

论文

中老年血脂异常患者6种微量元素营养状况的主成分分析

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摘要:

目的 利用主成分分析方法, 探讨中老年血脂异常患者血清中各类微量元素失衡特征, 分析其变化与血脂异常的关系。**方法** 从济南市历城区、历下区、槐荫区和天桥区4个社区的中老年人群中选取血脂异常患者, 排除其中带有心脑血管疾病、糖尿病及家族遗传性血脂异常等状况的病例, 剩余137例血脂异常患者作为病例组, 另选取119例健康居民作为对照组, 进行病例对照研究。运用主成分分析, 对血脂异常患者体内血清锌(Zn)、硒(Se)、锰(Mn)、铁(Fe)、铜(Cu)、铬(Cr)6种微量元素进行综合评价。结果 病例组和对照组前4个主成分累积贡献率均超过75%, 被确定为重要主成分, 建立主成分函数表达式, 分析主成分与原始变量之间的关系。利用主成分分析得到反映血脂异常的4个主成分, 这4个分别是反映了Se和Mn、Fe、Zn, Fe和Cu元素的综合指标。结论 中老年血脂异常患者血清中Zn元素有明显的减少趋势; Se元素有明显的增加趋势; Mn元素变化的作用并不明显; Cu元素和Cr元素相对不足; Fe元素过量或缺乏均会引起血脂代谢异常。

关键词: 血脂异常; 微量元素; 主成分分析

Principal components of 6 trace elements in the serum of middle-aged and elder people with dyslipidemias

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Abstract:

Objective To investigate the imbalance features of 6 trace elements (Zn, Se, Mn, Fe, Cu and Cr) in the serum of middle-aged and elder people with dyslipidemias, and to analyze connections between such imbalance and dyslipidemias. **Methods** Patients with dyslipidemias were selected from the middle-aged and elderly population in 4 districts of Jinan, and those with cardiac cerebral and vascular diseases, diabetes mellitus or hereditary dyslipidemias were excluded. 137 patients were involved in the case group, and 119 healthy residents were randomly selected from the same population as the control group. With principal component analysis (PCA), 6 trace elements in the serum of all the subjects were comprehensively evaluated. **Results** The first 4 principal components, whose accumulated contribution rates were all more than 75%, were extracted, and their function formulas were established. After that, the relation between the 4 principal components and their original variables was analyzed. The 4 principal components represented Se and Mn, Fe, Zn, and Fe and Cu, respectively. **Conclusion** The content of Zn in the serum of middle aged and elder people with dyslipidemias tends to significantly decrease, and that of Se has a tendency to remarkably increase. Contents of Cu and Cr are relatively insufficient. There is no apparent relevance between the content of Mn and dyslipidemias. An excess or lack of Fe are related to dyslipidemias.

Keywords: Dyslipidemias; Trace elements; Principal component analysis

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