

Hepatobiliary Malignancies 2016-2017

Retrospective Study at Truman Medical Center

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Introduction:

Hepatobiliary malignancies are cancers which arise from the liver parenchyma and biliary tree. These include hepatocellular carcinoma, cholangiocarcinoma, and gallbladder carcinoma. These diseases are less common among the cancers but carry a high morbidity and mortality rate. One unique characteristic is that hepatocellular carcinoma may be diagnosed without a tissue biopsy based on radiographic criteria alone.

We obtained a list of patients diagnosed with hepatobiliary malignancies at Truman Medical Center and extracted data from the electronic medical records. The goal of the study is to evaluate diagnostic and treatment methods, as well as whether patients received appropriate care according to the National Comprehensive Cancer Network (NCCN) guidelines.

Study:

A list of patients with hepatobiliary malignancies was obtained from the tumor registry database for encounters from January 2016 to December 2017. We performed a retrospective chart review to evaluate for pertinent details regarding quality of care provided at Truman Medical Center, using established care guidelines per the National Comprehensive Cancer Network (NCCN) as basis for comparison. We evaluated if treatment given was in accordance with NCCN guideline recommendations. We evaluated to see whether the patients received evidence-based care based off NCCN guidelines, specifically looking whether the following criteria were met:

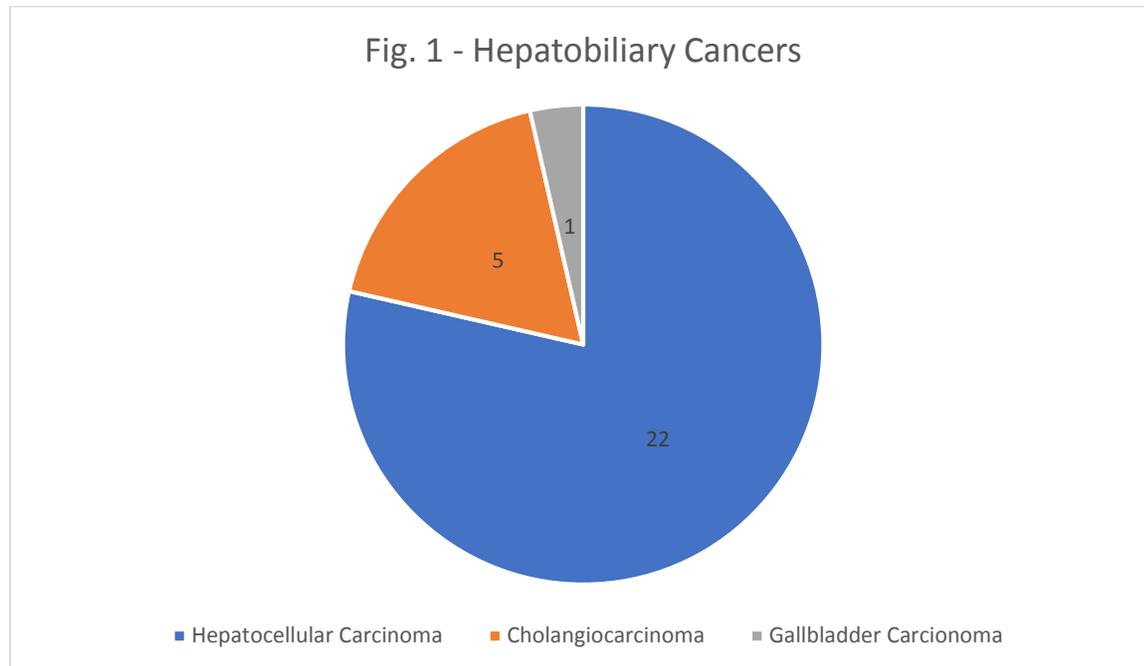
1. Method of Diagnosis – Hepatocellular carcinomas may be diagnosed based off tissue pathology or radiographic criteria
2. Components of Radiographic Studies – As hepatocellular carcinomas may be diagnosed by radiographic criteria, we evaluated triple phase CT or MRI to see whether the following aspects of a patient's study were discussed in the report:
 - a. The size and number of hepatic masses
 - b. Presence of characteristic arterial enhancement and venous washout
 - c. Patency or occlusion of the portal vein
 - d. Presence of distant metastasis
 - e. Cirrhotic morphology of the liver

3. Eligibility for curative versus palliative intent treatment based on Milan Criteria and Barcelona Clinic Liver Cancer (BCLC) staging. Curative intent treatment includes surgical resection, liver transplantation, and ablative therapy; whereas palliative treatment includes transarterial chemoembolization (TACE) and sorafenib. We evaluated whether the patients were discussed in multidisciplinary tumor board; as well as the appropriateness of referrals for transplant, resection, or radiation based off the Milan and BCLC criteria.
4. Checking of Hepatitis B and C status
5. Child-Pugh Score
6. Time lapse between diagnosis of hepatobiliary cancers and receipt of first treatment of any type.
7. We also evaluated whether serum tumor markers (alpha-fetoprotein for hepatocellular carcinoma and Cancer Antigen 19.9 for cholangiocarcinoma) were checked during the diagnostic workup.

Data:

A total of 32 patients were queried starting January 2016 through December 2017. Of those; 26 were carried the diagnosis of hepatocellular carcinoma, 5 with cholangiocarcinoma, and one with gallbladder carcinoma. Of the hepatocellular carcinoma patients, 4 had non-liver primary cancers and were excluded from the analysis. The patient list also included one case of carcinoma of the Ampulla of Vater, which was also excluded from analysis. The distribution of cases by primary site is shown in figure 1.

Primary Site	Number of Cases	Percent
Hepatocellular Carcinoma	22	78.6%
Cholangiocarcinoma	5	17.9%
Gallbladder Carcinoma	1	3.5%
Total	28	100%



We evaluated how many patients with hepatocellular carcinoma were referred for transplantation and the appropriateness of the transplantation referrals.

Results:

Hepatocellular Carcinoma:

Out of the 22 patients with hepatocellular carcinoma, 6 were diagnosed by tissue biopsy. The remaining patients were diagnosed by radiographic criteria. 7 patients were eligible for curative intent treatment by Milan and BCLC criteria (defined as resection, liver transplantation, or radiofrequency ablation). The other 15 patients were not candidates for curative treatment.

Of the 7 patients eligible for curative intent therapy, 4 were resectable by BCLC criteria. One patient refused all treatment, one patient underwent resection, one patient underwent laparoscopic microwave ablation, and one patient had upfront resection but later received a liver transplant. The other 3 patients were not resectable by BCLC criteria but were transplantation candidate per UNOS (Milan) criteria. 2 of these 3 patients were referred for transplantation evaluation. One patient was referred for transplant evaluation, but was not discussed in multidisciplinary tumor board. He was deemed to not be a candidate for transplantation due to evidence of branch portal vein invasion as well as presence of suspicious lung lesions noted on imaging done at the transplant center. This patient subsequently underwent TACE. One patient underwent liver transplantation after first undergoing neoadjuvant stereotactic body radiation therapy. One patient was transplantable by Milan criteria but had severely decompensated liver disease and multiple comorbidities which precluded him from transplant evaluation, and care was transitioned to comfort measures (Fig. 2).

Of the 17 patients not eligible for curative intent therapy, 6 received best supportive care with hospice upfront. Of patients who received palliative therapy, 3 received TACE combined with Sorafenib, 3 received Sorafenib alone, and 1 received TACE alone. 4 patients were lost to follow up (Fig. 3).

Of the patients who were not eligible for curative intent therapy, mortality data is available for 14 of these patients. Among these 14 patients, the median survival from the time of diagnosis was 10 months (range, 1 to 30 months). Two patients are still living at the time of this report.

We evaluated the quality of the radiographic studies performed during the 2016-2017 evaluation period. Of the 22 cases of hepatocellular carcinoma seen, 21 had radiographic studies (the remaining patient had a prior history of hepatocellular carcinoma and had distal recurrence).

Of the 21 cases where radiographic evaluation was performed, 14 of these patients had all five elements discussed in the radiology report. The frequency with which each of the five criteria was discussed in the radiology report is shown in Fig. 4.

We assessed the time from identification of hepatocellular carcinoma to the first receipt of treatment of any kind. Of the 22 patients with hepatocellular carcinoma, 11 underwent treatment of any type, the other 11 patients were either given best supportive care or they were lost to follow up and treatment information is not available. The median time to first treatment of any kind is 10 weeks (range, 4 to 20 weeks) (Fig. 5).

Cancers of the Biliary System and Gallbladder:

There were five patients diagnosed with cholangiocarcinoma during the evaluation period, three males and two females. Four had intrahepatic disease, and one had perihilar disease.

Two patients had clinical stage IV disease at the time of presentation. One of these patients was very ill with poor performance status and was transferred to inpatient hospice; the other sought a second opinion outside Truman Medical Center but subsequently transitioned to hospice.

Three had clinically localized disease based on imaging. All three patients appropriately underwent diagnostic laparoscopy. The first patient was clinically stage III and was noted to have non-regional lymph node metastatic disease on diagnostic laparoscopy. Post-diagnostic study he was staged upward to stage IV and went on to receive palliative chemotherapy.

The second patient had clinical stage I disease and underwent diagnostic laparoscopy. No distant metastasis was noted, and he underwent laparoscopic microwave ablation without lymph node dissection. He was started on adjuvant chemotherapy but was later noted to have metastatic disease.

The third patient had perihilar cholangiocarcinoma underwent diagnostic laparoscopy which did not show distant metastasis. His disease was clinically stage II at the time of diagnosis. There was a delay in hepatobiliary surgery evaluation due to absence of a hepatobiliary surgeon and thus got neoadjuvant chemotherapy. He transferred care outside the Truman system after he obtained insurance coverage for surgical treatment.

The sole case of gallbladder carcinoma was a 45-year-old male who presented with cholangitis and underwent urgent cholecystectomy, during which he was found to have metastatic disease. He did not recover well from the surgery and was later discharged with hospice.

Conclusion:

All patients with cholangiocarcinoma received care in accordance with NCCN guidelines as it pertains to appropriate utilization of diagnostic laparoscopy and chemotherapy. The only drawback in care was a period during which Truman Medical Center did not have a dedicated hepatobiliary surgeon, which led to delay in upfront resection.

Alpha-feto protein was tested in all but one of the 22 patients with hepatocellular carcinoma (Fig. 6), and CA 19.9 was tested in all the five patients with cholangiocarcinoma.

Hepatitis B and C testing was performed in all but one patient.

Discussion:

Oncology was consulted and participated in the care of all hepatobiliary cancers diagnosed during the period of 2016-2017.

Approximately three-fourths (72.7%) of patients diagnosed with hepatocellular carcinomas were diagnosed based off radiographic criteria. Of the 22 patients diagnosed with cholangiocarcinoma, all but one underwent MRI or CT imaging. Of the 21 patients who underwent radiographic evaluation, two-thirds (67%) had all five components of radiographic studies noted in the radiology report.

There were seven hepatocellular carcinoma patients who were candidates for curative treatment based off Milan and/or BCLC criteria. Of these patients, one refused all care and one was too critically ill to be considered for transplant. One patient had complete resection, and another had laparoscopic microwave ablation. Three patients were referred for transplant. One underwent transplant after first getting resection, and another had transplant after first undergoing stereotactic body radiation therapy. A third patient was transplantable by Milan criteria and was referred for transplantation but was found to have branch portal vein invasion and lung nodules upon evaluation at the transplant center which precluded him from transplant. There were no inappropriate referrals for transplantation.

Milan and BCLC criteria frequently needed to be calculated retrospectively during this study and were inconsistently documented in clinical notes. Similarly, Child-Pugh score frequently needed to be calculated retrospectively.

After the data set was analyzed, one patient was brought to light that was not included in the original patient list. This patient is a 56 year old female with a history of hepatitis C and cirrhosis who was found to have elevated alpha-feto protein with a suspicious liver lesion and occluded portal vein on imaging. She was referred to a transplant center by the GI clinic but was not discussed in tumor board. She was not seen by medical oncology for 6 months after diagnosis.

Recommendations:

1. All five characteristics of hepatocellular carcinoma should be noted on radiology reports - The size and number of hepatic masses, presence of characteristic arterial enhancement and venous washout, patency or occlusion of the portal vein, presence of distant metastasis, and cirrhotic morphology of the liver.
Plan: Discuss and reinforce components of these components at GI multi-disciplinary tumor board. Recommend the radiology department comment on all five components of scans when hepatocellular carcinoma is being considered in the differential.
2. Resectability and/or candidacy for transplant by Milan and BCLC criteria should be noted on clinical assessment.
Plan: Discuss and reinforce in GI multi-disciplinary tumor conference.
3. Child-Pugh Score should be noted in all patients with hepatobiliary cancers.
Plan: Discuss and reinforce with medical oncology physicians, as well as at GI tumor board discussions.
4. Hepatobiliary surgery should be involved to increase number of eligible patients who undergo surgical resection.
Plan: All patients who may be eligible for curative intent therapy should be discussed with surgical colleagues in multidisciplinary tumor board.
5. Focus on appropriate referrals to transplant centers.
Plan: All patients who may be eligible for curative intent therapy should be discussed in multidisciplinary tumor board to ensure there are no disqualifying patient characteristics prior to referral.
6. Patients with hepatobiliary cancers should be more easily identifiable by the tumor registry.
Plan: As some hepatobiliary cancers may be diagnosed without a tissue biopsy, it is recommended that all patients in which there is suspicion of hepatobiliary cancers should be discussed in GI multi-disciplinary tumor conference.

Fig. 2 - Curative Intervention Candidates

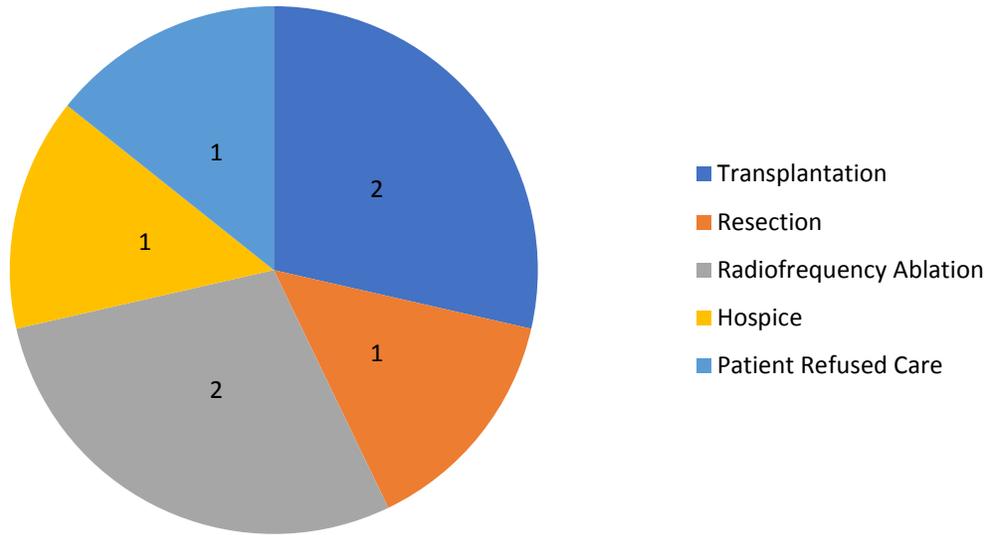


Fig. 3 - Non-Curative Intention Candidates

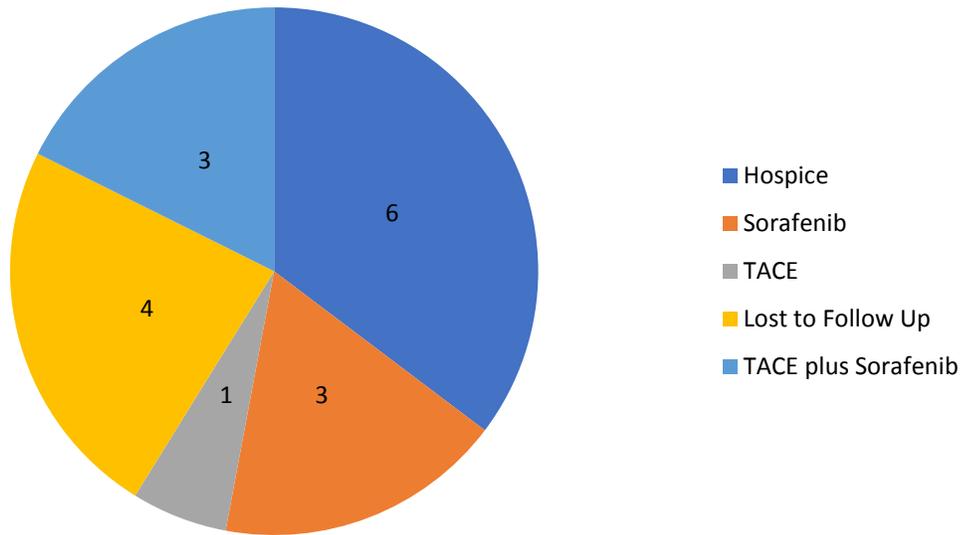


Fig 4. - Components of Radiographic Reports

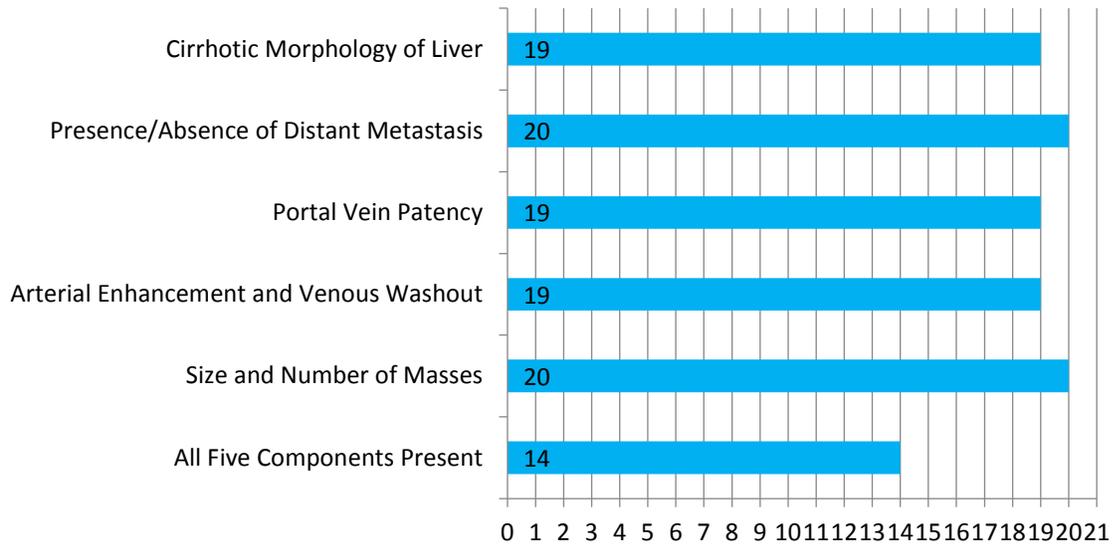
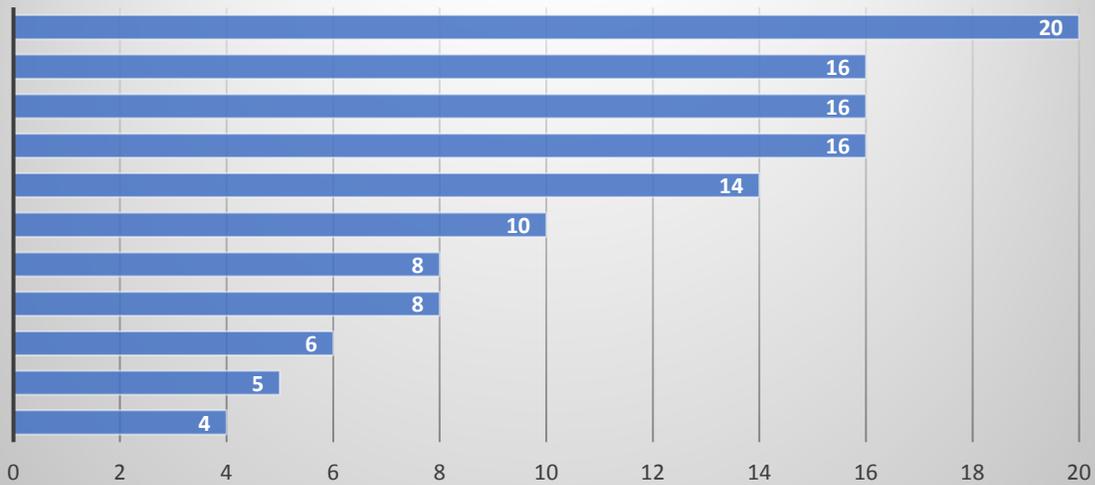


Fig. 5 - Time to Treatment (weeks)



■ Fig. 5 - Time to Treatment (weeks)

Fig. 6 - AFP testing in Hepatocellular Carcinoma

