

International Society of Gastrointestinal Oncology  
2009 Gastrointestinal Oncology Conference  
October 1–3, 2009  
ABSTRACTS

**Hepatobiliary Cancer**

abstr 0935

**Post-Transplant Recurrence of Hepatocellular Carcinoma and Elevated NLR**

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**Background:** Hepatocellular carcinoma (HCC) is the third most common cause of cancer death worldwide. Approximately 80% of patients with HCC have cirrhosis, making liver transplantation (LT) the ideal treatment modality, as it provides a cure for the underlying liver disease as well as complete neoplastic clearance of tumor. Many criteria have been developed for HCC patient selection for LT, although the use of current criteria does not completely eliminate the risk of recurrence. Approximately 15% to 20% of patients who are within the criteria still develop recurrent disease, leading to an extensive search for surrogate markers of HCC aggressiveness.

**Methods:** A prospectively collected database of all patients undergoing LT at our institution between January 1990 and January 2006 with a diagnosis of HCC was retrospectively analyzed. Patients undergoing LT had neutrophil and lymphocyte counts measured preoperatively on the day before surgery. The neutrophil to lymphocyte ratio (NLR) was calculated by dividing the neutrophil measurement by the lymphocyte measurement. An  $NLR \geq 5$  was considered elevated. Incidence of elevated NLR was compared in LT patients with and without HCC recurrence.

**Results:** Total of 47 patients who underwent LT for HCC were identified. Patients were followed for mean duration of 6 years (range, 8 months - 15 years). Eight (8) patients had recurrence of HCC during the follow-up period. The mean duration between LT and diagnosis of HCC recurrence was 667 days (range, 306 – 1424 days). Twice the number of patients (16) were randomly selected from the remaining 39 patients who had no recurrence. Only 2/8 patients with recurrence and 3/16 patients without recurrence were found to have an elevated NLR. There was no statistical difference in incidence of elevated NLR between patients with and without recurrence (25% vs. 18.75%;  $P > .05$ ).

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**Conclusions:** The effect of inflammation on carcinogenesis has been widely investigated, with recent increased interest in the systemic proinflammatory effects exerted by tumors. Several inflammatory markers such as C-reactive protein and neutrophil-lymphocyte ratio (NLR) have been suggested as surrogate markers of tumor biology. NLR is one such marker of inflammation that has been linked with several malignancies. NLR >5 has been shown to be a marker of survival in colorectal cancer patients. Similarly, a few studies have demonstrated the efficacy of NLR in predicting outcome in patients undergoing liver resection for HCC; however, none directly compared the incidence of elevated NLR in LT patients with and without HCC recurrence. Our study results indicate no statistical difference in incidence of elevated NLR between the two groups. We suggest that elevated NLR might not be closely correlated to recurrence of HCC post-transplant, although the small sample size might be a limiting factor. Larger studies are necessary to more definitively evaluate this relationship.