

**KORELASI TUMOR TO LIVER VOLUME RATIO
PADA CT SCAN ABDOMEN
DENGAN SKOR MELD
PADA PASIEN KARSINOMA HEPATOSELULER**

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INTISARI

Latar Belakang: Karsinoma hepatoseluler (KHS) merupakan kanker hati primer tersering dengan angka mortalitas yang tinggi, terutama di Asia. Penilaian beban tumor berperan dalam menentukan prognosis, namun pengukuran berbasis diameter memiliki keterbatasan. Parameter volumetri seperti TTLVR dinilai lebih mampu merepresentasikan beban tumor. Prognosis KHS juga dipengaruhi oleh fungsi hati yang dapat dinilai secara objektif menggunakan MELD. Namun, hubungan antara TTLVR dan skor MELD masih belum banyak diteliti.

Tujuan: Mengetahui korelasi TTLVR pada CT scan abdomen dengan skor MELD pada pasien karsinoma hepatoseluler.

Metode: Penelitian ini merupakan studi potong lintang observasional yang dilakukan di Departemen Radiologi dan Instalasi Catatan Medik RSUP Dr. Sardjito, Yogyakarta. Subjek penelitian adalah pasien karsinoma hepatoseluler yang menjalani pemeriksaan CT scan abdomen kontras multifase periode dari Oktober 2024-September 2025. TTLVR dihitung dari citra CT scan menggunakan metode segmentasi volumetrik semi otomatis, sedangkan skor MELD dari data laboratorium. Analisis korelasi antara TTLVR dan skor MELD dilakukan menggunakan uji *Spearman*.

Hasil : Penelitian terhadap 53 pasien karsinoma hepatoseluler menunjukkan terdapat hubungan bermakna antara TTLVR dan skor MELD dengan kekuatan korelasi sedang ($r = 0,406$; $p = 0,003$). Analisis multivariat menunjukkan TTLVR merupakan faktor independen yang berhubungan dengan skor MELD ($B = 0,063$; $p = 0,017$), sedangkan variabel lain tidak menunjukkan hubungan bermakna.

Kesimpulan: TTLVR memiliki korelasi bermakna dan independen terhadap skor MELD, sehingga dapat digunakan sebagai parameter kuantitatif tambahan dalam menilai fungsi hati pada pasien karsinoma hepatoseluler.

Kata kunci: karsinoma hepatoseluler, *tumor to total liver volume ratio*, *Model for End Stage Liver Disease score*, CT scan abdomen kontras multifase

CORRELATION BETWEEN TUMOR TO LIVER VOLUME RATIO ASSESSED BY ABDOMINAL CT AND MELD SCORE IN PATIENS WITH HEPATOCELULAR CARCINOMA

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ABSTRACT

Background: Hepatocellular carcinoma (HCC) is the most common primary liver malignancy and is associated with high mortality, particularly in Asia. Tumor burden assessment plays an important role in determining prognosis; however, diameter-based measurements have limitations. Volumetric parameters such as the tumor-to-total liver volume ratio (TTLVR) are considered to better represent tumor burden. Prognosis in HCC is also influenced by liver function, which can be objectively assessed using the Model for End-Stage Liver Disease (MELD) score. However, the relationship between TTLVR and MELD score has not been widely studied.

Objective: To evaluate the correlation between TTLVR measured on contrast-enhanced abdominal CT scans and the MELD score in patients with hepatocellular carcinoma.

Methods: This was an observational cross-sectional study conducted at the Department of Radiology and the Medical Records Unit of Dr. Sardjito General Hospital, Yogyakarta. The study included patients with hepatocellular carcinoma who underwent multiphasic contrast enhanced abdominal CT scans between October 2024 and September 2025. TTLVR was calculated using semi-automated volumetric segmentation from CT images, while MELD scores were obtained from laboratory data. Correlation analysis between TTLVR and MELD score was performed using *Spearman's* test.

Results: A total of 53 patients with hepatocellular carcinoma were included. A significant positive correlation was found between TTLVR and MELD score with moderate strength ($r = 0,406$; $p = 0,003$). Multivariate analysis demonstrated that TTLVR was an independent factor associated with MELD score ($B = 0,063$; $p = 0,017$), while other variables were not significantly associated.

Conclusion: TTLVR is significantly and independently associated with the MELD score and may serve as an additional quantitative parameter in assessing liver function in patients with hepatocellular carcinoma.

Keywords: hepatocellular carcinoma, tumor to total liver volume ratio, Model for End Stage Liver Disease, multiphasic contrast-enhanced abdominal CT