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**Multimodal diagnostic approach and surgical management of suspected malignant gallbladder tumor:
A case report**

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Abstract

Background: Gallbladder cancer is the most common tumor of the biliary tract and is recognized as one of the most aggressive gastrointestinal malignancies with a poor prognosis. Most cases are diagnosed at an advanced stage, which limits therapeutic options. According to data from the International Agency for Research on Cancer through the Global Cancer Observatory (GLOBOCAN) on 2018, gallbladder cancer ranks 22nd in global cancer incidence and 17th among the leading causes of cancer-related mortality worldwide.

Purpose: To describe the diagnostic approach and surgical management of a patient with suspected malignant gallbladder tumor.

Method: Descriptive analytic research used a case study approach involving a 51-year-old woman presented with a chief complaint of right upper abdominal pain that had persisted for three months prior to hospital admission. Clinical and diagnostic evaluations were performed using abdominal ultrasonography, multislice computed tomography (MSCT), and magnetic resonance imaging with Magnetic Resonance Cholangiopancreatography (MRI-MRCP) to establish the diagnosis and determine tumor staging.

Results: Radiological findings revealed a mass in the gallbladder suggestive of a malignant gallbladder tumor with a clinical stage of cT3N1M0. The patient subsequently underwent surgical intervention through an open laparotomy approach consisting of cholecystectomy combined with resection of tumor-invaded tissues or adjacent organs. Postoperatively, the patient's condition was stable, and further oncological management with chemotherapy was planned as part of a comprehensive treatment strategy.

Conclusion: Gallbladder tumor at stage cT3N1M0 represents an aggressive malignancy that is often diagnosed at an advanced stage. A multimodal diagnostic approach and adequate surgical resection are essential in the management of this condition to improve patient survival outcomes.

Keywords: Case Report; Cholecystectomy; Gallbladder Cancer; Gallbladder Tumor; Hepatobiliary Surgery.

INTRODUCTION

Gallbladder cancer is the most common malignancy of the biliary tract worldwide and is recognized as one of the most aggressive gastrointestinal cancers. This disease generally carries a poor prognosis, with low survival rates from the time of diagnosis (Grivennikov, Greten, & Karin, 2010). This is largely due to the nonspecific clinical manifestations and the anatomical location of the gallbladder, which makes early detection difficult. Consequently, most cases are diagnosed at an advanced stage of the disease (Roa, García, Kapoor, Maithel, Javle, & Koshiol, 2022; Valle, Kelley, Nervi, Oh, & Zhu, 2021).

The incidence of gallbladder cancer shows considerable geographic variation across different regions of the world. Higher incidence rates have been reported in regions such as South America, India, Pakistan, Japan, and Korea compared with other countries. These variations are closely associated with the high prevalence of gallstones and chronic gallbladder infections in these regions. In addition, differences in incidence have been observed among certain ethnic groups. Gallbladder cancer is more frequently reported in White populations, Native Americans in the southwestern United States, and Mexican Americans, whereas the incidence among African Americans is relatively lower (Siegel, Miller, Wagle, & Jemal, 2023; Sung, Ferlay, Siegel, Laversanne, M., Soerjomataram, Jemal, & Bray, Ferlay, Soerjomataram, Siegel, Torre, & Jemal, 2018).

Gallbladder cancer is also the only malignancy of the digestive system that occurs more frequently in women than in men. Globally, the incidence rate in women is slightly higher, with an age-standardized incidence of approximately 2.4 per 100,000 population, compared with about 2.2 per 100,000 in men. The cumulative lifetime risk of developing gallbladder cancer from birth to the age of 74 years is estimated to be around 0.26% in women and 0.25% in men. This difference is thought to be related to several factors, including hormonal influences, the higher prevalence of gallstones

among women, and the relatively longer life expectancy of women compared with men (Roa et al., 2022; Sung et al., 2021).

According to global cancer statistics reported by the International Agency for Research on Cancer through the GLOBOCAN database, gallbladder cancer ranks 22nd in global cancer incidence and 17th among the leading causes of cancer-related deaths worldwide (Randi, Franceschi, & La Vecchia, 2006). The prognosis of gallbladder cancer is generally poor due to the aggressive biological behavior of the tumor, delayed diagnosis, the complex anatomical location of the gallbladder, and the tendency for the disease to be detected at an advanced stage (Shindoh, De Aretxabala, Aloia, Roa, Roa, Zimmiti, & Vauthey, 2015; Bridgewater, Galle, Khan, Llovet, Park, Patel, Pawlik, & Gores, 2014). Histopathologically, most gallbladder cancers are adenocarcinomas originating from the secretory epithelial cells of the gallbladder mucosa (Stinton, & Shaffer, 2012). A less common subtype is papillary adenocarcinoma, which arises from papillary epithelial cells involved in bile motility within the gallbladder. Although relatively rare, the papillary subtype is generally associated with a better prognosis compared with other types of gallbladder carcinoma (Zhu, Hong, Hezel, & Kooby, 2010; Yoshimitsu, Honda, Kuroiwa, Irie, Aibe, Shinozaki, Tajima, & Masuda, 2001).

Currently, surgical resection remains the only potentially curative treatment for gallbladder cancer. However, at the time of initial diagnosis, only approximately 10% of patients meet the criteria for curative surgical intervention. Even among patients who undergo surgical resection, the complex anatomy of the hepatobiliary and portal systems, along with the morbidity and mortality associated with hepatic resection, continue to present significant challenges in disease management. Furthermore, the risk of tumor dissemination due to intraoperative manipulation and the high rate of postoperative recurrence also contribute to the high mortality associated with gallbladder cancer (Valle, Wasan,

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Palmer, Cunningham, Anthoney, Maraveyas, & Bridgewater, 2010; Siegel, Miller, & Jemal, 2018).

Based on this background, this report presents a case of a patient with a gallbladder tumor who underwent surgical management. This case report aims to provide a clinical overview and contribute to the understanding of the diagnosis and surgical management of patients with gallbladder tumors.

RESEARCH METHOD

A descriptive analytic design using a case report approach involving a female patient diagnosed with a suspected malignant gallbladder tumor who underwent surgical management at Awal Bros Botania Hospital, Batam, Indonesia. The case was selected to illustrate the clinical presentation, diagnostic evaluation, and surgical management of gallbladder tumor suspected of malignancy. Data were collected through comprehensive clinical assessment, including patient interviews, physical examinations, review of medical records, laboratory findings, imaging studies, operative reports, and postoperative evaluations. Diagnostic investigations included laboratory tests, tumor markers, and radiological examinations such as ultrasonography (USG), computed tomography (CT) scan, and magnetic resonance imaging with magnetic resonance cholangiopancreatography (MRI-MRCP). All relevant clinical and diagnostic data were documented systematically using a standardized head-to-toe assessment format. Data analysis was performed concurrently with the data collection process. The findings from the patient's clinical presentation, diagnostic workup, and surgical management were compared with existing literature and current theoretical knowledge regarding gallbladder tumors and gallbladder malignancy. The analysis was conducted narratively and descriptively to interpret the patient's condition and management in relation to established clinical guidelines and scientific evidence. This approach aimed to provide a comprehensive understanding of the diagnostic and therapeutic considerations in managing suspected malignant gallbladder tumors.

RESEARCH RESULTS

A 51-year-old woman, Mrs. Henny Triviani, presented to Wahidin Sudirohusodo Hospital with a primary complaint of right upper abdominal pain that had been occurring intermittently for approximately three months prior to hospital admission. The pain was described as episodic and was typically triggered after the consumption of fatty foods. The pain subsided after the patient took analgesic medication. The patient also reported that the pain radiated to the back and to the area beneath the right breast. She denied experiencing nausea, vomiting, or fever. Bowel movements were regular, occurring once daily with yellow-colored stool. Urination was normal, and there was no history of bloody or tarry stools. The patient also denied any history of jaundice or previous similar complaints. However, the patient reported an unintentional weight loss of approximately 5 kg within one month prior to admission.

The patient had a past surgical history of appendectomy performed in Kendari in 1999. She denied any history of smoking, alcohol consumption, diabetes mellitus, or hypertension. Prior to admission to Wahidin Sudirohusodo Hospital, the patient had been evaluated at a hospital in Kendari where she was diagnosed with cholelithiasis and was scheduled for cholecystectomy. Previous imaging examinations included abdominal ultrasonography, which suggested cholelithiasis, and abdominal computed tomography (CT) scan that revealed a suspected mass in the gallbladder (Figure 1). On physical examination, the patient appeared moderately ill but was fully conscious (*compos mentis*) with a Karnofsky performance status of 90%. Her body weight was 55 kg and height was 165 cm, resulting in a body mass index (BMI) of 20.2 kg/m², which falls within the normal range. Vital signs revealed a blood pressure of 110/88 mmHg, pulse rate of 90 beats per minute, respiratory rate of 20 breaths per minute, and body temperature of 36.5°C.

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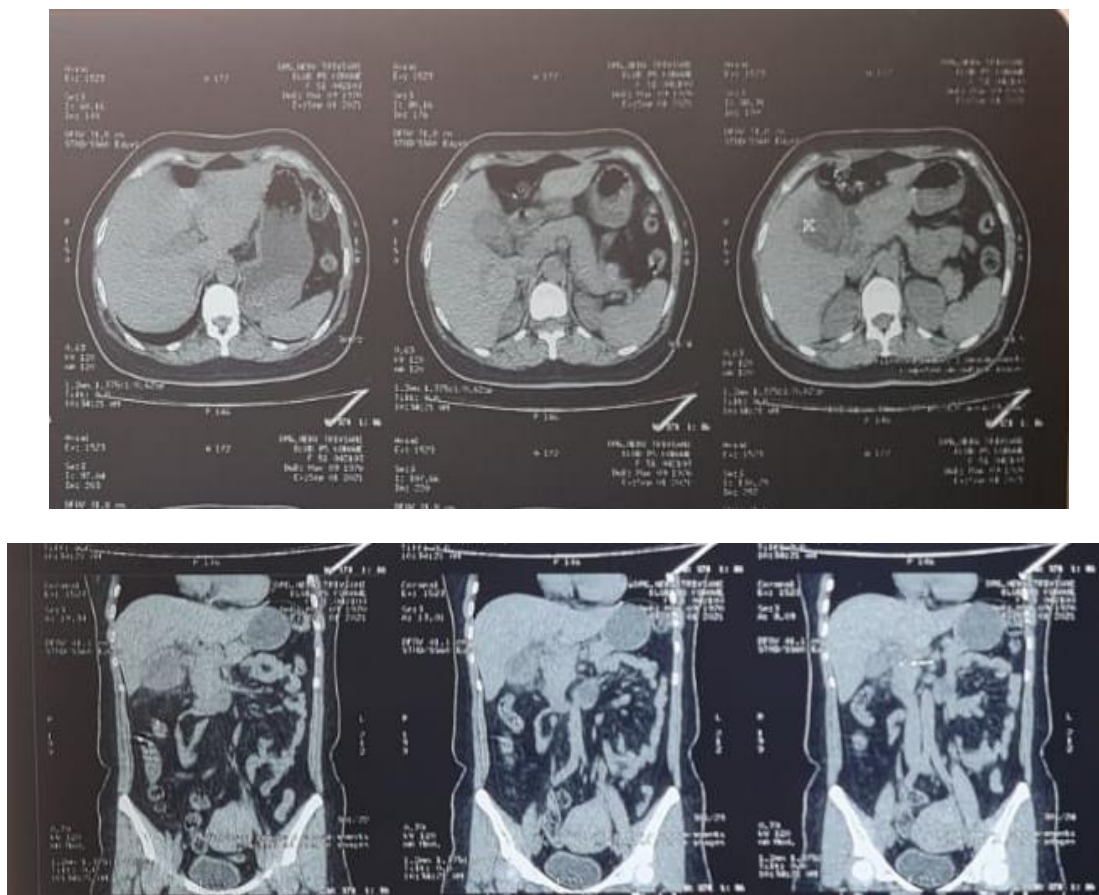


Figure 1. Multislice Computed Tomography (MSCT) examination (September 1, 2021) of patient Mrs. H showed a normal-sized gallbladder with a thickened irregular wall and intraluminal sludge with a slightly hyperdense lesion (15–59 HU), with impressions of choledocholithiasis (± 2.8 mm), acute cholecystitis with sludge, cystitis, and lumbar spondylosis.

Head and neck examination showed no evidence of anemia, jaundice, or lymph node enlargement. Thoracic examination revealed symmetrical chest wall movement without retraction. Palpation showed no palpable masses or crepitation, and vocal fremitus was symmetrical bilaterally. Percussion revealed a normal resonant sound throughout the lung fields, and auscultation demonstrated vesicular breath sounds without rhonchi, wheezing, or stridor. Abdominal examination showed a flat abdomen moving synchronously with respiration, without visible bowel contour or venous dilatation. A surgical

scar consistent with previous appendectomy was noted at McBurney's point. Bowel sounds were within normal limits. Palpation revealed tenderness in the right hypochondrium and a palpable mass approximately 7×5 cm in size with an irregular surface, firm consistency, and fixed position. The spleen and liver were not palpable. Murphy's sign was positive. Percussion demonstrated tympanic sounds with dullness extending approximately five finger breadths below the costal margin (Figure 2) and (Figure 3).

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Figure 2. Abdominal ultrasound examination (August 24, 2021) of patient Mrs. H. Impression: Suspected cholelithiasis with gallbladder sludge, with differential diagnosis of a right adnexal cystic mass.



Figure 3. Abdominal ultrasound examination (October 18, 2021) of patient Mrs. H. Impression: Suspected gallbladder mass measuring 8 × 7.4 × 7.8 cm, with multiple hyperechoic lesions on the gallbladder wall, the largest measuring 0.9 cm.

Digital rectal examination revealed no visible perianal mass. The anal sphincter tone was normal, and the rectal mucosa was smooth without palpable masses. The rectal ampulla was not collapsed. Stool present on the examining glove was yellow in color without blood or mucus. Laboratory examination

performed on November 1, 2021 showed anemia with hemoglobin level of 9.6 g/dL, leukocytosis with white blood cell count of 15,200/ μ L, and thrombocytosis with platelet count of 456,000/ μ L. Other hematological parameters included red blood cell count of $3.8 \times 10^6/\text{mm}^3$ and hematocrit of 31%.

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Blood chemistry analysis revealed a random blood glucose level of 110 mg/dL, SGOT of 20 U/L, SGPT of 11 U/L, urea level of 19 mg/dL, creatinine level of 0.86 mg/dL, albumin level of 3.7 g/dL, total bilirubin level of 0.86 mg/dL, and direct bilirubin level of 0.43 mg/dL. Electrolyte examination showed sodium level of 137 mmol/L, potassium level of 3.8 mmol/L, and chloride level of 105 mmol/L. Tumor marker evaluation demonstrated normal alpha-fetoprotein (AFP) level (<0.5 ng/mL), markedly elevated carcinoembryonic antigen (CEA) level of 71.23 ng/mL, and significantly elevated carbohydrate antigen 19-9 (CA 19-9) level greater than 500 U/mL.

In November 2021, the patient underwent cholecystectomy via laparotomy. Under general

anesthesia in the supine position, a midline incision from the xiphoid process to 3 cm below the umbilicus was performed, followed by exploration of the abdominal cavity, which revealed no ascites. An additional right subcostal incision was made to improve surgical exposure. Intra-abdominal exploration identified a tumor in the right hepatic lobe with omental adhesions, requiring omentectomy. A gallbladder mass infiltrating the gastric antrum, proximal transverse colon, and liver segments IVb and V was also identified. The tumor was carefully mobilized, the gastrocolic ligament and adhesions to the gastric wall were released, and the common bile duct and cystic duct were identified prior to performing cholecystectomy (Figure 4).

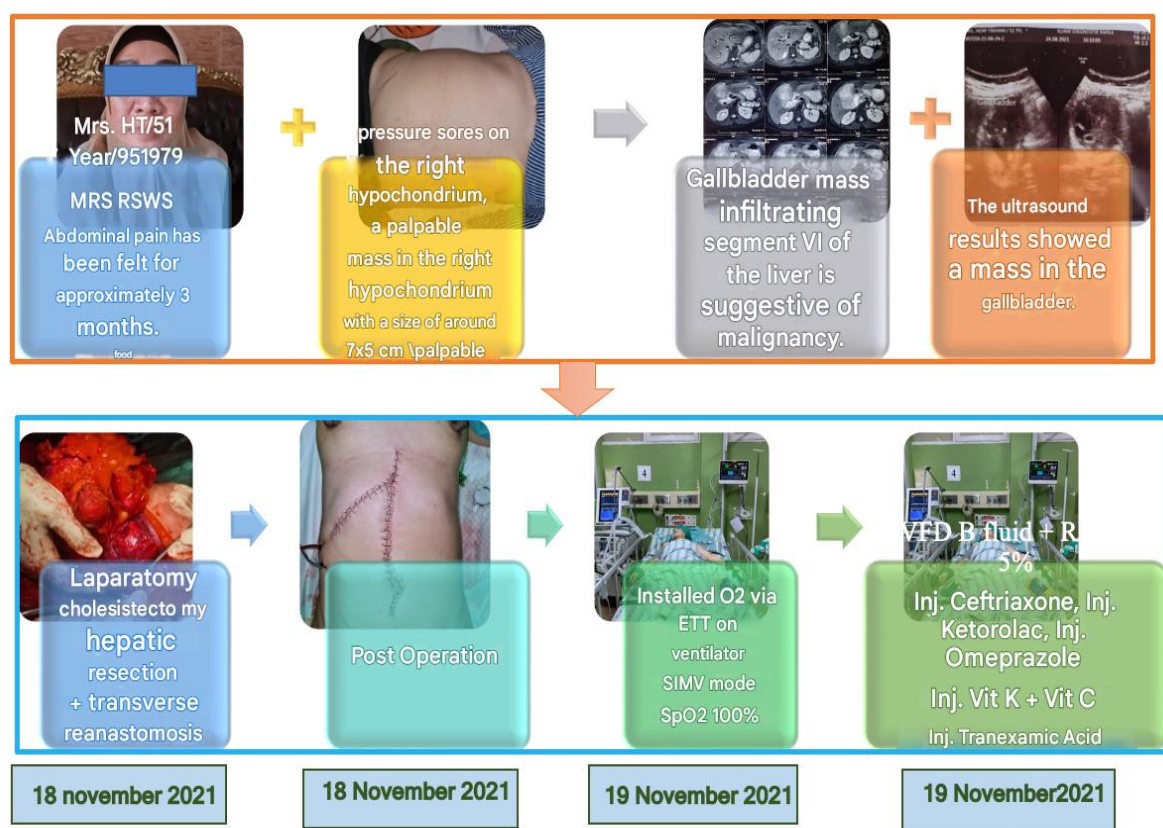


Figure 4. Patient Follow-up

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Because the tumor had infiltrated the proximal transverse colon, a segmental colon resection with end-to-end anastomosis was performed. The procedure continued with hepatectomy involving segmentectomy of liver segments IVb and V. Liver mobilization and Pringle maneuver were performed to control hepatic blood flow, followed by ligation of the hepatic arterial branches supplying the involved segments. Hepatic resection was carried out using the crushing clamp technique combined with harmonic scalpel and ligation of the involved vessels and bile ducts. The tumors of the liver, gallbladder, and transverse colon were successfully resected, after which hemostasis was secured. The abdominal cavity was irrigated with 0.9% NaCl, two drains were placed in the subhepatic space and Douglas pouch, and the surgical wound was closed in layers without significant intraoperative complications.

Following the surgical procedure, the patient was diagnosed with a postoperative condition of laparotomy cholecystectomy combined with anatomical liver resection of segments IVb and V (segmentectomy), proximal transverse colon resection with end-to-end anastomosis, and gastric wall repair. The final postoperative diagnosis was a suspected malignant gallbladder tumor with clinical stage cT3N1M0, which had infiltrated the hepatic parenchyma of segments IVb and V, the gastric wall, and the proximal transverse colon. During the postoperative period, the patient underwent close monitoring of vital signs and potential bleeding. Intravenous fluid therapy consisted of B-fluid, Ringer's lactate, and 5% dextrose, while ceftriaxone injection (1 g every 12 hours) was administered for infection prevention. Pain management included ketorolac injection (30 mg every 8 hours), and omeprazole injection (40 mg every 12 hours) was given as gastroprotective therapy. Additional supportive therapy included vitamin K, vitamin C, and tranexamic acid (500 mg every 8 hours) to reduce the risk of bleeding. The patient was temporarily kept fasting during the early postoperative recovery phase (Figure 4).

DISCUSSION

Gallbladder cancer is a relatively rare malignancy but is associated with a high mortality rate. According to data from the Global Cancer Observatory (GLOBOCAN), gallbladder cancer ranks 22nd in global cancer incidence and 17th as a cause of cancer-related mortality. In 2018, approximately 219,000 new cases of gallbladder cancer were diagnosed worldwide, accounting for about 1.2% of all cancer cases. The high mortality rate of this disease is largely attributed to the fact that most cases are diagnosed at an advanced stage, when the tumor has already undergone local invasion or metastasis (Rawla, Sunkara, & Thandra, 2019). In this case report, the patient was a 51-year-old Asian woman, which is consistent with the epidemiological characteristics of gallbladder cancer that occurs more frequently in women and older individuals, with peak incidence occurring in the sixth to seventh decades of life. Additionally, several regions in Asia have relatively higher incidences of gallbladder cancer compared to other regions.

The clinical manifestations of gallbladder cancer are often nonspecific, making early diagnosis difficult. Commonly reported symptoms include abdominal pain, nausea, vomiting, dyspepsia, weakness, anorexia, and weight loss. In some cases, patients may also develop jaundice due to biliary obstruction caused by tumor growth. This condition may lead to pale stools, dark urine resembling cola, and pruritus, which result from elevated bilirubin levels (Hundal & Shaffer, 2014; Lazcano-Ponce, Miquel, Muñoz, Herrero, Ferrecio, Wistuba, & Nervi, 2001). Gallbladder cancer may also lead to Mirizzi syndrome, which refers to obstruction of the common hepatic duct due to compression by gallstones impacted in the gallbladder neck or by a tumor mass. This condition is often associated with a poor prognosis, as it usually indicates unresectable disease at the time of diagnosis (Rawla et al., 2019).

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Physical examination findings may include jaundice, right upper quadrant abdominal tenderness, and Courvoisier's sign, which refers to painless enlargement of the gallbladder in patients with jaundice due to chronic malignant obstruction. In advanced stages, findings may include hepatomegaly, a palpable abdominal mass, ascites, or signs of bowel obstruction, indicating metastatic disease or extensive tumor spread (Hundal & Shaffer, 2014; Ludwig, & Strasser, 2001). In the present case, the patient presented with abdominal pain accompanied by progressive weight loss, a combination of symptoms that raises suspicion of a malignant process in the hepatobiliary system. Nevertheless, differential diagnoses such as biliary strictures caused by gallstones or biliary tract infections should still be considered during the initial clinical evaluation.

In this case, the patient's general condition was classified as moderately ill, with a normal body mass index, and her vital signs were within normal limits. However, abdominal examination revealed tenderness in the right hypochondrium and a palpable mass measuring approximately 7 × 5 cm with an irregular surface and fixed consistency. Tenderness in the right upper quadrant or epigastrium is the most common physical finding in patients with gallbladder tumors, occurring in approximately 54–83% of cases. In contrast, a palpable mass in the right hypochondrium is relatively uncommon, occurring in only 3–8% of cases (Rawla et al., 2019). Other possible findings include jaundice, anorexia, and weight loss associated with malignancy. A positive Murphy's sign was also observed in this patient, characterized by pain when the examiner presses the right hypochondrium while the patient takes a deep inspiration. This sign is typically associated with inflammatory conditions of the gallbladder, such as acute cholecystitis (Murphy, 1903).

Ultrasonography is the most commonly used initial imaging modality in patients suspected of having gallbladder disease. On ultrasound examination, gallbladder tumors may appear in three

main patterns, namely a mass replacing the gallbladder lumen, an intraluminal polypoid lesion, or asymmetric gallbladder wall thickening. In advanced disease, ultrasound has been reported to have a sensitivity of approximately 85% and specificity of 80% (Hundal & Shaffer, 2014). Computed tomography (CT) is widely used for further evaluation of gallbladder tumors. This imaging modality can help identify gallbladder wall thickening, intraluminal masses, and tumor invasion into hepatic tissue. In addition, CT scanning is superior in detecting porta hepatitis lymphadenopathy, peritoneal implantation, and vascular invasion (Goetze, 2015). CT has an accuracy of up to 93% in determining disease staging and assessing tumor resectability, making it an essential tool in preoperative planning for gallbladder cancer patients (Kim, Lee, Lee, Kim, Han, Choi, & Choi, 2008). MRI combined with magnetic resonance cholangiopancreatography (MRCP) is a highly useful imaging modality for evaluating gallbladder cancer. This technique provides more detailed visualization of tumor invasion into surrounding structures, including the liver, biliary ducts, and blood vessels. MRI is also more sensitive than CT in differentiating early tumor stages such as T1a and T1b, which is crucial for determining appropriate treatment strategies (Hundal & Shaffer, 2014). In this patient, abdominal MRI with and without contrast followed by MRCP was performed. The imaging findings demonstrated a heterogeneous mass originating from the gallbladder measuring approximately 9.88 × 8.70 × 6.95 cm, with relatively well-defined borders and irregular margins. The lesion showed peripheral contrast enhancement and appeared to infiltrate hepatic segment VI, measuring approximately 6.7 × 4.39 × 3.21 cm. These findings were suggestive of a malignant gallbladder mass with hepatic parenchymal invasion. Additionally, MRCP examination revealed stenosis of the cystic duct.

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CONCLUSION

Gallbladder cancer is a rare but aggressive malignancy that is often diagnosed at an advanced stage due to its nonspecific clinical manifestations. Early symptoms such as abdominal pain and weight loss may mimic other hepatobiliary conditions, which can delay diagnosis. Therefore, a comprehensive diagnostic approach involving laboratory tests, imaging modalities such as ultrasonography, CT scan, MRI, and MRCP, as well as histopathological examination, is essential for establishing an accurate diagnosis and determining disease staging. Surgical resection remains the main therapeutic option for patients with resectable disease, particularly when the tumor has invaded surrounding organs. Appropriate surgical management combined with careful postoperative monitoring and supportive care plays an important role in improving patient outcomes and guiding further treatment strategies.

REFERENCES

- Bray, F., Ferlay, J., Soerjomataram, I., Siegel, R. L., Torre, L. A., & Jemal, A. (2018). Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA: A Cancer Journal for Clinicians*, 68(6), 394–424.
- Bridgewater, J., Galle, P. R., Khan, S. A., Llovet, J. M., Park, J. W., Patel, T., Pawlik, T. M., & Gores, G. J. (2014). Guidelines for the diagnosis and management of intrahepatic cholangiocarcinoma. *Journal of Hepatology*, 60(6), 1268–1289.
- Goetze, T. O. (2015). Gallbladder carcinoma: Prognostic factors and therapeutic options. *World Journal of Gastroenterology*, 21(43), 12211–12217.
- Grivnenkov, S. I., Greten, F. R., & Karin, M. (2010). Immunity, inflammation, and cancer. *Cell*, 140(6), 883–899.
- Hundal, R., & Shaffer, E. A. (2014). Gallbladder cancer: Epidemiology and outcome. *Clinical Epidemiology*, 6, 99–109.
- Kim, S. J., Lee, J. M., Lee, J. Y., Kim, S. H., Han, J. K., Choi, B. I., & Choi, J. Y. (2008). Analysis of enhancement pattern of flat gallbladder wall thickening on MDCT to differentiate gallbladder cancer from cholecystitis. *American Journal of Roentgenology*, 191(3), 765–771.
- Lazcano-Ponce, E. C., Miquel, J. F., Muñoz, N., Herrero, R., Ferrecio, C., Wistuba, I. I., & Nervi, F. (2001). Epidemiology and molecular pathology of gallbladder cancer. *CA: a cancer journal for clinicians*, 51(6), 349–364.
- Ludwig, H., & Strasser, K. (2001). Symptomatology of anemia. *Seminars in Oncology*, 28(2 Suppl 8), 7–14.
- Murphy, J. B. (1903). The diagnosis of gallstones. *The American Journal of the Medical Sciences*, 125(5), 825–846.
- Randi, G., Franceschi, S., & La Vecchia, C. (2006). Gallbladder cancer worldwide: geographical distribution and risk factors. *International journal of cancer*, 118(7), 1591–1602.
- Rawla, P., Sunkara, T., & Thandra, K. C. (2019). Epidemiology of gallbladder cancer. *Clinical and Experimental Hepatology*, 5(2), 93–102.
- Roa, J. C., García, P., Kapoor, V. K., Maithel, S. K., Javle, M., & Koshiol, J. (2022). Publisher correction: gallbladder cancer. *Nature Reviews Disease Primers*, 8(1), 75.
- Shindoh, J., De Aretxabala, X., Aloia, T. A., Roa, J. C., Roa, I., Zimmiti, G., & Vauthey, J. N. (2015). Tumor location is a strong predictor of tumor progression and survival in T2 gallbladder cancer: an international multicenter study. *Annals of surgery*, 261(4), 733–739.

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- Siegel, R. L., Miller, K. D., & Jemal, A. (2018). Cancer statistics, 2018. *CA: a cancer journal for clinicians*, 68(1), 7-30.
- Siegel, R. L., Miller, K. D., Wagle, N. S., & Jemal, A. (2023). Cancer statistics, 2023. *CA: A Cancer Journal for Clinicians*, 73(1), 17-48.
- Stinton, L. M., & Shaffer, E. A. (2012). Epidemiology of gallbladder disease: Cholelithiasis and cancer. *Gut and Liver*, 6(2), 172-187.
- Sung, H., Ferlay, J., Siegel, R. L., Laversanne, M., Soerjomataram, I., Jemal, A., & Bray, F. (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(3), 209-249.
- Valle, J. W., Kelley, R. K., Nervi, B., Oh, D. Y., & Zhu, A. X. (2021). Biliary tract cancer. *The Lancet*, 397(10272), 428-444.
- Valle, J., Wasan, H., Palmer, D. H., Cunningham, D., Anthoney, A., Maraveyas, A., & Bridgewater, J. (2010). Cisplatin plus gemcitabine versus gemcitabine for biliary tract cancer. *New England Journal of Medicine*, 362(14), 1273-1281.
- Zhu, A. X., Hong, T. S., Hezel, A. F., & Kooby, D. A. (2010). Current management of gallbladder carcinoma. *The Oncologist*, 15(2), 168-181.

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