



# The Impact of Hepatobiliary Multidisciplinary Tumor Board Review on Patient Management; A Descriptive Analysis



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## Introduction

Tumors of the liver and biliary tract are the second leading cause of cancer related death worldwide and the sixth leading cause of cancer related death among men in developed countries<sup>1</sup>. In 2020, the burden of hepatobiliary malignancies in the United States alone was predicted to be on the rise with an additional 42,810 tumors of liver/intrahepatic bile ducts and another 11,980 gallbladder and other biliary tumors<sup>2</sup>. Together, hepatobiliary tumors were expected to cause 34,250 deaths in 2020<sup>2</sup>. While there have been many therapeutic advancements in the field of hepatobiliary tumors over the years, one of the important aspects of management involves recommendations from a multidisciplinary liver tumor board. The importance of multidisciplinary tumor boards has been well demonstrated, especially in the care of patients with HCC where multiple studies have shown significant improvements in survival with the implementation of multidisciplinary review<sup>3,4,5,6</sup>.

Hepatobiliary tumor boards however have not been studied as closely. One recent study out of NYU examined the impact of expert radiologist review at multidisciplinary hepatobiliary tumor board and found significant discordance between the initial radiologist report and image reinterpretation by an expert hepatobiliary radiologist<sup>7</sup>. Their study found significant impact on management in 99% of discordant cases including loco-regional therapy instead of follow-up imaging (19.1%), follow-up imaging instead of treatment (17.5%), and avoidance of biopsy (12.4%)<sup>7</sup>. We aimed to characterize the impact of our institution's hepatobiliary tumor board on patient management and outcomes, specifically regarding tumor characterization and diagnosis, treatment plan and avoidance of unnecessary testing.

## Methods and Materials

We conducted a single-center retrospective review of patients discussed at our institution's Multidisciplinary Hepatobiliary Tumor Board (MDTB) during the study period of January 1st, 2017-December 31st, 2018. The hepatobiliary tumor board at The University of Chicago includes not only expert radiologist review but also includes participation from hepatology, transplant surgery, oncology and interventional radiology.

## Results

We reviewed 94 patients in total. The majority of patients presented with HCC (45%), followed by benign liver lesions (24%), bile duct/gallbladder cancers (6%), benign bile duct/gallbladder lesions (4%), colorectal liver metastasis (1%), neuroendocrine liver metastasis (1%) and the remaining were other hepatobiliary pathologies (18%). In 30% of total cases, review at MDTB led to further characterization or correction of initial diagnosis. In 12% of total cases, the diagnosis was corrected from concern for malignancy/malignant to non-malignant. In 20% of cases, an unnecessary intervention (described as imaging, procedure, or treatment) was prevented. The next step in management (described as further imaging, procedure, or biopsy) was suggested in 57% of cases. In total, 12 of the 94 patients analyzed were newly diagnosed with HCC. In these cases, 100% of the treatments recommended by the MDTB met adherence to 2018 AASLD practice guidelines. As an institution, the most frequent choice for locoregional therapy was TARE.

Table 1: Multidisciplinary Hepatobiliary Tumor Board Outcome Measures

	2017 Cases (n=50)	2018 Cases (n=44)	Total Cases (n=94)	Percent of Total Cases
<b>A) Further characterization or correction of initial diagnosis</b>				
i) Diagnosis corrected from concern for malignancy/malignant to non-malignant		8	3	11
ii) Diagnosis corrected from non-malignant to malignant		1	1	2
iii) Non-malignant tumor diagnosis further characterized		9	6	15
<b>Total:</b>		<b>18</b>	<b>10</b>	<b>28</b>
<b>B) Unnecessary intervention prevented</b>				
i) Procedure		8	2	10
ii) Treatment		1	2	3
iii) Imaging		3	3	6
<b>Total:</b>		<b>12</b>	<b>7</b>	<b>20.2%</b>
<b>C) Next step in management suggested</b>				
i) Imaging		18	18	36
ii) Biopsy		2	2	4
iii) Procedure		3	11	14
<b>Total:</b>		<b>23</b>	<b>31</b>	<b>57.4%</b>

Table 2: First Line Treatments Recommended by the Multidisciplinary Hepatobiliary Tumor Board for HCC

Treatment	BCLC 0 (n=1)	BCLC A (n=6)	BCLC B (n=3)	BCLC C (n=0)	BCLC D (n=2)
<b>Surgical Resection</b>					
RFA		1			
TARE			5	2	
TACE					
MWA					
Downsize OLT		1		1	
OLT					
Sorafenib					
Supportive Care					2
<b>Adherence to 2018 AASLD Guidelines (%)</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>100%</b>

## Discussion

Expert case review at MDTB has a significant impact on patient morbidity and management strategy of complex hepatobiliary tumors. Of the patients reviewed, 30% had further characterization or correction of initial diagnosis (of these, 39% had their diagnosis corrected from concern for malignancy to non-malignant). Furthermore, 20% avoided unnecessary interventions, of which 53% were procedures. In 2012, The National Academy of Medicine estimated the US healthcare system spends \$765 billion on unnecessary health care costs, approximately one fourth of the total amount spent on healthcare a year<sup>8</sup>. Thus, case review of patients with hepatobiliary lesions could help both prevent unnecessary invasive tests and mitigate hospital costs by catching misdiagnoses early. This also has significant psychosocial benefits for patients who get to avoid superfluous costs, unnecessary interventions and have the relief that their diagnosis is non-malignant. In addition, 57% of cases had a next step in management suggested, indicating that tumor board reviews allow for streamlined, evidence based recommendations that all providers can follow.

Among newly diagnosed HCC cases, clinical practice at our institution adhered to 2018 AASLD guidelines with TARE being the preferred locoregional therapy. Given that our data so far is from 2017-2018, further data collection will allow us to determine how tumor board recommendations evolved over the years and whether we continue to adhere to current AASLD recommendations.

Data from MDTB review provides many opportunities to analyze for additional secondary outcomes. One particular outcome we look to further characterize is the underlying etiology of cirrhosis for patients diagnosed with HCC. Recent data shows a shift in HCC mortality away from HCV-cirrhosis to Alcoholic Liver Disease (ALD) and Non-Alcoholic Fatty Liver Disease cirrhosis<sup>9</sup>. It will be interesting to see which subtypes our patients with HCC are classified under.

## Limitations

There are several limitations to this study including the following:

- Small sample size
- Subjective interpretation of outcomes during data collection process
- Exclusion of cases due to lack of MDTB documentation of discussion

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