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Comparison of 3-D ultrasound and magnetic resonance imaging for microwave ablation in the canine splenomegaly model

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Microwave ablation is used for the treatment of hypersplenism; image guidance and ablation volume assessment is very important to ensure that the ablation is successful. In this study, 3-D ultrasound (US) and Magnetic Resonance Imaging (MRI) were compared with regard to their accuracy in determining the ablation parameters for microwave ablation in a canine splenomegaly model. Microwave ablation was carried out in the spleen of 13 dogs with congestive splenomegaly. Different combinations of power output and ablation time were used: 60 W for 300 s, 50 W for 360 s and 40 W for 450 s. The volume of the ablation zone was measured by 3-D US and 3-D MRI immediately after microwave ablation, and at one, two and eight weeks thereafter. Compared with 3-D MRI, the ablation zone reconstruction rate was lower with 3-D US (92% vs. 100%). However, there was no significant difference with regard to the ablation volume calculated soon after the ablation and one week and two months later. Therefore, 3-D US may be a useful technique for quantifying the volume of microwave ablation zones in the spleens of experimental animals and may be a promising method for clinical examinations.

Biography

Lin Sheng has completed his studies from The General Hospital of the People's Liberation Army hospital. He is the Director of the Department of Interventional Ultrasound, Yuquan Hosiptal, Tsinghua University. He has published more than 25 papers and books in reputed journals and has been five invention patents.

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