

Educational Case Study: Cholecystitis

Hamidah Mohammed Busbieh^{1, *}, Fatimah Musaad Al-Subeay²,
Amina Ibrahim Aljassem³, Norah Musaad Alsubaie⁴,
Mariam Abdullah Yousef albutayan⁵, Sharifah Mohammed Hussain Alghanim⁶,
Ahmed mohammed alaliwi⁷, Ali Yousef Al-Dhneen⁸,

^{1, *} King Faisal General Hospital-Al Ahsa, Nurse Technician,

² King Faisal General Hospital-Al Ahsa, Nurse Specialist

³ King Faisal General Hospital-Al Ahsa, Obstetrics and gynecology consultant

⁴ King Fahad hospital, Al Ahsa, Nursing specialist

⁵ King Faisal General Hospital-Al Ahsa, Nursing specialist⁶ King Faisal General Hospital-Al Ahsa, Nursing specialist⁷ MCH, Al Ahsa, Staff Nurse

⁸ King Faisal University, Medical student

Abstract

In nursing education (NE), a set of educational standards for case study teaching, the following fictional case is designed as a learning tool. In general, these competencies can be divided into three categories: assessment, nursing care plan, and health education.

Date of submission: 20-03-2024

Date of acceptance: 30-03-2024

I. Introduction

T.A.H, a 46-year-old male, arrived at the Almanaa emergency room in a wheelchair accompanied by his wife. He presented complaints of pain in the right upper quadrant of the abdomen, accompanied by bloating that radiates to his back and below the right shoulder blade. Over the past two days, he also experienced food intolerances, increased gas, nausea, and vomiting. He noted a worsening of these symptoms following a family gathering where he consumed a substantial amount of fatty food. The doctor diagnosed him with cholecystitis, an inflammation of the gallbladder situated beneath the liver. This inflammation is commonly attributed to the presence of gallstones, which can obstruct the normal bile flow, leading to irritation or infection of the gallbladder.

Cholecystitis prevalence in Saudi Arabia is reported to be approximately 24%, with a female-to-male ratio of 11.9:1. The annual incidence is found to be 4.4 per 100,000 adults, and it accounts for up to 5% of emergency department visits. Surgical procedures also frequently involve the management of cholecystitis (Khafaji et al., 2023)

Patient's Baseline Data

On February 11, 2023, T.A.H, a 46-year-old male teacher from Saudi Arabia, was admitted to the Almanaa Emergency Room. Upon assessment, his vital signs were within normal ranges, with a temperature of 37°C, a pulse rate of 80 beats per minute, a respiratory rate of 20 breaths per minute, and blood pressure measured at 110/70 mmHg. His oxygen saturation level (SPO₂) was recorded at 98%. T.A.H reported a pain level of 7 out of 10 on the pain scale.

Chief Complaint

The patient reported, "I am experiencing severe pain in the right upper quadrant of my abdomen, along with bloating that extends to my back and below the right shoulder blade. Additionally, I have been dealing with food intolerances, increased gas, nausea, and vomiting for the past two days."

History of Present Illness

The patient is a middle-aged male is experiencing pain in the right upper quadrant of the abdomen, accompanied by bloating that extends to his back and below the right shoulder blade. He has reported food intolerances, increased gas, nausea, and vomiting over the past two days, with these symptoms intensifying after consuming a substantial amount of fatty food at a family gathering. Additionally, the patient has undergone significant weight gain. After a comprehensive examination, the physician promptly requested a full set of

diagnostic tests, including a complete blood count (CBC), biochemistry blood test, CT scan, and ultrasound. The outcomes of these tests led to the identification of cholecystitis. Subsequently, the doctor determined that a cholecystectomy was warranted based on the diagnostic findings.

History of Past Illness

The patient reported no history of hypertension, cardiovascular disease, cancer, chronic obstructive pulmonary disease (COPD), renal disease, bleeding disorders, infectious diseases, or childhood illnesses such as measles, mumps, rubella, chickenpox, and strep throat. Additionally, there is no record of prior surgical procedures, major or minor trauma, or hospitalization. The patient does not have any known allergies to food, drugs, environmental factors, latex, or intravenous contrast.

Medications

The patient has not taken any medications in the past. Following the doctor's assessment of the current condition, a prescription was provided for 50 mg of Diclofenac three times daily (TDS), 1000 mg of Paracetamol every six hours, 400 mg of Ciprofloxacin every 12 hours, 40 mg of Clexane at bed time, 40 mg of Omeprazole once a day, 10 mg of Buscopan four times a day, 8 mg of Xefo three times a day, and 40 mg of Pantoprazole once daily. For over-the-counter relief, the patient relies on Paracetamol and vitamin D. Lastly, there is nouse of herbal or alternative medications.

Functional Health Pattern, Health Perception-Health Management Pattern

When asked about his personal perception of health, the patient expressed that "health means the absence of illness."

Nutritional-Metabolic Pattern: The patient is a non-vegetarian and follows a diet consisting of three daily meals supplemented with various snacks. He tends to gravitate towards fast food, particularly favoring salty and spicy fried dishes. Daily water intake is limited to one liter, and the consumption of soda is frequent.

Elimination Pattern: The patient reports regular bowel movements with occasional episodes of yellow-colored diarrhea, voiding seven times per day.

Activity-Exercise Pattern: He engages in moderate physical activity, walking twice a week for 20 minutes. **Sleep-Rest Pattern:** The patient sleeps for seven hours per day without daytime napping, although the sleep is often interrupted by pain, leading to irritability and discomfort.

Cognitive-Perceptual Patterns: The patient maintains consciousness and possesses the ability to discern place, time, and people in his surroundings. All senses are in good condition without associated problems.

Self-Perception Self-Concept Pattern

The patient expresses dissatisfaction with his body image due to weight gain and difficulty in performing daily activities.

Role-Relationship Pattern

The patient is married and content with his marital relationship. He has a daughter and a son. Professionally, he serves as a teacher in a public school, maintaining positive social connections with both family members and colleagues.

Coping-Stress Tolerance Pattern

To alleviate stress, the patient typically visits the beach and engages in swimming.

Value-Belief Pattern

As a Muslim, he adheres to praying five times a day, frequently attends the mosque, and observes fasting two days a week.

Review of Systems

- **General Health:** The patient has weight gain and restless feeling because of pain and denied having weakness, malaise, fever, chills, sweats, or night sweats.
- **Skin:** The patient denies having any eczema, excessive dryness or moisture, rashes, lesions, or moles.
- **Lymph nodes:** There is no enlargement in the lymph nodes.
- **Hair:** The patient stated "I have a partial change in hair color and no hair loss".
- **Nail:** The patient denies any change in nails shape, color, brittleness, longitudinal ridges, thick, pale, or cyanosed.

- **HEENT:** The patient denies having any headache, dizziness, earache, hearing loss, use of hearing aids, tinnitus, vision change, excessive tearing, eyeglasses/contact use, rhinorrhea, nasal congestion, postnasal drip, sinus pain, nosebleeds, sore throat, mouth sores, hoarseness, toothache, bleeding gums, or dentures.
- **Respiratory system:** The patient denies having any cough, sputum, hemoptysis, dyspnea, pain with respiration, wheezing, or cyanosis.
- **Cardiovascular and peripheral system:** The patient denies having any chest pain, palpitations, orthopnea, syncope, or leg edema. The patient denies having any varicose vein, phlebitis, coldness of hands/feet, or leg ulcers.
- **Gastrointestinal system:** The patient verbalized having heartburn, nausea, vomiting, abdominal pain, bloating, flatulence, intermittent diarrhea.
- **Urinary system:** The patient verbalized voiding dark yellow urine and denies having any dysuria, urgency, frequency, hematuria, nocturia, polyuria, incomplete emptying of bladder, suprapubic pain, flank pain, incontinence, or retention.
- **Reproductive system:** The patient denies having any testicular pain, testicular mass/ swelling, penile discharge, or erectile dysfunction.
- **Hematopoietic system:** The patient denies having any anemia, easy bruising, or bleeding skin/mucous membranes.
- **Musculoskeletal:** The patient stated having back pain and below the right shoulder blade with no joint pain, stiffness, swelling, deformity, muscle cramps/weakness, or use of assistive devices for mobility.
- **Neurological system:** The patient denies having any paresis, paralysis, numbness, tremors, seizure, gait disturbance, memory loss, disorientation, or aphasia.
- **Psych:** The patient verbalized interrupted sleep due to the pain with irritability and denied having any anxiety, panic attacks, depression, nervousness, eating disorders, suicidal thoughts, impaired judgment, hallucinations, or confusion.

Physical Assessment

- **Vital Signs:** BP:110/70mmHg, PR:80/min, Spo2:98%, RR:20/min, Temp:37 C, PainScale: 7/10
- **General Assessment:** 46 years old male who is alert and oriented. Despite the pain, he is cooperative.
Weight: 85 Kg
Height: 170 Cm
BMI: 29.41
- **Skin and Lymphatics:** Normal skin with no pruritus, rash or pigment changes and no edema.
- **Head and face:** Symmetric size and normocephalic scalp, no hair loss, partial change in hair color, and there is no sign of trauma on the face structure, no tenderness during palpation.
- **Eyes:** Eyeballs are symmetrical in size and position. Conjunctiva is pink. Pupils equal, round, reacted to light and accommodation. There is no nystagmus, blurred vision in both eyes and no myopia.
- **Ears:** Equal size bilaterally, no swelling, no tenderness or earache, no discharge, no redness, no hearing loss.
- **Nose:** The nasal mucosa is pink and moist. The nasal septum is midline. Nares are patent bilaterally.
- **Mouth and throat:** Oral mucosa is pink and moist. Tongue is normal in appearance without lesions and with symmetrical movement. No tonsillar swelling.
- **Neck:** Symmetrical neck with no deformities and no tracheal deviation. Non-tender

Pathophysiology

Cholecystitis is the inflammation of the gallbladder, and it is often associated with the presence of gallstones. The pathophysiology of cholecystitis involves a complex interplay of factors, including obstruction of the cystic duct, ischemia, and infection.

Gallstones, primarily composed of cholesterol or bilirubin, can obstruct the cystic duct, preventing the normal flow of bile from the gallbladder. This obstruction leads to an accumulation of bile, causing distension of the gallbladder. The increased pressure within the gallbladder can impede blood flow, leading to ischemia, which is a critical component of cholecystitis (Adachi et al., 2021).

Ischemia, or inadequate blood supply, can result in damage to the gallbladder wall. Reduced blood flow compromises the delivery of oxygen and nutrients to the gallbladder tissues, leading to inflammation and cellular injury. Ischemia is often a consequence of prolonged obstruction and may contribute to the severity of cholecystitis (Adachi et al., 2021).

The presence of stagnant bile within the gallbladder creates an environment conducive to bacterial overgrowth, particularly by enteric organisms. Bacterial infection further exacerbates the inflammatory response,

triggering the release of proinflammatory mediators and attracting immune cells to the site of infection. This immune response contributes to the characteristic symptoms of cholecystitis, including pain, tenderness, and systemic signs of inflammation (Adachi et al., 2021).

In severe cases, the inflammation can extend beyond the gallbladder, affecting surrounding structures such as the liver or adjacent peritoneal tissues. This can lead to complications such as abscess formation or perforation of the gallbladder.

Chronic cholecystitis may develop as a result of recurrent or persistent inflammation. In this condition, the gallbladder undergoes structural changes, with thickening of the wall and alterations in its contractile function. Chronic inflammation can also contribute to the formation of gallstones, perpetuating the cycle of gallbladder dysfunction.

Several risk factors contribute to the development of cholecystitis. The most common risk factor is the presence of gallstones, which can obstruct the flow of bile and lead to inflammation. Other factors include obesity, as excess body weight can increase the likelihood of gallstone formation. Rapid weight loss, either through crash diets or certain medical procedures, is also associated with an elevated risk. Additionally, women, especially those who are pregnant or taking hormone-based medications, face a higher susceptibility to cholecystitis.

Age, genetics, and certain medical conditions, such as diabetes, further contribute to the risk profile. Recognizing these factors is essential for preventive measures and early intervention in individuals at higher risk of developing cholecystitis (*Cholecystitis*, n.d.).

Surgical Management

The physician opted for a laparoscopic cholecystectomy based on the results obtained from various tests. This surgical procedure involves the removal of the gallbladder and is commonly recommended for cases of cholecystitis, marked by inflammation, often triggered by gallstones.

When conservative treatments like medications and lifestyle adjustments prove ineffective or when there are recurring episodes of gallbladder inflammation, surgical removal becomes a viable option. Cholecystectomy stands as one of the most frequently performed elective abdominal surgeries worldwide.

There are two primary approaches to cholecystectomy: laparoscopic (minimally invasive) and open (traditional) surgery. In laparoscopic cholecystectomy, small incisions are made, and a miniature camera along with specialized instruments aid in visualizing and extracting the gallbladder. This method typically results in reduced postoperative pain, shorter recovery times, and smaller scars compared to open surgery (*Cholecystectomy*, 2019).

Open cholecystectomy involves a larger incision in the abdominal wall to directly access and remove the gallbladder. Although less common today due to the widespread use of laparoscopic techniques, it may be necessary in specific cases where laparoscopic surgery is impractical or poses risks (*Cholecystectomy*, 2019).

Cholecystectomy is generally considered a safe and effective procedure, providing relief from symptoms for most individuals. The absence of the gallbladder does not significantly impact digestion, as the liver continues to produce bile, which is released directly into the small intestine.

Health Education

Nutrition: Following a cholecystectomy, it's essential to make mindful dietary choices to support the digestive system. While the gallbladder has been removed, the liver still produces bile, aiding in digestion. The patient is advised to focus on a well-balanced diet that includes lean proteins, whole grains, fruits, and vegetables. Considering smaller, more frequent meals to assist the body in managing bile release. Being cautious with high-fat foods, as they can sometimes be harder to digest. Gradually reintroducing these foods into the patient's diet, paying attention to the body's response. Staying hydrated is crucial, as it supports overall digestion and helps prevent constipation (*Can You Recommend a Diet After Gallbladder Removal*, 2023).

Exercise and Physical Activity: Engaging in regular physical activity is beneficial for the patient's overall health and maintaining healthy body weight, including post-cholecystectomy recovery. It is recommended to aim for at least 150 minutes of moderate-intensity exercise per week. Activities like brisk walking, swimming, or cycling can promote digestion.

Medication: The patient has to follow the prescription given by the doctor and take his medications regularly.

II. Conclusion

In summary, cholecystitis demands prompt recognition and appropriate management to alleviate symptoms and avert potential complications. Whether through conservative treatments or surgical interventions like cholecystectomy, the key lies in early detection and proactive healthcare. As a preventive measure, maintaining a healthy lifestyle that includes a balanced diet, regular exercise, and proper hydration can contribute to overall gallbladder health. Additionally, avoiding excessive consumption of high-fat foods may

reduce the risk of gallstone formation, serving as a practical strategy for preventing cholecystitis. Regular medical check-ups and adherence to a health-conscious lifestyle are fundamental in minimizing the impact of cholecystitis and promoting enduring well-being.

References

- [1] Khafaji, M. A., Bagasi, J. T., Albahiti, S. K., Alsayegh, L. A., Alsayyad, S. A., Algarni, S. S., Bahowarth, S. Y., & Baghdadi, E. S. (2023). Accuracy Of Ultrasound And Computed Tomography In Diagnosing Acute Cholecystitis Patients In A Tertiary Care Center In Saudi Arabia. *Cureus*. <https://doi.org/10.7759/cureus.44934>
- [2] Teachmeanatomy. (2019, August 16). The Gallbladder - Biliary Tree - Gallstones. Teachmeanatomy. <https://teachmeanatomy.info/abdomen/viscera/gallbladder/>
- [3] Institute For Quality And Efficiency In Health Care (Iqwig). (2018, September 6). How Does The Gallbladder Work? *Informedhealth.org*
- [4] Ncbi Bookshelf. <https://www.ncbi.nlm.nih.gov/books/nbk279386/>
- [5] Adachi, T., Eguchi, S., & Muto, Y. (2021). Pathophysiology And Pathology Of Acute Cholecystitis: A Secondary Publication Of The Japanese Version From 1992. *Journal Of Hepato-Biliary-Pancreatic Sciences*, 29(2), 212–216. <https://doi.org/10.1002/jhbp.912>