

## **Percutaneous hepatic perfusion (PHP) with melphalan for patients with metastatic melanoma (MM) to the liver**

**Introduction:** Patients with metastatic melanoma to liver have a median survival between 6-9 months and different treatment strategies have not meaningfully altered the natural history of the disease. 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 metastatic melanoma (MM).

**Methods:** Between August 2001 and July 2004, 17 MM patients (mean age: 50 y; M: 9, F: 8; ocular: 13, cutaneous: 4) were enrolled on an IRB approved PHP protocol for unresectable liver metastases using melphalan. Analyses included previous treatment, 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 hepatic venous hemofiltration using a double balloon catheter (Delcath Systems, Inc.) positioned in the retrohepatic inferior vena cava and an activated charcoal filter with subsequent return to the systemic circulation. Treatment course consisted of four PHPs every 21-28 days with follow-up and imaging evaluation after treatment and every 3-4 months thereafter. Survival curves were estimated by the Kaplan-Meier method.

**Results:** Fifteen patients received 49 treatments (mean: 3.3/pt); 2 patients were not treated due to anatomic limitations or other technical reasons. Previous treatment included surgery (n=10), biochemotherapy (n=7), and isolated hepatic perfusion (n=6). Mean melphalan dose was 163.5 mg (range: 114-257). Reversible grade III/IV toxicities observed were hematologic and hepatic. Mean hospital stay was 2.5 days/PHP. An overall radiographic response was seen in 6 (40%; complete n=2; partial n=4). Hepatic disease remained stable in 5 other patients. Median hepatic progression-free survival was 11 months (range: 5-16.5) and overall survival was 14 months (range 3-24).

**Conclusions:** This study shows that PHP with melphalan has efficacy in patients with MM of the liver with low morbidity and warrants further clinical investigation.