Nursing Case Analysis of a Patient with Diabetes Mellitus Complicated by Acute Heart Failure

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Abstract

This case analysis examines the nursing process of a patient with diabetes mellitus complicated by acute heart failure. The comorbidity of diabetes and heart failure increases patient complexity and presents significant nursing challenges. Through comprehensive nursing assessment, the care team effectively addressed the patient's physiological and psychological needs. Scientific interventions were implemented in cardiovascular monitoring, diabetes management, oxygen therapy, and psychological support, resulting in control and improvement of the patient's condition. Nursing outcome evaluation demonstrated gradual stabilization of physiological parameters, with effective control of blood glucose and cardiovascular status. This case underscores the importance of a comprehensive nursing model in managing complex diseases, offering valuable experience and insights for the care of similar conditions.

Full Text

Nursing Case Analysis of a Patient with Diabetes Complicated by Acute Heart Failure

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Abstract

This case analysis examines the nursing management of a patient with diabetes complicated by acute heart failure. The combination of diabetes and heart failure significantly increases patient complexity and poses substantial nursing challenges. Through comprehensive nursing assessment, the care team effectively

addressed the patient's physiological and psychological needs. Scientific interventions were implemented across cardiovascular monitoring, diabetes management, oxygen therapy, and psychological support, resulting in effective disease control and clinical improvement. Evaluation of nursing outcomes demonstrated gradual stabilization of physiological indicators, with effective control of both blood glucose and cardiovascular status. This case underscores the importance of an integrated nursing model in managing complex diseases and provides valuable experience and insights for the care of similar conditions.

Keywords: diabetes; acute heart failure; nursing measures

Introduction

Diabetes mellitus is a common chronic metabolic disease that can cause multi-organ damage and complications, with the cardiovascular system being one of the most frequently affected organ systems in diabetic patients. Acute heart failure represents a clinical manifestation of impaired cardiac function leading to reduced cardiac output or inability to meet the body's metabolic demands. The nursing care of diabetic patients with acute heart failure presents considerable complexity and challenges [1-4]. In such cases, the nursing team plays a particularly crucial role, requiring the delivery of personalized, comprehensive care plans that address multiple interacting etiologies and pathophysiological mechanisms to achieve disease control and recovery. This case analysis aims to explore, through an in-depth examination of the clinical nursing process for a patient with diabetes complicated by acute heart failure, how the nursing team can collaborate effectively, apply medical knowledge and nursing skills, and address patient needs holistically from both physiological and psychological perspectives. Through detailed analysis of this case, we can better understand the patient's clinical characteristics, key aspects of nursing interventions, and achieved outcomes, thereby providing beneficial experience for nursing management of similar conditions.

1 Case Presentation

The patient was a 75-year-old female who presented for triage at 20:26 on June 5, 2023. She was conscious and alert with a temperature of 36.2°C, pulse of 85 beats per minute, and blood pressure of 143/53 mmHg. The triage chief complaint was heart failure, with a reported 5-day history of fever. Present illness: Five days prior to admission, the patient developed fever and chest tightness without cough. Temperature was 37.9°C, white blood cell count 5.89$×10^{9}$/L, hemoglobin 73 g/L, and creatinine 185 mol/L. Past medical history included hypertension for over 30 years, myocardial infarction for 30 years, and diabetes for 30 years. Drug allergy history was unknown. Physical examination revealed coarse breath sounds in both lungs and mild edema of both lower extremities. Western medicine diagnosis: diabetes mellitus and acute heart failure. Management: The patient was placed under observation, received oxygen therapy, and

was provided with effective emergency care.

2 Nursing Care

2.1 Nursing Assessment

The nursing assessment focused on physiological status, cardiovascular system function, glycemic control, and psychological state. Physiological indicators showed elevated blood pressure, increased respiratory rate, distant heart sounds, and hyperglycemia. The patient exhibited significant anxiety and fear.

2.2 Nursing Interventions

2.2.1 Cardiovascular Monitoring and Intervention To ensure cardiovascular stability, continuous cardiac monitoring was implemented to track changes in cardiac electrical activity. Blood pressure, heart rate, and respiratory rate were measured every four hours to facilitate early detection of arrhythmias and blood pressure fluctuations. Diuretic medications were administered as prescribed to eliminate excess fluid and reduce cardiac workload [5-8]. Additionally, vasodilator drugs were used according to medical orders to dilate blood vessels, decrease afterload, and improve cardiac pumping function.

2.2.2 Diabetes Management The patient's blood glucose levels were closely monitored with multiple daily measurements to ensure stable glycemic control. Insulin and oral medication dosages were adjusted according to physician orders based on actual glucose values. A personalized meal plan was developed to control carbohydrate intake and maintain effective glucose control. Diabetic patients are prone to neuropathy and microvascular complications, requiring close attention to foot health to prevent infection.

2.2.3 Oxygen Therapy and Respiratory Support Due to potential oxygen supply deficiency from acute heart failure, oxygen therapy was initiated to improve oxygen saturation. Healthcare professionals regularly inspected oxygen delivery equipment to ensure stable oxygen supply [9-12]. Nurses also assisted the patient with deep breathing exercises to prevent pulmonary congestion and reduce infection risk. Coughing and sputum training were incorporated into daily care to maintain airway patency.

2.2.4 Psychological Support Nurses established effective communication with the patient, listening to emotional expressions to alleviate anxiety. Through supportive communication, nurses provided emotional support and psychological comfort, encouraging the patient to face disease challenges positively. For more complex emotional issues, nurses facilitated referral for psychological counseling [13-15] to provide more specialized mental health support.

2.2.5 Heart Failure Care Nursing care included regular monitoring of glucose levels, heart rate, respiratory rate, blood pressure, and weight changes to facilitate early detection and management of abnormalities. Pharmacological management was optimized according to physician recommendations, including diuretics, ACE inhibitors, and beta-blockers, with careful attention to medications that might affect glucose levels. Fluid intake was controlled to prevent fluid retention and heart failure deterioration while avoiding dehydration, particularly important as hyperglycemia can increase urine output. Appropriate dietary modifications were provided to control blood glucose and weight, following physician or dietitian recommendations for a high-fiber, low-salt, low-fat diet with controlled carbohydrate intake. During the acute phase of heart failure, bed rest was required with respiratory monitoring and gradual activity resumption under physician guidance. An appropriate exercise plan was developed to help control blood glucose and alleviate heart failure symptoms, implemented under medical supervision to avoid overexertion. Patient and family education covered fundamental knowledge of diabetes and heart failure, proper medication management, monitoring parameters, and emergency response procedures.

2.3 Evaluation of Nursing Outcomes

Throughout the nursing interventions, the patient's physiological indicators gradually stabilized, with decreased blood pressure and normalized respiration. Blood glucose levels were effectively controlled within target ranges. The patient's emotional state improved with reduced anxiety. Through comprehensive nursing team interventions, the patient's health status improved, disease was controlled, and a solid foundation was established for subsequent treatment. This patient was successfully resuscitated with favorable prognosis.

This case analysis emphasizes the importance of interdisciplinary collaboration in complex disease management. Through comprehensive nursing assessment, scientific nursing interventions, and timely outcome evaluation, the nursing team provided personalized, holistic care. In such cases, nurses must integrate the characteristics of both diabetes and heart failure to implement appropriate measures for patient stabilization and recovery. This analysis offers valuable experience and guidance for nursing care of similar conditions and highlights the essential role of holistic patient care in promoting recovery. This integrated nursing model can inform future practice to provide higher quality care and improved outcomes for patients.

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Note: Figure translations are in progress. See original paper for figures.