

Scientific Session 3: Oncology I - Neuroblastoma and Hepatic Tumors (continued)

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THE USE OF REAL-TIME INDOCYANINE GREEN-GUIDED NEAR-INFRARED IMAGING DURING PARTIAL HEPATECTOMY FOR THE TREATMENT OF PEDIATRIC LIVER CANCER

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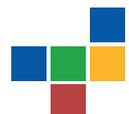
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Purpose: Hepatoblastoma (HB) and hepatocellular carcinoma (HCC) are the most common primary malignant tumors of childhood. Intraoperative indocyanine green (ICG) administration with near-infrared imaging (NIR-ICG) has emerged as a surgical technology that can be used to assist with localization of pulmonary metastases secondary to HB; however, there has been limited application to the real-time intraoperative use for extrahepatic disease, multifocal tumors, and margin assessment during partial hepatectomy.

Methods: We present five patients treated for HB and HCC at our institution with the use of intraoperative NIR-ICG imaging. All patients were treated with 0.5-0.75 mg/kg IV ICG, 48-72 hours prior to surgery.

Results: NIR-ICG allowed pulmonary metastasectomy in two patients using thoracoscopy or thoracotomy allowing for visualization of 20 nodules not seen on preoperative imaging of which 14 were positive for malignancy. NIR-ICG imaging allowed for identification of extrahepatic extension in two patients; an HCC patient with extrahepatic lymph nodes positive for malignancy, and a recurrent HB patient with diaphragm thickening demonstrating NIR-ICG fluorescence and disease on resection pathology. This technique was used to guide partial hepatectomy in four patients. Three patients underwent right trisectionectomy, and NIR-ICG was used for real time resection of satellite HB lesions in two multifocal patients and detected caudate extension that was subsequently resected. The fourth patient had preoperative biliary obstruction and NIR-ICG imaging revealed fluorescence throughout the liver. All 4 patients were resected with negative margins.

Conclusions: Intraoperative use of NIR-ICG imaging during partial hepatectomy enabled identification and guidance for surgical resection of extrahepatic extension and multifocal liver tumors for the treatment of children with HB and HCC.



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