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## 卵巢肿块性质的超声指标Fisher判别分析

### Fisher discriminant analysis of ultrasonography index in diagnosing characters of ovarian neoplasms

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中文摘要:

目的 建立超声指标诊断卵巢肿块性质的Fisher判别函数。方法 共纳入卵巢非赘生性肿块48个、良性肿瘤137个、恶性肿瘤120个,以超声参数和多普勒血流信号为鉴别诊断变量,逐步判别分析法建立Fisher判别函数,绘制投影图和领域图,回代法和刀切法验证。结果 ①单因素分析显示3类肿块在体积、内部舒张期血流速度( $V_{ED}$ )、平均血流速度( $V_m$ )、阻力指数(RI)、搏动指数(PI)、物理性质、回声、形态、边界、腹水和血流信号分级方面差异有统计学意义;②逐步判别分析法显示肿块体积、RI、物理性质、形态和边界是鉴别诊断肿块性质的显著指标。两个非标准化Fisher判别函数是:方程1=0.002体积-4.793RI+0.468物理性质+0.862形态+0.901边界-4.076;方程2=0.005体积-1.480RI+0.851物理性质-0.291形态+0.443边界+0.524;③3类卵巢肿块的二维坐标投影散点基本清晰;④回代法验证函数诊断非赘生性肿块、良性肿瘤和恶性肿瘤的敏感度分别是91.67%、88.32%和93.33%;刀切法分别是91.67%、86.13%和93.33%。结论 超声肿块体积、RI、物理性质、形态和边界是鉴别卵巢肿块性质的显著指标,Fisher判别分析法可为卵巢肿块性质提供较好的鉴别诊断模型。

英文摘要:

**Objective** To construct Fisher discriminant functions with index of ultrasonography. **Methods** A total of 48 non-neoplastic ovarian cysts, 137 benign and 120 malignant ovarian tumors were enrolled in this study. Taking ultrasonographic parameters and Doppler blood flow signals as differential diagnosis variable, a diagnosis model was developed using stepwise discriminant analysis. Then a projection and territorial map were drew and the diagnostic ability of the model was verified with substitution method and jackknife. **Results** ①Univariate analysis indicated that ovarian cysts volume, end-diastolic blood flow velocity ( $V_{ED}$ ), mean blood flow velocity ( $V_m$ ), resistance index (RI), pulse index (PI), physical property, echo, shape, boundary, ascites and blood flow signal have statistical difference among the three kinds of ovarian cysts. ②Stepwise discriminant analysis showed that volume, resistance index, physical property, shape and boundary are the independent prognostic variables. The two Fisher discriminant functions were as following: Function 1=0.002volume-4.793 RI+0.468physical property+0.862shape+0.901boundary-4.076, Function 2=0.005volume-1.480 RI+0.851physical property-0.291shape+0.443boundary+0.524. ③The projective positions of three kinds of ovarian cysts at 2D coordinates were clear. ④The sensibility and specificity of mode for diagnosis non-neoplastic ovarian cysts, benign and malignant ovarian tumors was 91.67%, 88.32% and 93.33% with substitution method, and was 91.67%, 86.13% and 93.33% with jackknife method. **Conclusion** Cysts volume, RI, physical property, shape and boundary are the significant differential prognostic variables. Fisher discriminant analysis can provide a reliable prognostic model for ovarian cysts.

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