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MRI信号强度预测子宫肌瘤微波消融能量的可行性

Feasibility of predicting the microwave ablation energy for uterine leiomyomas with MRI signal intensity

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英文关键词: [Leiomyoma](#) [Microwaves](#) [Ablation techniques](#) [Magnetic resonance imaging](#)

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中文摘要:

目的 探讨根据MR T2WI信号强度预测微波消融子宫肌瘤所需能量的可行性。方法 于超声引导下对143例子宫肌瘤患者(共197个病灶)行经皮微波消融治疗,对其中42例(49个病灶)于微波消融术前、术后进行盆腔平扫+MR增强扫描。微波消融功率为50 W,微波天线型号均为T11a。术前根据MR T2WI中子宫肌层信号强度为标准,将子宫肌瘤分为高、等、低信号3组;消融后测量增强MRI中无灌注区体积作为消融体积,对子宫肌瘤微波消融能效因子进行统计学分析。结果 低、等、高信号组子宫肌瘤微波消融平均能效因子分别为(685.01±206.27)J/cm³、(702.70±254.25)J/cm³和(945.12±321.83)J/cm³,高信号组与低信号组比较差异有统计学意义(P=0.015)。结论 根据MR T2WI中子宫肌瘤的信号强度可初步预测微波消融所需能量;微波消融中,T2WI呈高信号的子宫肌瘤所需能量高于呈低信号者。

英文摘要:

Objective To evaluate the feasibility of signal intensity at MR T2WI for predicting microwave (MW) ablation energy of uterine leiomyoma. **Methods** Totally 143 patients with 197 uterine leiomyomas who underwent ultrasound-guided percutaneous MW ablation treatment were prospectively observed. Among them, 42 patients with 49 uterine leiomyomas received contrast-enhanced MR imaging (ceMRI) before and after MW ablation, the output energy was set at 50 W, and MW antennas T11a were used. Taking MR T2WI signal intensity of myometrium as reference standard, uterine leiomyomas were classified into three groups, i.e. hyperintensity group, isointensity group and hypointensity group. After MW ablation, the volume of nonperfused area on ceMRI was calculated as MW ablation volume. Energy required per unit volume (EPV) was analyzed statistically. **Results** The mean EPVs were (685.01±206.27)J/cm³ in hypointense group, (702.70±254.25)J/cm³ in isosignal group and (945.12±321.83)J/cm³ in hyperintense group. There was significant difference of EPV between hypointensity group and hyperintensity group (P=0.015). **Conclusion** MW ablation energy can be predicted with signal intensity at T2WI of uterine leiomyoma. Uterine leiomyomas which are hyperintense at T2WI need higher energy for ablation than isointense and hypointense ones.

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