

**FC-056****Contrast enhanced ultrasound (CEUS) to improve the accuracy in differentiating benign and malignant soft tissue tumors**

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Introduction: Musculoskeletal Soft Tissue Tumours vary in a wide spectrum of lesions. Both MRI and CT with contrast medium have a good sensitivity to discriminate benign and malignant lesions. CEUS can detect both vascularity and tumour neoangiogenesis^[1] and help in differentiating them. The aim of the study is to identify the perfusion patterns and vascularisation time of malignant and benign lesions to improve the accuracy of CEUS.

Methods: 216 patients with soft tissue tumours were enrolled in this study (60% malignant tumours, 56% in the lower limbs). Informed consent and IRB approval were obtained. Seven CEUS perfusion patterns and 3 types of vascularisation (arterial-venous uptake, absence of uptake) were considered. The accuracy of CEUS was evaluated by comparing Imaging with the histological diagnosis. Statistical analysis: univariate and multivariate analysis, Chi-square test and t-test for independent variables ($p < 0.05$, 95% CI).

Results: CEUS pattern 6 (inhomogeneous perfusion), arterial uptake and location in the lower limb were associated with high risk of malignancy. The best positive predictive isolated values were CEUS pattern (77%) and rapidity of vascularisation (69%). The combination of CEUS-pattern and vascularisation has 74% PPV, 60% NPV, 70% sensitivity. No statistically significant correlation with size and location (whether deep or superficial to the fascia) was found.

Conclusion: CEUS is a reliable Imaging technique in the diagnostic process of soft tissue lesions and it is helpful in guiding the US guided biopsy. CEUS could overcome the influence of the operator's experience. Its role and timing in the diagnostic process should be defined in international panels for diagnostic guidelines.

References:

¹ Eur J Radiol. 2015 Jan;84(1):142-50.