

# Nursing Care for 53 Patients with Advanced Hepatocellular Carcinoma Treated with Atezolizumab Combined with Bevacizumab

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**Abstract:** With China's growing population and increased awareness of cancer prevention, the incidence and detection rates of liver cancer have risen significantly. Primary liver cancer ranks fifth in incidence and second in mortality in China, and its prognosis is generally poor. Most patients with intermediate-to-advanced liver cancer are ineligible for curative treatment, making systemic therapy critical. The Chinese Guidelines for the Diagnosis and Treatment of Primary Liver Cancer (2024 Edition) recommend the combination of atezolizumab and bevacizumab as the first-line treatment regimen for patients with unresectable liver cancer who have not previously received systemic therapy. This study reports on the outcomes of 53 patients with mid-to-late-stage liver cancer who received this combination therapy at our hospital between August 2024 and February 2026. During treatment, patients experienced adverse reactions such as hypertension, hypoalbuminemia, abdominal distension, fatigue, gastrointestinal bleeding, and anaphylactic shock; all recovered and were discharged after receiving standardized treatment and nursing care. Throughout the nursing process, emphasis was placed on pre-medication assessment and patient education, medication preparation and infusion care, monitoring of clinical status and adverse reactions, as well as patient health education and psychological care. The study highlights that while combination therapy can prolong patient survival, managing adverse reactions is challenging, placing higher demands on nursing staff, who must possess a comprehensive knowledge base and proficient professional skills.

**Keywords:** advanced-stage liver cancer, atezolizumab, bevacizumab, combined therapy nursing, adverse reaction management, standardized nursing

## 1. Introduction

With China's growing population and increased awareness of cancer prevention, the number of patients seeking active medical care has gradually risen, leading to an increase in both cancer incidence and detection rates in China <sup>[1]</sup>. According to the latest statistical data released by the National Cancer Center of China in 2022, primary liver cancer ranks fifth in incidence and second in mortality in China, and it is characterized by high incidence and poor prognosis <sup>[1]</sup>. Liver cancer often develops insidiously, and most patients are diagnosed at an intermediate or advanced stage, when curative treatments such as surgical resection are no longer feasible. Systemic therapy, therefore, plays a crucial role in the management of intermediate- and advanced-stage liver cancer <sup>[2]</sup>. The Chinese Guidelines for the Diagnosis and Treatment of Primary Liver Cancer (2024 Edition) state that the combination of atezolizumab and bevacizumab is the first-line treatment regimen for patients with unresectable liver cancer who have not previously received systemic therapy <sup>[2]</sup>. Results from relevant clinical and authoritative institutional studies show that treatment with atezolizumab combined with bevacizumab significantly prolongs patient survival and reduces the risk of death and disease progression <sup>[3-6]</sup>. However, a study by Yu Feihong et al. <sup>[7]</sup> reported that treatment with atezolizumab leads to an increased incidence of adverse reactions, and its safety requires further verification through clinical trial data. A study by Hsu, C et al. <sup>[5]</sup> suggests that the combination of atezolizumab and bevacizumab increases the risk of adverse reactions in patients with unresectable hepatocellular carcinoma, and may even exacerbate them. Therefore, nursing staff must prioritize close monitoring of patients' conditions, prompt management of drug-related adverse reactions, and health education in clinical practice. This report details our nursing experience with 53 patients with advanced-stage liver cancer treated with the combination of atezolizumab and bevacizumab at our hospital from August 2024 to February 2026.

## 2. Clinical Data

This study included 53 patients with hepatocellular carcinoma, comprising 50 males and 3 females, aged 39–79 years (mean 58.5 years), all of whom received treatment with the atezolizumab combined with bevacizumab regimen.

During treatment, 27 patients developed hypertension, which was controlled through bed rest and antihypertensive medication; 7 patients developed hypoalbuminemia, which improved following intravenous infusion of human albumin; 2 patients experienced abdominal distension, which resolved after enema and diuretic therapy; 1 patient experienced fatigue, which resolved after bed rest; 1 patient experienced gastrointestinal bleeding, which was controlled through comprehensive management including endoscopic ligation and hemostasis; One patient developed anaphylactic shock; following resuscitation, endotracheal intubation, and advanced life support in the ICU, the patient's condition stabilized and was transferred back to our department for continued treatment.

The remaining 14 patients experienced no significant adverse reactions, and all 53 patients were discharged after recovery following standardized treatment and nursing care.

## 3. Clinical Nursing

### 3.1 Pre-medication Assessment and Patient Education

Prior to medication preparation, nursing staff must comprehensively assess the patient's condition to ensure medication safety. The nurse should first assess whether the patient's condition is stable, measure vital signs, and make a comprehensive judgment based on medical records and recent test results. The nurse should conduct a detailed inquiry into the patient's allergy history, paying particular attention to information regarding allergies related to atezolizumab and bevacizumab; the nurse should ascertain the patient's history of infusion with these two drugs, including dosage, frequency, and duration of treatment. The nurse should inquire about a history of adverse reactions, such as gastrointestinal reactions or infusion reactions, to assess the risk of adverse reactions during this administration. Next, the nurse should assess vascular access conditions by observing the size, elasticity, and course of superficial veins. Based on the patient's age and underlying medical conditions, the nurse should select an appropriate and patient-acceptable vascular access device [8]; for example, the nurse may use a standard intravenous catheter for short-term infusions if vascular access is good, and a central venous catheter for long-term infusions or poor vascular access. Finally, the nurse should inform the patient in advance about the categories of drug adverse reactions [9], such as the symptoms and management of allergic reactions, manifestations of gastrointestinal and pulmonary reactions, and monitoring for liver function abnormalities, to enhance patient awareness and cooperation.

### 3.2 Medication Preparation and Infusion Care

When preparing medications, two staff members must verify the physician's orders [8], and preparations should be made immediately prior to use. Confirm the drug name, strength, dosage, route of administration: intravenous infusion; diluent: use 0.9% sodium chloride for both the diluent and pre- and post-infusion flushing; infusion rate: for the first infusion of atezolizumab, the duration should be >60 minutes; if well-tolerated, subsequent infusions may be >30 minutes; for bevacizumab, the first infusion should last >90 minutes; if well-tolerated, the second infusion should last 60 minutes, and subsequent infusions 30 minutes; administration sequence: when administering both drugs in combination, infuse atezolizumab first, followed by a line flush, then infuse bevacizumab.

### 3.3 Monitoring of Disease Progression and Adverse Reactions

Relevant literature reports that patients treated with the combination of atezolizumab and bevacizumab have a higher incidence of adverse reactions compared to the sorafenib group, lenvatinib group, and others [3][5][7]. Therefore, patients' condition should be closely monitored during drug infusion [8], including the following:

1) Measure vital signs before and after infusion, paying close attention to the patient's blood pressure. If the patient has hypertension, medication should be administered as necessary to control it. Additionally, inquire about the patient's chief complaints, such as fatigue or loss of appetite [4]. In this study, 27 and 1 patients, respectively, experienced hypertension and fatigue/malaise. Blood pressure

decreased after administering antihypertensive medications orally or sublingually as prescribed, and patients were instructed to rest in bed to alleviate fatigue and malaise.

2) Monitor patients for allergic reactions, such as rash, chest tightness, or shortness of breath. In this study, one patient developed anaphylactic shock with cardiac arrest at the conclusion of combination therapy. After immediate cardiopulmonary resuscitation, endotracheal intubation, and fluid resuscitation, the patient's condition stabilized and they were transferred to the Department of Critical Care Medicine. Following advanced life support treatment, the patient improved and was transferred back to our department to continue antiviral, anti-infective, and liver-protective therapies. The patient subsequently recovered and was discharged.

3) Other infusion reactions, such as palpitations, chills, or fever, should be addressed by immediately stopping the infusion if an infusion or allergic reaction occurs. As much of the solution as possible should be withdrawn from the vascular access, and the incident should be reported to a physician immediately. The patient should be placed under ECG monitoring to track vital signs, and a second intravenous line should be established. The patient and their family should be informed of the situation, and their emotions should be reassured. Treatment should be administered according to medical instructions.

4) Gastrointestinal reactions, such as nausea, melena, vomiting, and the color, nature, volume, and frequency of vomitus; be vigilant for symptoms of hematemesis<sup>[5]</sup>, as most patients with intermediate- to advanced-stage liver cancer are at risk for esophageal-gastric varices and upper gastrointestinal bleeding. Hsu, C et al.<sup>[5]</sup> suggested that the incidence of gastrointestinal bleeding in the combination therapy group was 25%, higher than the 17% observed in the sorafenib-only group. Therefore, nursing staff must remain vigilant for symptoms of hematemesis and melena in clinical practice. In this study, one patient developed gastrointestinal bleeding after treatment. Bleeding was controlled following a series of measures, including emergency endoscopic banding, fasting, administration of hemostatic agents as prescribed, ECG monitoring, and oxygen therapy, and the patient's condition improved.

5) Ensure unobstructed drug infusion; check for tubing blockages, drug extravasation, etc.

6) Monitor the patient's laboratory parameters. ① Patients receiving combination therapy have an increased risk of hypoalbuminemia<sup>[3-4]</sup>, so nursing staff should collaborate with the nutrition department to provide early nutritional guidance to patients. In this study, 7 cases of hypoalbuminemia were identified; human albumin and nutritional solutions were administered as prescribed. Additionally, 53 patients required the placement of a microalbuminuria monitoring kit during hospitalization to allow healthcare providers to monitor renal function<sup>[5][11]</sup>. ② Impaired liver function<sup>[3]</sup> During combination therapy, antiviral treatment—such as oral antiviral medications—must continue to stabilize liver function and prevent further deterioration<sup>[10]</sup>. Additionally, nursing staff should monitor patients for jaundice (yellowing of the skin and sclera) and changes in stool color, and advise patients to maintain a healthy sleep schedule, avoid staying up late, and limit intake of high-fat foods such as red meat and butter<sup>[11]</sup>.

### **3.4 Health Education on Adverse Drug Reactions**

Nursing staff should help patients identify and understand adverse drug reactions and their management strategies, teaching them to self-assess their physical condition and proactively report any issues to facilitate self-management<sup>[9]</sup>. A health education section can be established on the ward bulletin board, featuring content on disease prevention and control, medication use, and healthy lifestyle guidance, presented with illustrations and updated regularly; a variety of health education materials should be made available for patients to read. Nurse-led health education activities, conducted jointly with physicians, should be regularly organized within the ward, using formats such as lectures, case studies, and interactive Q&A sessions to deepen patients' understanding of their condition and treatment. Patients should be encouraged by nurses to keep a diary during treatment, recording details such as the frequency, time, name, and dosage of administered medications; after treatment concludes, patients should document changes in their condition and the measures taken, thereby helping them stay focused on their health and cooperate with treatment.

### **3.5 Psychological Care**

Research by Cheng Jieyin et al.<sup>[12]</sup> indicates that rational emotive therapy combined with evidence-based preventive care yields significant results in patients undergoing targeted

immunotherapy, improving their psychological state, quality of life, and nutritional status while reducing the incidence of adverse reactions. In nursing care, nursing staff should proactively engage in conversation with patients, comprehensively observe their quality of life and emotional changes, and thoroughly analyze the causes of negative emotions. This helps patients recognize their own negative behaviors—such as resistance to treatment or self-isolation—and guides them to confront these issues head-on. Patients are encouraged to keep treatment diaries for self-observation and self-reflection. With the assistance of nursing staff, they can establish correct beliefs while receiving ample psychological support, including active listening, comfort, and encouragement to alleviate psychological stress. Regarding patient re-education, regular medical and nursing outreach activities are held, using formats such as specialized lectures, case studies, and interactive Q&A sessions to explain disease mechanisms and treatment precautions. A health education section is established, covering topics including disease, treatment, rehabilitation, and nutrition. This section features rich visual content and is updated promptly, allowing patients to access information at any time. Based on evidence-based nursing, nursing staff maintain a comprehensive understanding of patients' disease progression, treatment courses, and regimens. They strictly adhere to physicians' orders to guide rational medication use, provide detailed explanations of drug mechanisms, side effects, and precautions, and closely monitor drug reactions. In collaboration with physicians, they adjust treatment plans to prevent and control adverse reactions, and implement effective preventive measures for issues such as venous access damage. Through these comprehensive measures, we alleviate patients' physical and psychological distress, enhance their confidence in and adherence to treatment, and lay the foundation for the recovery of patients undergoing targeted and immunotherapy combination therapy. This approach warrants further promotion and refinement in clinical practice.

#### 4. Summary and Discussion

In current medical practice, the combination therapy of atezolizumab and bevacizumab has become an integral part of the clinical treatment regimen for advanced unresectable hepatocellular carcinoma, providing survival benefits to the vast majority of patients with advanced liver cancer. However, it is worth noting that as a first-line systemic treatment, this combination therapy involves complex mechanisms of action, and the clinical management of adverse reactions is challenging due to significant individual variability. Consequently, this places higher demands on frontline nursing staff—requiring not only excellent clinical competence but also a comprehensive knowledge base and proficient professional skills. A study by Liu Shuhui et al.<sup>[13]</sup> currently, the primary channels through which nursing staff acquire knowledge related to targeted and immunotherapy combination treatments are concentrated on attending academic conferences, exchanging ideas with peers, reviewing relevant literature, and reading drug package inserts. However, this fragmented approach to knowledge acquisition not only leads to variations in individual understanding and perception but also often results in nursing staff lacking systematic and specialized knowledge, making it difficult to meet clinical needs. Consequently, they are unable to provide patients with the highest quality and standardized nursing care; therefore, there is an urgent need for specialized training for nursing staff<sup>[14]</sup>. This study identified one case of anaphylactic shock caused by targeted immunotherapy. Addressing the core challenges of “high risk of anaphylactic shock and insufficient patient self-awareness” in targeted immunotherapy, a comprehensive closed-loop management protocol was developed covering the entire process: “pre-treatment assessment—drug preparation—in-treatment monitoring—post-treatment follow-up—emergency response to infusion reactions.” Centered on patient safety, this protocol conducts a multidimensional risk assessment prior to treatment focusing on the three key elements of “patient-drug-environment.” This assessment covers the patient's baseline characteristics (age, medical history, drug sensitivity history), drug awareness and psychological state, availability of resuscitation supplies, and vital signs to accurately identify high-risk individuals. During the drug preparation phase, the protocol strictly enforces verification of medical orders, informed consent for patient-provided medications, and the “prepared-on-site, used-on-site” principle to ensure drug safety and potency; During treatment, standardized infusion procedures are enforced (using dedicated infusion sets, selecting appropriate vascular access devices, flushing lines with 0.9% sodium chloride before and after infusion, and strictly adhering to infusion schedules), and monitoring during infusion is intensified. Concurrently, through patient education, patients are encouraged to report “subtle discomforts” such as rashes or chest tightness to facilitate early identification of adverse reactions<sup>[15]</sup>; After treatment, enhance patients' self-management capabilities through public education activities, dedicated health education sections for targeted immunotherapy, and psychological support; For emergency management, follow these key steps<sup>[16-17]</sup>: removal of allergens, adjustment of body position (sitting or semi-sitting for respiratory symptoms; supine position for cardiovascular symptoms), administration of

epinephrine as the first-line treatment, and establishment of an intravenous line. If symptoms do not resolve within 5–10 minutes, repeat administration of epinephrine and fluid resuscitation; if ineffective, escalate to critical care team support; and perform cardiopulmonary resuscitation immediately in the event of cardiac arrest. This protocol integrates four major modules—risk prevention, process control, follow-up care, and emergency response—to form a “pre-event, during-event, post-event” closed-loop system. It offers advantages such as standardization, patient-centered care, and safety and feasibility, providing an evidence-based reference for the clinical safety management of targeted immunotherapy drugs. In the future, its effectiveness should be validated through multicenter clinical studies; process efficiency should be optimized using information technology; infusion parameters and emergency strategies should be adjusted for specific patient populations; and the protocol should be dynamically updated according to the latest guidelines to further enhance its applicability.

In summary, the combination therapy of atezolizumab and bevacizumab synergistically inhibits the progression of advanced hepatocellular carcinoma, improves treatment response rates, and prolongs patient survival. Therefore, throughout the entire course of combination therapy, it is essential to closely monitor vital signs during treatment, accurately document the timing and severity of adverse reactions, and assess patients' nutritional status. When necessary, multidisciplinary consultations with the nutrition department should be sought, and targeted health education sessions and psychological interventions should be conducted. Standardized emergency response protocols should also be established to provide patients with comprehensive nursing support. This ensures patients can safely tolerate the combination therapy and successfully complete the prescribed treatment cycle. In actual nursing practice, due to significant individual differences in disease progression, underlying conditions, and immune status, adverse reactions associated with combination therapy (such as hypertension, proteinuria, gastrointestinal bleeding, and anaphylactic shock) present in complex and diverse forms. Nursing staff must continue their education, undergo specialized training in combined targeted and immunotherapy for cancer, and continuously accumulate nursing experience. By fully integrating patients' clinical symptoms, laboratory test results, and tolerance levels, nursing plans should be dynamically adjusted to ultimately promote patients' physical and mental recovery and maximize the benefits of combination therapy.

## References

- [1] HAN B F, ZHENG R S, ZENG H M, et al. *Cancer incidence and mortality in China, 2022* [J]. *Journal of the National Cancer Center*, 2024, 4(1):47-53.
- [2] Department of Medical Administration, National Health Commission of the People's Republic of China. *Guidelines for the Diagnosis and Treatment of Primary Liver Cancer (2024 Edition)* [J]. *Journal of Peking Union Medical College*, 2024, 15(3):532-558.
- [3] Lang Xu, Liu Boyu, Zeng Jia. *A Comparative Study on the Efficacy and Safety of Atezolizumab Combined with Bevacizumab Versus Lenvatinib in HBV-Associated Unresectable Hepatocellular Carcinoma* [J]. *Chinese Medical Journal*, 2026, 106(6):559-565.
- [4] SHOMURA M, OKABE H, SAKAKIBARA M, et al. *Impact of Atezolizumab + Bevacizumab Therapy on Health-Related Quality of Life in Patients with Advanced Hepatocellular Carcinoma* [J]. *Cancers*, 2024, 16(21):3610.
- [5] HSU C, RIMASSA L, SUN H C, et al. *Immunotherapy in hepatocellular carcinoma: evaluation and management of adverse events associated with atezolizumab plus bevacizumab* [J]. *Therapeutic Advances in Medical Oncology*, 2021, 13: 17588359211031141.
- [6] Li Xuerui, Li Junfeng, Zhang Wenwen, et al. *Long-term efficacy of an immunotherapy-targeted therapy combination followed by radical surgical resection for the treatment of initially unresectable hepatocellular carcinoma* [J]. *Chinese Journal of Hepatobiliary Surgery*, 2024, 30(1): 9-14.
- [7] Yu Feihong, Xiong Shunyu, Li Jiazhao, et al. *Systematic review and re-evaluation of the efficacy and safety of atezolizumab in the treatment of hepatocellular carcinoma* [J]. *Chinese Journal of Hospital Pharmacy*, 2024, 44(12): 1442-1447.
- [8] Chinese Nursing Association. *Intravenous Administration Techniques for Anticancer Drugs: T/CNAS 53-2025* [S]. Beijing: China Standards Press, 2025.
- [9] Oncology Nursing Professional Committee of the Chinese Nursing Association, Oncology Nursing Professional Committee of the Shanghai Anti-Cancer Association, Yang Zhan, et al. *Expert Consensus on Patient Self-Management of Skin Adverse Reactions Associated with Targeted Anticancer Drug Therapy* [J]. *Chinese Journal of Nursing*, 2024, 59(17): 2095-2099.
- [10] Sun Yu, Li Yangyang, Li Zhenli, et al. *Current Status and Prospects of Adjuvant Therapy Following Curative Resection for Hepatocellular Carcinoma* [J]. *Chinese Journal of Experimental*

*Surgery*, 2025, 42(6): 1152-1156.

[11] Guangdong Nursing Association. *Identification and Nursing of Adverse Reactions in Immune Checkpoint Inhibitor Therapy for Cancer Patients: T/GDNAS 055—2024*[S]. 2024.

[12] Cheng Jieyin, Liu Ruijuan, Chen Jinjiao. *Application of Rational Emotive Therapy Combined with Evidence-Based Preventive Nursing in Cancer Patients Receiving Targeted and Immunotherapy Combination Therapy* [J]. *Qilu Nursing Journal*, 2021, 27(11): 27-29.

[13] Liu Shuhui, Pan Ruili. *Roles and Functions of Oncology Nurse Specialists in Immunotherapy in China* [J]. *Chinese Journal of Modern Nursing*, 2021, 27(15): 2087-2091.

[14] Jiang Kai, Yan Rong, Meng Xiangmin, et al. *Development of a Specialized Training Program for Oncology Nurses in Immunotherapy* [J]. *Chinese Journal of Practical Nursing*, 2024, 40(29): 2292-2299.

[15] Yong Dingli, Gu Aihua, Chen Xiaofang. *Experience in Emergency Management and Medication Care for a Case of Anaphylactic Shock Induced by Atezolizumab* [J]. *Contemporary Nurse (Late Edition)*, 2022, 29(10):143-147.

[16] Specialized Committee on Rehabilitation of Allergic Diseases, Chinese Society of Rehabilitation Medicine; Allergen-Specific Diagnosis Working Group, Allergy Branch, Chinese Medical Association; Specialized Committee on Prevention and Control of Allergic Diseases, Chinese Preventive Medicine Association; et al. *Expert Consensus on the Diagnosis and Clinical Management of Severe Allergic Reactions* [J]. *Chinese Journal of Preventive Medicine*, 2025, 59(6): 749-765.

[17] Zhang Ziwei, Luo Bing, Ge Weihong, et al. *Interpretation and Evidence Analysis of the EAACI and WAO Guidelines on Pharmacological Emergency Management of Anaphylaxis* [J]. *Medical Guide*, 2021, 40(11):1511-1516.