intervention for the anxiety and depression of patients

caused by disease extension; provide convenient services such as drug mailing and online consultation for patients in different places or patients with mobility inconvenience, effectively avoid patients giving up treatment due to physical and mental discomfort, medical inconvenience, etc., which is similar to Weng Qiaofen, etc. [10] [11], the research conclusion is consistent, it also further verifies that case management CHB Core value in patient refined management.

4.1.2. Continuity Guarantee of Closed-Loop Management

The full-cycle closed-loop management process constructed in this study breaks the bottleneck of "treatment-follow-up-feedback" disconnection in traditional management and realizes the seamless connection from patient grouping to scheme optimization. Through the circulation mechanism of "information collection-evaluation-formulation-implementation-evaluation-feedback-optimization", timely identify, quickly handle and continuously follow up the problems in the treatment process of patients, such as solving patients' issues through video or door-to-door guidance. PEG-IFNα injection technical problems, through regular index detection, timely detection of liver function fluctuations and adjustment of intervention programs, to ensure the effectiveness and sustainability of management measures, which is related to Zhao Hongli, etc. [9]. The results of the study are consistent, highlighting the improvement of closed-loop management. CHB plays an important role in the standardization of patient management.

4.2. Significance to Clinical Practice

The dual nursing management mode of "case management + closed-loop management" constructed in this study, for CHB, the nursing management of patients in clinical cure period provides a standardized and operable practical path, which has important guiding significance for clinical nursing work.

4.2.1. Clear Division of Labor and Cooperation to Avoid Management Loopholes

This mode clearly defines the job responsibilities of competent doctors, full-time nurses and administrators, and forms a three-level management system of "doctor diagnosis and treatment + nurse execution + administrator monitoring", which effectively avoids the problems of responsibility prevarication and management vacancy in routine management and improves the efficiency and standardization of management work.

4.2.2. Refine the Management Process and Improve the Promotion

This study disassembles the dual management mode into specific and operable implementation steps, and defines the key links, such as follow-up frequency, intervention mode, effect evaluation standard, etc., without complicated equipment and technical support, which has strong clinical promotion.

4.2.3. Improve Clinical Management Indicators and Boost Public Health Objectives

Through promotion of CHB, the medication compliance of patients in the clinical

cure period, the improvement of liver function and virological indexes of patients, and the improvement of patients' quality of life, provide clinical nursing practice support for the realization of the global goal of "eliminating viral hepatitis as a public health hazard by 2030".

4.3. Research Limitations

There are still some limitations in this study: 1) the sample is only from our hospital, the sample size is small, and there may be selection bias. The sample size can be expanded in the future, and multi-center and large sample studies can be carried out to further verify the effectiveness of this model; 2) the follow-up period of this study is 6 months, and the long-term application effect and its influence on the relapse rate of patients still need to be further verified by extending the follow-up; 3) this study did not carry out subgroup analysis on patients of different ages and course of disease, and then stratified research can be carried out to formulate personalized dual management plans for patients with different characteristics in clinical cure period of CHB.

5. Conclusion

"Case management + closed-loop management" dual nursing management mode can effectively improve CHB medication compliance and nursing satisfaction of patients in clinical cure period, improvement of laboratory indexes related to liver function of patients, and improvement of patients' quality of life. The model is scientific, effective and highly operable, and can form a standardized process for clinical promotion and application, so as to optimize the clinical cure of CHB. Periodic nursing management strategies for patients provide a solid practical basis.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

[1] GBD 2019 Hepatitis B Collaborators (2022) Global, Regional, Regional, and National Burden of Hepatitis B, 1990-2019: A Systematic Analysis for the Global Burden of Disease Study 2019. *The Lancet Gastroenterology & Hepatology*, **7**, 796-829.

[2] Infectious Disease Credit Association of the Chinese Medical Association and Hepatology Branch of the Chinese Medical Association (2019) Guidelines for the Prevention and Treatment of Chronic Hepatitis B (2019 Edition). *International Journal of Epidemiology and Epidemiology*, **46**, 423-446. (In Chinese)

[3] Sung, H., Ferlay, J., Siegel, R.L., Laversanne, M., Soerjomataram, I., Jemal, A., *et al.* (2021) Global Cancer Statistics 2020: GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries. *CA*: *A Cancer Journal for Clinicians*,

71, 209-249. https://doi.org/10.3322/caac.21660

[4] Jia, J., Hou, J., Wei, L., *et al.* (2020) New Highlights of Guidelines for the Prevention and Treatment of Chronic Hepatitis B (2019 Edition). *Chinese Journal of Hepatology*, **28**, 21-23. (In Chinese)

[5] Chu, W. and Gao, Z. (2020) Clinical Problems Expected to Be Solved by Clinical Cure of Chronic Viral Hepatitis B (Everest Project) in China. *Journal of Clinical Internal Medicine*, **37**, 543-546. (In Chinese)

[6] Infectious Disease Credit Association of Chinese Medical Association and Hepatology Branch of Chinese Medical Association (2019) Guidelines for Prevention and Treatment of Chronic Hepatitis B (2019 Edition). *Chinese Journal of Hepatology*, **27**, 938-961. (In Chinese)

[7] Hepatology Branch of Chinese Medical Association and Infectious Disease Credit Association of Chinese Medical Association (2023) Guidelines for Prevention and Treatment of Chronic Hepatitis B (2022 Edition). *Chinese Journal of Infectious Diseases*, **41**, 3-28. (In Chinese)

[8] Peng, Y. and Wu, X. (2025) Research Status and Prospect of Clinical Cure for Chronic Hepatitis B. *Journal of Southwest Medical University*, **48**, 27-30. (In Chinese)

[9] Zhao, H., Ding, Y., Wang, D., *et al.* (2024) Observation on the Effect of Closed-Loop Management on Patients with Viral Hepatitis B Based on Chronic Liver Disease Management Platform. *General Practice Nursing*, **11**, 4246-4249. (In Chinese)

[10] Weng, Q. and Shen, H. (2017) Effect Analysis of Professional Case Management Mode Applied to Patients with Chronic Hepatitis B. *Journal of Practical Clinical Nursing*, **2**, 168-171. (In Chinese)

[11] Lu, X., Zhang, H., Ji, F., *et al.* (2016) Application Effect of Case Management Mode in Health Management of Patients with Chronic Hepatitis B. *Chongqing Medicine*, **45**, 2987-2988. (In Chinese)

[12] Xie, Y., Wei, X. and Li, M. (2025) Comprehensive Optimization Treatment Strategy for Pursuing Clinical Cure for Chronic Hepatitis B. *Journal of Southwest Medical University*, **48**, 6-10. (In Chinese)