

## **Bronchial or pulmonary artery chemoembolization of lung metastases: 6 month follow up results from a phase I trial**

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### **Purpose:**

Lung chemoembolization is a new treatment option for lung tumors, but the optimal embolic, drug, and technique are unknown. We performed a phase I trial to determine the technical success rate and safety of bronchial or pulmonary artery chemoembolization of lung metastases, using Lipiodol, mitomycin, and Embospheres.

### **Materials and Methods:**

Patients with unresectable and unablatable lung, endobronchial, or mediastinal metastases, who failed systemic chemotherapy, were enrolled in this prospective, single-center, single-arm, phase I clinical trial. Pulmonary and bronchial angiography was performed to determine the blood supply to the lung metastases. Based on the angiographic findings, bronchial or pulmonary artery chemoembolization was performed, using an Lipiodol/mitomycin emulsion, followed by Embospheres. Primary objectives were technical success rate and safety (CTCAE). Median change in size of treated versus untreated tumors was compared using the Wilcoxon signed-rank test. Correlations were evaluated using Spearman's test. Overall survival was estimated using the Kaplan-Meier method, and local progression rate was estimated with death as a competing risk.

### **Results:**

10 patients (median age 60 years; 6 women) were evaluated. 9 of 10 (90%) patients had lung metastases supplied by the bronchial artery, and 1 of 10 (10%) were supplied by the pulmonary artery. Technical success rate of intratumoral drug delivery was 10 of 10 (100%). There were no severe adverse events, and all patients met criteria for discharge 4 hours post procedure. Response rate of treated tumors was 1 of 10 (10%) by RECIST and 4 of 10 (40%) by PERCIST. Treated tumors decreased in size, compared to untreated tumors ( $p=0.02$ ). Lipiodol retention at 4-6 weeks was correlated with reduced tumor size and metabolic activity. Pharmacokinetics showed that 45% of the mitomycin dose underwent burst release in 2 minutes, and 55% of the dose was retained intratumorally with a half-life >5 hours. The initial intratumoral mitomycin concentration was 380 times the plasma mitomycin concentration. Six months after treatment, overall survival rate was 70% (95% CI: 47-100%), and local progression rate was 26% (3-60%).

### **Conclusion:**

Lung chemoembolization can potentially treat large and multifocal lung metastases, including mediastinal lymph nodes, in patients with limited treatment options (chemorefractory, unresectable, and unablatable).