

# 应用超声特征建立Logistic回归模型评价甲状腺结节的良恶性

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**Title:** Logistic regression analysis of benign and malignant thyroid nodules by ultrasound features

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**关键词:** 三维彩色多普勒超声; 甲状腺结节; 良恶性; Logistic回归

**Keywords:** three-dimensional color Doppler ultrasound; thyroid nodules; benign and malignant; Logistic regression

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**摘要:** 目的: 通过Logistic回归模型评价三维彩色多普勒超声定量分析联合二维超声鉴别甲状腺结节良恶性的临床意义。方法: 应用三维彩色多普勒超声分析123个甲状腺结节血管指数(vascular index, VI)、血流指数(flow index, FI)、血管血流指数(vascularization flow index, VFI)及体积值并比较良恶性结节间差异, 并应用二维超声观察其在回声、边界、形状、纵横比及微钙化方面差异, 将上述全部有统计学差异量纳入Logistic回归模型分析。结果: 甲状腺良恶性结节在VI、FI、VFI、内部、边界、形状、纵横比及微钙化方面存在显著差异( $P < 0.05$ ), 而在体积方面不存在显著差异( $P > 0.05$ ); Logistic回归模型纳入变量为甲状腺结节边界、形状、纵横比、微钙化及VFI, 诊断准确率为91.1%。结论: 三维彩色多普勒超声定量参数VI、FI及VFI对鉴别甲状腺结节良恶性有临床意义, 多因素联合Logistic回归模型的建立有助于提升临床诊断准确率。

**Abstract:** Objective: To evaluate the clinical significance of three-dimensional color Doppler ultrasound quantitative analysis combined with two-dimensional ultrasound in the identification of benign and malignant thyroid nodules by Logistic regression model. Methods: In 123 thyroid nodules, to compare the differences between benign and malignant in vascular index using(VI), flow index(FI), vascularization flow index(VFI) and the value of the volume by three-dimensional color Doppler ultrasound, and to observe the differences in echo, boundary, shape, aspect ratio and micro-calcification by two-dimensional ultrasound. All the statistical differences above were included in the Logistic regression model. Results: VI, FI, VFI, echo, boundary, shape, aspect ratio and micro-calcification of thyroid nodules in benign and malignant had significant difference ( $P < 0.05$ ), but volume not ( $P > 0.05$ ). Boundary, shape, aspect ratio, micro-calcification and VFI of thyroid nodules were included in Logistic regression model, and the accuracy of diagnosis of benign and malignant thyroid nodules was 91.1%. Conclusion: The three-dimensional color Doppler ultrasound quantity parameters included VI, FI and VFI which are significant in the differentiation of benign and malignant thyroid nodules. The establishment of multi-factor Logistic regression model can improve the accuracy of clinical diagnosis of benign and malignant thyroid nodules.

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备注/Memo: -

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