

论文

贫血人群中体内铁储量评估与分析

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摘要:

目的 定量评估中国河南省农村地区贫血人群的铁储量(BIS)水平和分布特征,分析BIS与传统铁营养评估指标之间的相关性及可能存在的优势。方法 于2010年1月对河南省南阳市宛城区10个行政村1 757名村民和学生进行贫血和铁缺乏状况调查,测定贫血个体的血清铁蛋白(SF)和转铁蛋白受体(sTfR)水平,定量估计个体BIS水平并分析该指标在不同人群中的分布特征,比较缺铁性贫血与非缺铁性贫血个体BIS水平之间的差异及BIS、血红蛋白(Hb)、SF、sTfR 4个指标之间的相关性,探索BIS与Hb之间的数量依存关系。结果 各研究人群BIS的平均水平分别为青春期末女生(11.1±2.7)mg/kg、育龄期妇女(5.9±6.5)mg/kg、老年女性(12.8±4.1)mg/kg、老年男性(11.4±5.3)mg/kg;青春期末女生缺铁性贫血组BIS平均水平为(0.02±5.43)mg/kg,非缺铁性贫血组为(11.39±1.99)mg/kg;育龄期妇女缺铁性贫血组BIS平均水平为(0.42±4.66)mg/kg,非缺铁性贫血组为(10.82±2.93)mg/kg;老年男性缺铁性贫血组BIS平均水平为(-4.59±6.78)mg/kg,非缺铁性贫血组为(12.39±3.16)mg/kg;老年女性缺铁性贫血组BIS平均水平为(3.11±2.03)mg/kg,非缺铁性贫血组为(13.80±2.64)mg/kg;4个人群缺铁性贫血组与非缺铁性贫血组BIS平均水平差异均有统计学意义($P<0.01$);Pearson相关分析表明,各人群BIS水平与Hb水平均呈正相关($P<0.05$),BIS与Hb之间存在数量依存关系,可以建立拟合的线性方程。结论 BIS是一个综合评估贫血个体铁营养状况的良好指标。

关键词: 铁储量(BIS) 贫血 铁蛋白(SF) 转铁蛋白受体(sTfR) 血红蛋白(Hb)

Quantitative assessment of body iron stores in anemic populations

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Abstract:

Objective To quantitatively estimate the body iron stores(BIS) among anemic populations in rural areas of Henan province, China. Methods Level of serum ferritin(SF) and soluble transferrin receptor(sTfR) were measured for each anemic subject. BIS was calculated with the equation: $BIS(mg/kg) = -[\log(sTfR/SF) - 2.8229] / 0.1207$. BIS levels and their distribution in different populations were evaluated and the differences in BIS level between iron deficiency anemia and non-iron deficiency anemia subjects were assessed. The correlations of BIS to hemoglobin(Hb), SF and sTfR were analyzed and the quantum dependency relationship between BIS and Hb was explored in four studied populations. Results The average levels of BIS were 11.1±2.7 mg/kg, 5.9±6.5 mg/kg, 12.8±4.1 mg/kg, and 11.4±5.3 mg/kg in observed subgroups of adolescent girls, women of childbearing age, male elderly, and female elderly, respectively. After dividing the subjects of each subgroup into iron deficiency anemia(IDA) and non-iron deficiency anemia(non-IDA), we found that BIS level of IDA group in subgroup of adolescent girls was 0.02±5.43 mg/kg and BIS level of non-IDA group was 11.39±1.99 mg/kg. BIS level of women of childbearing age in IDA group was 0.42±4.66 mg/kg and that of in non-IDA group was 10.82±2.93 mg/kg. BIS level of male elderly in IDA group was -4.59±6.78 mg/kg and that of in non-IDA group was 12.39±3.16 mg/kg. BIS level of female elderly in IDA group was 3.11±2.03 mg/kg and that of in non-IDA group was 13.8±2.64 mg/kg. The differences in BIS level between IDA and non-IDA groups were all significant in the four populations ($P<0.01$ for all). BIS level positively correlated to Hb level and the Pearson coefficients between them were all significant in the four populations studied. BIS was dependent on the level of Hb and the linear equation could be established for the four subgroups, respectively. Conclusion BIS is a good indicator which could comprehensively reflect the iron status in anemic population.

Keywords: body iron stores anemia serum ferritin soluble transferrin receptor

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参考文献:

- [1] United Nations Children's Fund, United Nations University and World Health Organization. Iron deficiency anemia assessment, prevention and control: a guide for program managers. Geneva: World Health Organization, 2001.
- [2] 黄桥梁, 胡晓抒, 袁宝君. 缺铁性贫血研究进展[J]. 中国公共卫生, 2006, 22(11): 1406-1407.
- [3] 张金磊, 李路平. 中国居民2008年缺铁性贫血疾病负担分析[J]. 中国公共卫生, 2011, 27(5): 647.
- [4] Cook JD, Flowers CH, Skikne BS. The quantitative assessment of body iron[J]. Blood, 2003, 10: 3359-3364.
- [5] Skikne BS, Flowers CH, Cook JD. Serum transferrin receptor: a quantitative measure of tissue iron deficiency[J]. Blood, 1990, 75: 1870-1876.
- [6] Signo P, Barassi A, Novario R, et al. Preliminary evaluation of the performance of a new, highly sensitive commercial immunoassay for serum ferritin determination[J]. Clin Chem Lab Med, 2005, 43: 883-885.
- [7] 于守洋. 缺铁性贫血的防治[J]. 中国公共卫生, 1990, 6(7): 319-322.
- [8] Punnonen K, Irjala K, Rajamaki A. Serum transferrin receptor and its ratio to serum ferritin in the diagnosis of iron deficiency[J]. Blood, 1997, 89: 1052-1057.
- [9] Malope BI, MacPhail AP, Alberts M, et al. The ratio of serum transferrin receptor and serum ferritin in the diagnosis of iron status[J]. Br J Haematol, 2001, 115: 84-89.
- [10] Rimon E, Levy S, Sapir A, et al. Diagnosis of iron deficiency anemia in the elderly by transferrin receptor-ferritin index[J]. Arch Intern Med, 2002, 162: 445-449.
- [11] Jain S, Narayan S, Chandra J, et al. Evaluation of serum transferrin receptor and sTfR ferritin indices in diagnosing and differentiating iron deficiency anemia from anemia of chronic disease[J]. Indian J Pediatr, 2010, 77: 179-183.

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