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Technique and results of hyperthermic (41 degrees C) isolated lung perfusion with high-doses of cisplatin for the treatment of surgically relapsing or unresectable lung sarcoma metastasis.

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OBJECTIVE: A technique of hyperthermic isolated lung perfusion (ILP) chemotherapy was developed.
METHODS: Since April 1999, four patients with unilateral (n=2) or bilateral (n=2) sarcoma metastasis confined to a lobe (n=2) or entire lung (n=2) entered into a pilot study of hyperthermic (41 degrees C) ILP with high doses of cisplatin (70 mg/m(2)). Eligibility included drug resistant metastasis and at least four previous surgical metastectomies. The ILP of the lung segments was carried out following metastectomy, for 20-40 min at a rate of 0.3-0.5 l/min, a mean perfusion pressure lower than the own mean pulmonary artery pressure, and an inflow temperature of 41 degrees C or higher. Before and following ILP, the isolated lung segments were flushed with normothermic saline (1 l). Flow was continuously maintained by a centrifugal pump.
RESULTS: All patients successfully completed 31.7+/-9 min perfusion time at 41.4+/-0.3 degrees C, and this time-point corresponded to the maximal platinum lung-uptake (93.8 ng/mg tissue). The total vascular isolation was confirmed by continuously low systemic cisplatin plasma levels. There was no systemic drug-related toxicity but all patients experienced transient pulmonary toxicity as non-cardiogenic edema of the treated lung segments. With a median follow-up of 12 months, three patients are alive and disease-free and one died from cerebral metastasis without autopsy evidence of local recurrence 13 months following ILP.
CONCLUSION: Hyperthermic perfusion chemotherapy can be done safely and effectively. It represents a new treatment modality and deserves further investigations for patients with advanced, drug resistant or surgically refractory, lung sarcoma metastasis. However, further studies are needed to limit the ILP-induced pulmonary toxicity.