

11TH GLOBAL GASTROENTEROLOGISTS MEETING

June 12-13, 2017 Rome, Italy

Microwave ablation of large HCCs by simultaneous multiple antennae insertion: Long term follow-up

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Background & Aim: We report long term results of microwave (MW) ablation with simultaneous insertion of multiple antennae for large hepatocellular carcinoma (HCC).

Methods: Between October 2008 and September 2013, 36 cirrhotic with a single HCC nodule >3 cm (range: 3.2-7.0 cm; mean: 4.4 cm) underwent MW ablation in a single session by simultaneous insertion of multiple 13-gauge-MW-antenna (Viva-Wave, Covidien, USA). All patients underwent intra operative evaluation of efficacy with contrast enhanced ultrasound (CEUS). Residual viable tumor at CEUS was treated in the same session by reinsertion of 2-3 MW antennae in the tumor. Efficacy of ablation was definitely assessed with three-phase computed tomography (CT) after one month. After treatment, scheduled follow-up entailed US every three months and CT every 12 months.

Results: 10 and 18 patients were treated with a single insertion of two and three synchronous antennae, respectively. Eight patients were treated with two insertions of three antennae in the same session. Intraoperative CEUS showed residual tumor in 12 patients. Nine out of these patients underwent an additional insertion of two antennae and three patients of three antennae. Intraoperative CEUS at the end of the procedure showed complete necrosis in all patients. One month-CT showed complete necrosis in 33/36 patients. A severe hemoperitoneum, treated with blood transfusion, occurred in one patient after treatment. No major complication occurred in the other patients. Follow-up ranged from 18 to 78 months (mean: 42 months). During follow-up, local recurrence occurred in seven patients within 3 to 12 months (mean: six months). Recurrences in other liver segments occurred in 35/36 patients within 6 to 24 months (mean: 15 months). Extrahepatic metastases from HCC were observed in one patient 24 months after treatment. 16 patients died within 18-60 months (mean: 36 months) for tumor progression in 11 cases, decompensation of cirrhosis in four cases, hemorrhagic stroke in one case, respectively. 20 patients were alive at 18-78 months follow-up (mean: 42 months).

Conclusions: Ablation of large HCC by simultaneous insertion of multiple MW antennae is a safe and effective treatment and can result in long survival of patients.

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