CORRELATION BETWEEN SYSTEMIC INFLAMMATORY MARKERS AND EVIDENCE OF METASTATIC DISEASE IN PATIENTS WITH HEPATOCELLULAR CARCINOMA

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Introduction

Hepatocellular carcinoma (HCC) is a leading cause of cancer-related mortality worldwide. A wide variety of scoring systems such as Albumin-Bilirubin (ALBI), Platelet-Album-Bilirubin (PALBI), Monocyte-to-Lymphocyte ratio (MLR), and Neutrophil-Lymphocyte Ratio (NLR) along with tumor characteristics (tumor size, count, and vascular invasion) have been proposed as prognostic indicators. The aim of our study was to determine the correlation, if any between these scoring systems and evidence of metastatic disease at diagnosis in patients with HCC.

Methods and Materials

A cross-sectional study was conducted at Liver Associates of Texas Hepatology clinics in Houston, Texas. Included were patients diagnosed with HCC between January 2014 and December 2021. Demographic data, chronic liver disease, cirrhosis status, and evidence of metastatic disease at diagnosis were recorded.
Laboratory parameters including serum albumin, total bilirubin, platelet count, absolute lymphocyte, neutrophil, and monocyte counts were collected for each patient at the time of diagnosis. The diagnosis of HCC was established by Magnetic Resonance Imaging (MRI). ALBI score, PALBI score, MLR, and NLR were calculated by mathematical formulas previously described in the literature. A binomial logistic regression model was performed with the different scores and ratios as independent variables, and evidence of metastatic disease as the dependent variable. A *p*-value of less than 0.05 was considered significant.

Results

231 patients were identified with HCC. The mean age was 69 years old. 72.3% were male. 38.1% Caucasian, 21.6% Hispanic, 13.4% African American, 13.4% Asian/Pacific Islander, and 13.4% unspecified ethnicity. Out of the 231, all except one patient had cirrhosis; hepatitis C was the most common cause of cirrhosis (59.7%) followed by NASH (17.7%). 17.3% of the patients had evidence of metastatic disease at diagnosis. Patients with metastatic disease at diagnosis had a higher NLR (OR: 1.64 [1.18 – 2.29], $p = 0.003$). However, interestingly, patients with metastatic disease at diagnosis had a lower MLR (OR: 0.11 [0.01 – 0.77], $p = 0.027$).

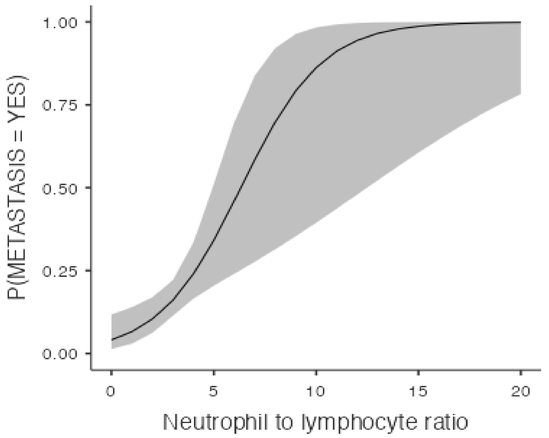

Figure 1. Positive correlation between NLR and metastatic disease in patients with HCC

Figure 2. Demographic distribution of the population

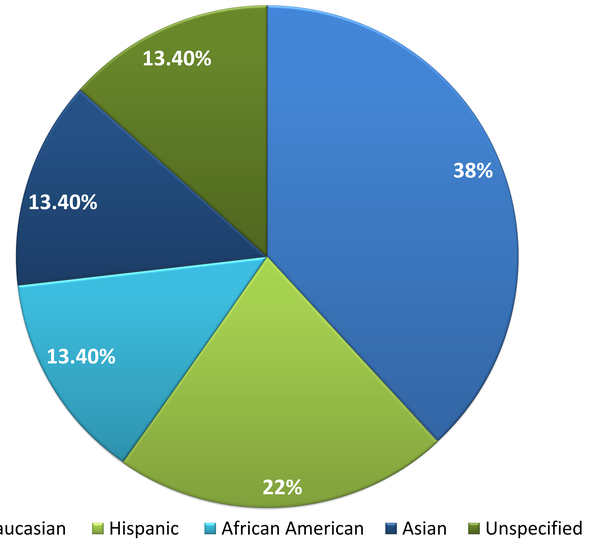

Table 1. Correlation among different steatosis scores and ratios with the evidence of metastatic disease at diagnosis in patients with HCC

	OR	*p* value	95% CI
ALBI score	8.99	0.141	(0.48 – 166.95)
PALBI score	0.59	0.219	(0.25 – 1.36)
MLR	0.11	0.027*	(0.01 – 0.77)
NLR	1.64	0.003*	(1.18 – 2.29)

ALBI= Albumin-Bilirubin; PALBI= Platelet-Albumin-Bilirubin; MLR= Monocyte to Lymphocyte Ratio; OR= Odds Ratio
NLR= Neutrophil to Lymphocyte Ratio; * = Statistically significant to the 95% CI; CI = Confidence Interval.

Discussion

Among the wide variety of scoring systems proposed in the literature as prognostic factors for patients with HCC, NLR remains one of the most described. In our study patients with advanced disease had a higher NLR at the time of diagnosis. Similar findings were described by Bannaga et al, who reported that patients with high NLR had a statistically significant and inversely relationship with survival. On the contrary, the results described by Wang et al differ from ours since they concluded that high MLR was associated with unfavorable outcomes in patients with HCC, while in our population patients with metastatic disease at diagnosis had a lower MLR.

Conclusion

Our study suggests that patients with metastatic disease at diagnosis had a higher NLR, hence this ratio is a promising non-invasive prognostic parameter for patients with HCC. However, further studies need to be performed to validate our results.

References

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