

人工神经网络在肾小球滤过率估算中的应用 (PDF)

《第三军医大学学报》 [ISSN:1000-5404/CN:51-1095/R] 卷: 34 期数: 2012年第05期 页码: 409-411 栏目: 论著 出版日期: 2012-03-15

Title: Estimating glomerular filtration rate with artificial neural network: a model establishment

作者: 李宁山; 刘迅; 吴效明; 黄岳山; 娄探奇
华南理工大学生物医学工程系; 中山大学附属第三医院肾内科

Author(s): Li Ningshan; Liu Xun; Wu Xiaoming; Huang Yueshan; Lou Tanqi
Department of Biomedical Engineering, South China University of Technology, Guangzhou, Guangdong Province, 510006; Department of Nephrology, Third Affiliated Hospital of Sun Yet-sun University, Guangzhou, Guangdong Province, 510630, China

关键词: 慢性肾脏病; 肾小球滤过率; 人工神经网络

Keywords: chronic kidney disease; glomerular filtration rate; artificial neural network

分类号: R318;R334.1

DOI: -

文献标识码: A

摘要: 目的 建立一个适用于中国慢性肾脏病人群的肾小球滤过率估算模型, 基于人体体征及血清肌酐来估算肾小球滤过率。 方法 采用人工神经网络方法中的广义回归神经网络 (generalized regression neural network, GRNN) 方法, 基于562例训练样本集建立模型, 在独立的269例验证样本集中验证模型性能, 与传统的统计学回归方法得到的GFR估算经验方程比较。 结果 与经验方程相比, 神经网络模型具有更高的准确性 ($P<0.05$)。 结论 人工神经网络作为常用的机器学习方法之一, 应用于生物医学信息处理时, 比传统统计学方法具有更大的优势, 利用该方法建立的肾小球滤过率估算模型具有更好的估算精度。

Abstract: Objective To build a model to estimate glomerular filtration rate for Chinese patients with chronic kidney disease based on serum physiological parameters and demographic characteristics. Methods Generalized regression neural network (GRNN), one approach of artificial neural network, was applied to build the model based on 562 training data set, and the performance of the model was validated in 269 validation data set. Then the results were compared with empirical equations derived from traditional regression method of statistics. Results Compared with empirical equations, the performance of artificial neural network was better in accuracy with statistically significant differences ($P<0.05$). Conclusion Our study indicated that approach of artificial neural network, as a common machine learning method, is superior to the traditional statistical method in biomedical information processing. Our model to estimate glomerular filtration rate is more accurate.

参考文献/REFERENCES

李宁山, 刘迅, 吴效明, 等. 人工神经网络在肾小球滤过率估算中的应用[J]. 第三军医大学学报, 2012, 34(5): 409-411.

备注/Memo: -

更新日期/Last Update: 2012-03-01

导航/NAVIGATE

[本期目录/Table of Contents](#)

[下一篇/Next Article](#)

[上一篇/Previous Article](#)

工具/TOOLS

[引用本文的文章/References](#)

[下载 PDF/Download PDF\(441KB\)](#)

[立即打印本文/Print Now](#)

[推荐给朋友/Recommend](#)

[查看/发表评论/Comments](#)

统计/STATISTICS

[摘要浏览/Viewed](#)

全文下载/Downloads 147

评论/Comments 105

[RSS](#) [XML](#)