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The role of biplane ultrasound probe combined with ultrafine blood flow imaging technology in stress urinary incontinence: A clinical application study

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Objective:

- To evaluate the diagnostic value of combining biplane ultrasound and ultra-fine blood flow imaging for stress urinary incontinence (SUI)
- To establish a logistic regression model for SUI diagnosis using quantitative indicators

Methods:

- **Technology:** Biplane ultrasound + ultra-fine blood flow imaging
- **Key Parameters:** Vascular density (VD), flow-weighted vascular density (FWVD), flow perfusion index (FPI)
- **Statistical Analysis:** t-tests, LASSO regression, Spearman correlation, logistic regression, ROC curve analysis

Results:

- **Demographics:** Significant differences in age and BMI between groups ($P < 0.001$)
- **Vascular Findings:** Fewer urethral vascular branches ($P < 0.05$), lower mid-urethral vascular density (1.19 vs. 1.27, $P < 0.05$), reduced spectral parameters (PS, RI, S/D)
- **Model Performance:** 90% diagnostic accuracy (95% CI: 0.83–0.95)

Conclusion:

- Debut dual-plane SR-US for SUI
- maps urethral microvasculature, perfusion, and flow
- non-invasive, high-accuracy aid

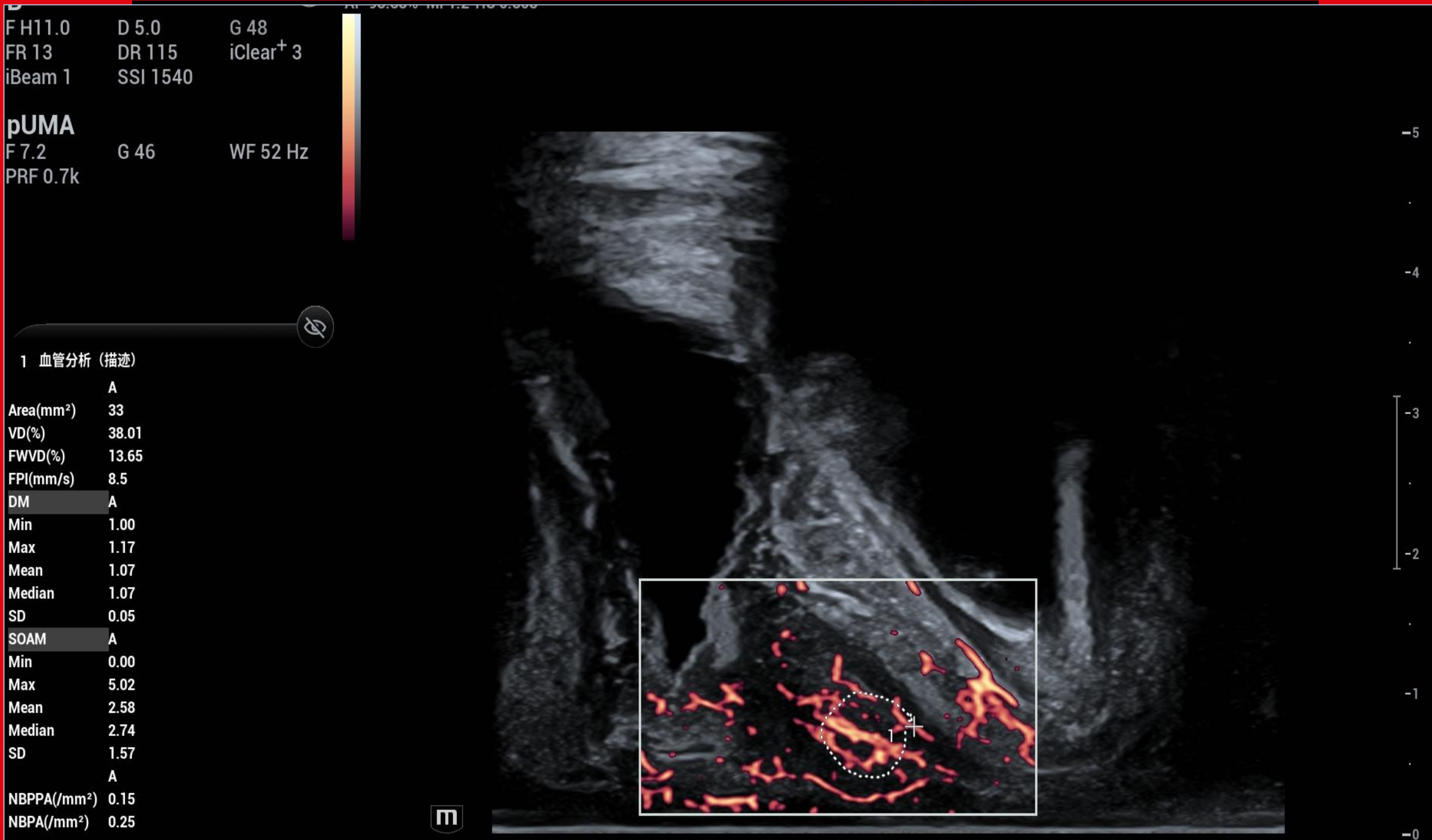


Figure 1. Vascular morphological parameters、Microvascular network parameters at the urethral meatus and mid-urethra

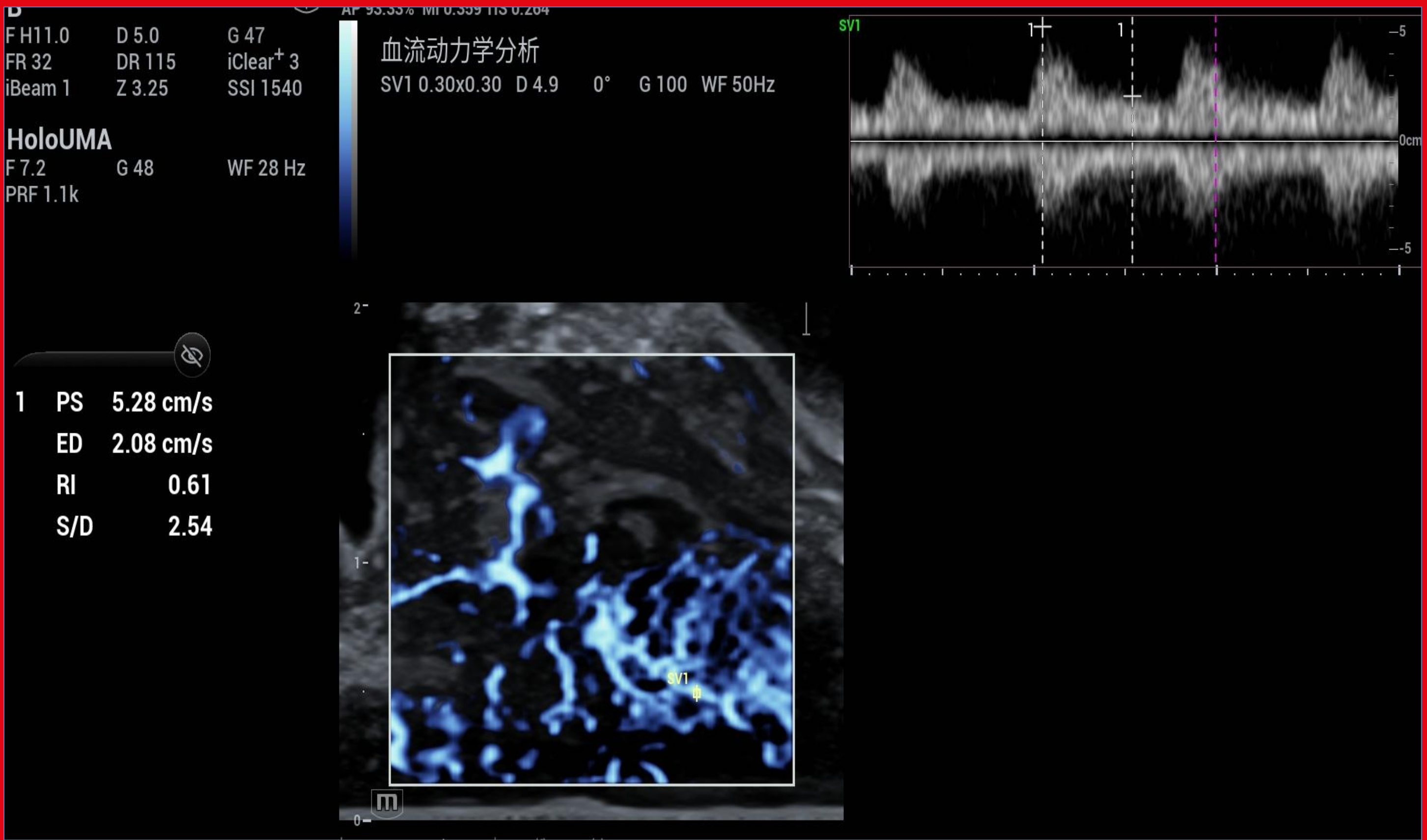


Figure 2. Pulsed-wave spectral parameters