

## **ABSTRACT**

**Introduction:** Patients with metastatic neuroendocrine tumors (MNET) to liver are faced with multiple treatment strategies including resection, ablation, and a variety of regional therapies which have been successfully utilized in this heterogeneous group of patients. This study examined whether a minimally invasive regional therapy, percutaneous hepatic perfusion (PHP), with melphalan has efficacy in patients with isolated or predominant hepatic metastases from MNET.

**Methods:** Between December 2001 and February 2007, 17 MNET patients (mean age: 50 y; M: 10; F: 7; pancreatic neuroendocrine: 12; carcinoid: 5) were enrolled on one of two IRB-approved PHP protocols using melphalan. Analysis included PHP parameters, complications, toxicities, response, progression-free and overall survival. PHP consisted of a 30 minute hepatic artery infusion of melphalan via a percutaneously placed catheter with subsequent return to the systemic circulation. Treatment course consisted of four PHPs every 38 to 35 days. Survival curves were estimated by the Kaplan-Meier method.

**Results:** Seventeen patients received 45 treatments (median: 2/pt). Reversible grade III/IV toxicities observed were hematologic (82%) and hepatic (16%). An overall radiographic response was seen in 9 of 12 evaluable patients (75%; complete n=2, partial n=7). At a median potential follow-up of 18 months, progression of intrahepatic disease has been observed in two patients (43 and 24 months, respectively) and two additional patients have died secondary to progression of extrahepatic disease. Median duration of ongoing hepatic response in eight patients is 13 months (mean : 15, range: 5-28).

**Conclusions:** This study shows that PHP with melphalan has efficacy in patients with diffuse MNET of the liver when hepatic disease is too extensive for resection, ablation, or embolization strategies.