

## Comparison of Yttrium-90 Microspheres and Transarterial Chemoembolization in the Treatment of Inoperable Metastatic Neuroendocrine Tumors

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**Background:** There are limited treatment modalities for inoperable liver neuroendocrine (NET) metastases. The study compares the efficacy and safety of yttrium-90 microspheres (SIR) to transarterial embolization (TACE).

**Methods:** Medical records and axial imaging studies were retrospectively reviewed for all patients with NET liver metastases treated with SIR or doxorubicin based TACE at our institution from Jan, 2001-Dec, 2010. The demographics, immediate effects, and time to radiologic progression were compared.

**Results:** 89 liver directed procedures were performed on 18 SIR and 23 TACE patients. Median follow-up was 26 mos (range 4-120). Patient age, performance status, type of primary NET, and systemic therapy were similar. Pts in the SIR group did not require liver-directed therapy as quickly (SIR 43.7 mos vs. TACE 18.2 mos,  $p < 0.001$ ) and had less liver burden than TACE patients (65% vs. 33% with  $< 25\%$  liver burden respectively). Immediate treatment response was measured using the product of WHO times EASL. SIR achieved total benefit of 97% (9.1% complete response (CR), 48.5% partial response (PR), 39.4% stable disease (SD) versus 83.3% for TACE (0% CR, 37.5% PR, 45.8% SD) ( $p = 0.05$ ). At 26 mos, SIR had a longer radiologic response than TACE (10 mos) ( $p = 0.035$ ). SIR patients underwent less treatments (95% with  $\leq 2$  treatments) than TACE patients (70% with  $\leq 2$  treatments) ( $p = 0.045$ ). Both treatments were well tolerated with minimal side effects. With only 10/41 deaths, there was no statistically significant difference in overall survival between the two groups.

**Conclusion:** Liver metastasis from NETs can be successfully treated with yttrium-90 radioembolization. Earlier intervention using SIR allows fewer treatments with more durable responses. Prospective studies controlling for rate of disease progression and disease burden are needed to validate these findings.