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Case Report on HILAR Cholangiocarcinoma Type 3A

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Abstract: ***A bile duct cancer known as haemocarcinoma, which develops where the left and right hepatic ducts meet, is a rare and aggressive form of bile duct cancer. It is also known as a klatskin tumor. Type 3A describes tumors that are found in the common hepatic duct or the junction between the left and right hepatic bile ducts. And it is the right hepatic duct. In order to carry out a minimally invasive resection of perihilar cholangiocarcinoma, one must be familiar with both minimally invasive liver resection and reconstructive biliary surgery. Conclusion: An effective adjuvant therapy for this disease is resection. When resection is not feasible, either operative bilioenteric bypass or percutaneous transhepatic intubation can provide significant relief.***

Keywords: Cholangiocarcinoma of the hepatobiliary system, Klatskin tumors, percutaneous transhepatic intubation, right hepatectomy plus CBD removal, Hepatobiliary Doppler examination.

1. Introduction

There is a rare and aggressive form of bile duct cancer called hilar cholangiocarcinoma that develops at the junction of the left and right hepatic ducts. Hilar cholangiocarcinoma is a kind of cancer that begins as bile duct cell development. The digesting fluid bile is transported from the liver to the small intestine by bile ducts, which are thin tubes. The tumor has progressed through the liver's outer lining, or capsule, in stage IIIAType 3A indicates that the cancer is located in the common hepatic duct. It also affects the junction where the left and right hepatic bile ducts converge, as well as the right hepatic duct. Cholangiocarcinoma is a highly aggressive cancer that affects the extrahepatic bile ducts, with hilar lesions being the most prevalent. Patients exhibit obstructive jaundice along with dilation of the intrahepatic bile ducts. Cross - sectional imaging shows the local, regional, and distant spread of the disease, while direct cholangiography offers tissue samples for diagnosis. Minimally invasive resection for perihilar cholangiocarcinoma is a developing technique that necessitates expertise in both minimally invasive liver resection and biliary reconstruction. (1) The most frequent manifestation of hilar cholangiocarcinoma (CC) is jaundice. Numerous patients will receive biliary drainage in the preoperative preparation stage. In cases where there is no suspicion of a benign cause for hilar biliary obstruction, current noninvasive imaging techniques allow for precise staging of the primary tumor and have enhanced patient selection for surgical intervention, eliminating the necessity for invasive methods. Overall survival rates are improving with increasingly aggressive surgical procedures. The tendency of this tumor to invade locally has prompted the majority of seasoned hepatobiliary centers to carry out a partial hepatectomy in 50% to 100% of instances. Three - year survival rates ranging from 35% to 50% can be attained. When resection is not feasible, either surgical bilioenteric bypass or percutaneous transhepatic intubation can provide substantial palliation. Currently, there is no effective adjuvant therapy available for this condition. (2) Hilar cholangiocarcinoma is an uncommon tumor associated with a bleak prognosis. Surgical resection remains the sole option for a potential cure. Progress in hepatobiliary imaging and surgical techniques for managing this condition has led to enhanced postoperative results.

2. Case Report

A 61 - year - old female patient was admitted to the hospital due to jaundice and the yellowish discoloration of her urine observed in March 2025. Her medical history includes the use of complementary and alternative medicine (CAM) for skin hyperpigmentation, along with recent weight loss. Blood tests were conducted upon her admission on March 28, 2025. The patient's laboratory results were as follows: Hemoglobin was measured at 11.4 g/dL, with total white blood cell counts at 8010 cells/mm³, and platelet counts at 324, 000/mm³. Coagulation analysis revealed a prothrombin time of 11.9 seconds, with an international normalized ratio (INR) of 1.00. Renal function tests indicated a urea level of 19 mg/dL and a creatinine level of 0.54 mg/dL, alongside a sodium level of 139 mmol/L and a potassium level of 4.0 mmol/L. Liver function tests showed a total bilirubin level of 2.62 mg/dL and direct bilirubin level of 2.04 mg/dL. Enzyme levels were reported as 56 U/L for aspartate aminotransferase, 49 U/L for alanine aminotransferase, 298 U/L for alkaline phosphatase, and 156 U/L for gamma - glutamyl transferase. Albumin was recorded at 4.1 g/dL, globulin at 3.5 g/dL, and total protein at 7.6 g/dL. Additionally, histopathological examinations were conducted. According to the histopathological report, the patient has been diagnosed with Type 3A Perihilar Cholangiocarcinoma. The patient exhibits no food or drug allergies and has no other comorbidities. Subsequently, post percutaneous transhepatic biliary drainage and metal stenting were performed on April 2, 2025. The patient continues on a regimen of cyclical antibiotics, specifically T. Taxim O at 200 mg taken once daily and T. Udiliv at 300 mg taken thrice daily, with this course expected to last until April 28, 2025. On April 28, 2025, the patient was readmitted for a planned surgical procedure involving a right hepatectomy, common bile duct (CBD) excision, and hepaticojejunostomy. Prior to the surgery, blood tests revealed the following: hemoglobin levels at 11.6 g/dl, packed cell volume at 35%, white blood cell count at 18, 180 cells/mm³, and platelet count at 448, 000 lakhs/mm³. Renal function test results showed urea at 20

mg/dl, creatinine at 0.39 mg/dl, sodium at 131 mmol/L, and potassium at 4.2 mg/dl. The prothrombin time (PT) was recorded as 14.5/11.9. Liver function tests indicated total bilirubin at 1.18 mg/dl and direct bilirubin at 0.85 mg/dl, with ALT at 21 U/L, AST at 22 U/L, albumin at 2.4 g/dl, globulin at 3.7 g/dl, and total protein at 6.1 g/dl. Additionally, histopathological analysis was conducted once again. the histopathology report indicates a diagnosis of perihilar cholangiocarcinoma from the right hepatectomy specimen. The analysis reveals a well to moderately differentiated unifocal tumor, with a maximum size of 1.5 cm, exhibiting periductal infiltration. Perineural invasion is noted, while vascular invasion is absent. The tumor permeates the liver parenchyma and hilar connective tissue and extends to the extrahepatic bile duct. Tumor presence is absent along the bile duct margins, portal vein, hepatic vein, and hepatic artery margins, with no necrosis detected. The hepatic surgical margin shows a ~1 mm clearance of tumor involvement, similarly free from infiltration in the surrounding soft tissue and portal vein. Additionally, the gallbladder exhibits chronic cholecystitis., The liver parenchyma distal to the tumor exhibits obstructive cholangiopathy, accompanied by bridging fibrosis and cholestasis. Examination of the celiac lymph nodes revealed no presence of tumors (0 out of 3), similar results were observed with the hepatoduodenal ligament tissue and the common hepatic artery lymph node, which were both tumor - free (0 out of 1 and 0 out of 1, respectively). The hilar lymph nodes were also found to be devoid of tumors (0 out of 4). On May 1, 2025, a right hepatectomy, common bile duct excision, and hepaticojejunostomy were performed without complications. Post - operative care involved transferring the patient to the liver intensive care unit for continued observation and management.

3. Discussion

Following surgery, the patient was transferred to the ward on the third postoperative day after exhibiting clinical improvement and hemodynamic stability. Due to a drop in hemoglobin levels, two units of packed red blood cells were transfused.

Laboratory Parameters Summary

Parameter	On Admission (28- Mar- 2025)	Pre - Surgery (28- Apr- 2025)
Hemoglobin (g/dL)	11.4	11.6
WBC Count (cells/mm³)	8010	18180
Platelets (cells/mm³)	324000	448000
Prothrombin Time (sec)	11.9	14.5/11.9
INR	1.00	-
Urea (mg/dL)	19	20
Creatinine (mg/dL)	0.54	0.39
Sodium (mmol/L)	139	131
Potassium (mmol/L)	4.0	4.2
Total Bilirubin (mg/dL)	2.62	1.18
Direct Bilirubin (mg/dL)	2.04	0.85
AST (U/L)	56	22
ALT (U/L)	49	21
Alkaline Phosphatase (U/L)	298	-
GGT (U/L)	156	-
Albumin (g/dL)	4.1	2.4
Globulin (g/dL)	3.5	3.7
Total Protein (g/dL)	7.6	6.1

A hepatic Doppler examination revealed a minor fluid accumulation in the anterior perihepatic space, measuring approximately 10cc, and a right pleural effusion of around 30cc, accompanied by a sonographic air bronchogram in the right costophrenic recess. The triglyceride levels of the drain fluid were sent for analysis, initially showing 39 mg/dL. The test was conducted daily, and by the sixth postoperative day, the result had increased to 59 mg/dL. With a decrease in drain output volume, the drain was removed on the eighth postoperative day. On the ninth postoperative day, a repeat hepatic Doppler was performed, indicating a right pleural effusion of minimal volume, approximately 20 - 25cc. On the eleventh day, a computed tomography scan of the abdomen was performed, revealing a fluid collection beneath the right diaphragm, along with postoperative changes in the abdominal area, mild ascites, and mild bilateral pleural effusion. Given her clinical and symptomatic improvement, she was subsequently discharged.

4. Conclusion

Hilar cholangiocarcinoma, particularly Type 3A, remains a challenging and aggressive malignancy with limited treatment options. Surgical resection continues to be the only potentially curative approach. In this case, the patient underwent successful right hepatectomy, common bile duct excision, and hepaticojejunostomy following percutaneous transhepatic biliary drainage and stenting. Postoperative recovery was satisfactory, with effective management of minor complications. Although adjuvant therapies remain limited, timely surgical intervention and supportive care significantly improved the patient's clinical condition and quality of life. Continued follow - up and adherence to post - surgical recommendations, including dietary modifications and activity restrictions, are essential for optimal long - term outcomes.

Declarations

Patient Consent: Informed consent was obtained from the patient's legal representative.

Conflict of Interest: None declared.

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