Nursing Care of a Patient with Salmonella Typhimurium Infection and Vomiting

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Abstract

This article summarizes the nursing care of a patient with Salmonella typhimurium infection and vomiting, including close monitoring of the patient' s condition and proper implementation of gastrointestinal isolation, vomiting management, psychological care, and dietary care. Through active and effective nursing interventions, the patient' s condition was effectively controlled.

Full Text

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Abstract

This study summarizes the nursing care of a patient with Salmonella typhimurium infection accompanied by vomiting. Through close monitoring of the patient' s condition and comprehensive nursing interventions—including digestive tract isolation, vomiting management, psychological support, and dietary care—the patient' s condition was effectively controlled.

Keywords: Salmonella typhimurium; vomiting; nursing care

Introduction

Salmonella typhimurium enteritis is an acute infectious disease caused by Salmonella typhimurium, with primary sources of infection including poultry, livestock, rodents, infected patients, and carriers. Transmission occurs primarily through contaminated food and water. Upon entering the host intestine, the

bacterium employs its type III secretion system (T3SS) located on Salmonella pathogenicity island 1 (SPI-1) to secrete effector proteins (including SipA, SipB, SipC, and SipD) that induce host cytoskeletal rearrangement and modulate signaling pathways, facilitating invasion of host cells and triggering associated pathologies [1]. Clinical manifestations primarily include high fever, anorexia, nausea, vomiting, abdominal pain, and diarrhea, with bowel movements ranging from several to more than 30 times daily. Stool characteristics may vary from undigested loose stools to yellow-green mucoid stools, purulent bloody stools with a foul odor. A minority of patients may develop sepsis and urinary tract infection [2]. In March 2023, our department admitted a patient with Salmonella typhimurium infection and vomiting. Through meticulous treatment and nursing care, satisfactory outcomes were achieved. The nursing experiences are reported below.

Case Presentation

The patient was a 63-year-old female admitted due to intermittent vomiting for over one month, worsening with abdominal pain for three days. Diagnoses upon admission included: vomiting of undetermined cause, urinary tract infection, coronary atherosclerotic heart disease (cardiac function class II), chronic gastritis, chronic colitis, renal calculi, depressive state, and insomnia. Past medical history included chronic colitis for 10 years, depressive state for 10 years, coronary heart disease for 10 years, renal calculi for 3 years, hysterectomy in 2010, cholecystectomy in 2013, and cataract surgery in 2020. The patient denied histories of hypertension, diabetes, hepatitis, tuberculosis, other surgeries, trauma, blood transfusions, or food and drug allergies.

Presenting symptoms included clear consciousness, weak mental status, fever, fatigue, nausea and vomiting (gastric contents), poor appetite, dry mouth with bitter taste, periumbilical and left lower abdominal pain, poor sleep, increased bowel frequency with loose stools containing mucus, and dysuria. Laboratory results after admission revealed: C-reactive protein 13.06 mg/L, complete blood count showing white blood cell count $15.74\$\times10^{\{9\}/L, neutrophilpercentage89.7\times10\{9\}\$/L$, interleukin-6 73.32 pg/ml; biochemical tests: creatinine 58 mol/L, glucose 7.2 mmol/L, lipase 16 U/L. Urinalysis: leukocytes 3+, occult blood 1+; stool routine: occult blood 3+; stool bacterial culture: Salmonella typhimurium.

The patient was placed in single-room isolation with digestive tract isolation protocols and reported to the infection control department. Treatment included: 0.9% sodium chloride 100 ml + esomeprazole sodium for injection 40 mg IV drip, levofloxacin sodium chloride injection 0.5 g IV drip, and 10% glucose injection 500 ml + vitamin C injection 1 g + vitamin B6 injection 100 mg + potassium chloride injection 1 g IV drip for acid suppression, gastric protection, anti-infection, and electrolyte supplementation. Additionally, Weichang' an pills were administered orally in divided doses for aromatic turbidity resolution, qi regulation, pain relief, and gastrointestinal motility improvement. The patient'

s symptoms improved, with formed soft stools, and two consecutive negative stool cultures. She was discharged in stable condition.

Nursing Care

2.1 Digestive Tract Isolation

Standard infectious disease nursing protocols for enteric infections were implemented. Medical staff were required to wear isolation gowns and pants during diagnosis, treatment, and nursing procedures for self-protection. After bathing, the patient wore designated hospital clothing. The patient' s tableware and bedpans were designated for individual use only and disinfected after each use. All vomitus and excreta were disinfected before disposal. Measures were taken to ensure the ward remained free of flies and cockroaches. Isolation could be discontinued after the fifth day following clinical symptom resolution, or 15 days after normalization of body temperature, with two consecutive negative stool cultures [3].

2.2 Vomiting Management

Vomit was promptly removed, and the patient rinsed her mouth with warm water to maintain oral hygiene. Small, frequent meals were provided to prevent vomiting episodes. The patient was instructed to keep fresh fruits in her room and to smell orange or tangerine peels when experiencing nausea to alleviate symptoms [4].

2.3 Psychological Care

A positive nurse-patient relationship was established, implementing patient-centered holistic nursing care. Scientific education was provided to the patient and her family, explaining the etiology, transmission routes, clinical features, and prognosis of the disease to optimize their psychological state for treatment.

2.4 Close Monitoring of Condition

Absolute bed rest was enforced, with blood pressure and stool frequency, volume, and characteristics measured and recorded. Specimens were collected and sent for examination as ordered. Immediate intravenous fluid administration was initiated, with blood transfusion preparation when necessary. During the recovery phase without complications, the patient could gradually ambulate and increase activity levels.

2.5 Dietary Management

During the febrile period, easily digestible, low-gas-producing, high-calorie liquid diets were provided in small, frequent meals, with encouragement for adequate fluid intake. One week after fever resolution, low-residue semi-liquid diets or soft foods were introduced.

2.6 Complication Management: Intestinal Bleeding

Intestinal bleeding is a common serious complication, typically occurring during the second to third week of disease course, often triggered by improper diet, excessive activity, diarrhea, or excessive straining during defecation. During massive hemorrhage, patients may experience sudden temperature drop, dizziness, thirst, nausea, and restlessness. Physical examination may reveal pale complexion, cold extremities, rapid breathing, tachycardia, and hypotension indicating shock.

2.7 Discharge Guidance

Patients were instructed to maintain adequate rest and nutrition to strengthen physical constitution. Education on basic knowledge of typhoid fever was provided, emphasizing good personal and dietary hygiene habits. Handwashing before meals and after defecation, avoiding untreated water, and not consuming contaminated food are critical measures for interrupting transmission routes and preventing disease recurrence.

Discussion

Salmonella enterica is a common foodborne enteric pathogen belonging to the family Enterobacteriaceae, a facultative anaerobic Gram-negative bacterium that can infect humans and animals, causing food poisoning and typhoid fever [1]. According to World Health Organization data, Salmonella Enteritidis and Salmonella Typhimurium are the two most frequently detected serotypes due to their broad host specificity [5-6]. In this case, the diagnosis was clear and treatment appropriate. The patient presented in poor general condition and received anti-inflammatory and electrolyte supplementation therapy. From the perspective of Traditional Chinese Medicine, this disease falls under the category of "vomiting disease," characterized by food retention in the stomach with eventual regurgitation. A classic description notes morning food being vomited in the evening and evening food vomited in the morning, with undigested food remnants. Symptoms include gastric fullness before or after vomiting that resolves after emesis, typically occurring long after meals with relatively large vomitus volume, likely related to contaminated food. Moving forward, targeted condition monitoring should be implemented for such patients, with enhanced psychological nursing, anticipatory nursing, and basic nursing care to improve overall nursing quality.

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