人工神经网络在宫颈癌预后预测中的应用

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Application of Artificial Neural Networks in Prediction of Prognosis of Cervical Cancer

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摘要

目的
探讨人工神经网络在宫颈癌术后5年生存期预测中的应用。方法收集125例宫颈癌患者的临床病理资料及治疗随访信息，按照4∶1的比例，随机分为训练组(100例)和测试组(25例)，分别采用Logistics回归分析，筛选单因素分析有统计学意义的因素建立Logistics回归模型和概率神经网络模型（PNN），用训练组训练网络模型，用测试组检测网络模型。结果PNN模型的准确性92%，

敏感度为75%，特异性为95.23%,Logistics回归模型的准确性为84%，敏感度为50.0%，特异性为82.61%。结论神经网络在生存分析
中有很大的灵活性;在模型中可以容纳非线性效应,不需要对数据的随机特征如分布等作出假设,不要求满足H0假定,具有较广泛的应用前景。

关键词： 人工神经网络　宫颈癌　预后

Abstract：

Objective
To explore the application of artificial neural networks in survival prediction for postoperative cervical cancer. MethodsClinical and pathological data of 125 cases of cervical cancer and treatment follow-up information, were collected and in accordance with the ratio of 4:1, randomly divided into a training group and test group, respectively. Through Logistics regression, significant factors were screened by univariate analysis to build the logistics regression model, and a probabilistic neural network (PNN) model was established by significant factors. The training group was trained by network and the test group was detected by network.ResultsThe accuracy, sensitivity and specificity of PNN model was 92%,75% and 95.23%, respectively. The

accuracy, sensitivity and specificity of logistics regression model was 84% ,50.0% and 82.61% respectively.ConclusionThe neural network had a great deal of flexibility in the survival analysis. Nonlinear effects could be accommodated in the model, and random characteristics of the data such as the distribution was

not required to make assumptions and might not meet the H0 supposition, The neural network had broad application
prospects.

Key words： Artificial neural network　Cervical cancer　Prognosis

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