

论文

儿童低发育商与母亲孕早期血清游离脂肪酸关系

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摘要:

目的 分析儿童低发育商与母亲孕早期血清游离脂肪酸(PUFA)水平的关系,为孕早期孕妇补充富含脂肪酸类食物提供理论依据。方法 根据《贝利婴幼儿发展量表(中国城市修订版)》规定的神经发育指数确定43名2岁儿童的发育商 $\leq P_5$ 的儿童作为病例组,依据匹配条件为1:3配对选取129名发育商正常的儿童作为对照组,运用气相色谱-质谱联用方法检测母亲孕早期血清游离脂肪酸水平。结果 低发育商与发育商正常儿童的母亲孕早期血清中PUFA、 ω -3PUFA、 ω -6PUFA、DPA、DHA、EPA、EPA+DHA、DHA+AA水平差异均具有统计学意义($P<0.05$);Cox模型分析结果显示,孕妇孕早期血清中高水平的EPA是儿童低发育商的保护性因素($OR=0.37,95\%CI=0.17-0.79$)。孕妇孕早期血清中EPA水平分别与DPA($r=0.608$)、DHA($r=0.659$)、AA($r=0.605$)和DHA+AA($r=0.676$)水平呈正相关且具有统计学意义($P<0.01$);EPA在孕妇血清中的含量随着孕妇孕早期摄入鱼虾等海产品频率降低呈下降趋势($F=3.410,P=0.019$)。结论 孕早期多不和脂肪酸摄入量不足影响幼儿智力发育,孕妇应多补充富含多不饱和脂肪酸的食物。

关键词: 游离脂肪酸 智力 智力测验 巢式病例对照研究

Correlation between low development quotient of children and first-trimester serum level of free fatty acids in mothers: a nested case-control study

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Abstract:

Objective To explore the correlation between low development quotient of children and first-trimester serum level of free fatty acids in the mothers, and to provide a basis for supplementing food rich in fatty acid in early pregnancy. Methods The Bayley Scales of Infant Development of China Revision (BSID-CR) was used to evaluate the development of the infants ($n=811$). Children with mental development index (MDI) $< P_5$ (1.64 standard deviation below the mean) were classified as the low development quotient group (cases, $n=43$). One case was paired with three children with normal intelligence matched for maternal age, education, and family income. We used gas chromatography-mass spectrometry (GC-MS) to determine first-trimester serum level of free fatty acids. Results There were significant differences in the levels of polyunsaturated fatty acids (PUFA), ω -3PUFA, ω -6PUFA, docosapentaenoic acid (DPA), docosahexaenoic acid (DHA), eicosapentaenoic acid (EPA), EPA+DHA, DHA+arachidonic acid (AA) between the cases and the controls ($P<0.05$ for all). High level of EPA served as a protective factor of child low development quotient (odds ratio=0.37, 95% confidence interval: 0.17-0.79). Correlation analysis demonstrated that there were relationships between EPA and DPA ($r=0.608$), DHA ($r=0.659$), AA ($r=0.605$), and DHA+AA ($r=0.676$). The level of EPA in maternal serum showed a downward trend with the reduced frequency of fish and other seafood intake ($F=3.410, P=0.019$). Conclusion The study suggests that there is an association of child's low development quotient with the lack of PUFA supplement of the pregnancy woman. Pregnant women should supplement PUFA to ensure normal mental development of the infant.

Keywords: free fatty acid intelligence intelligence test nested case-control study

收稿日期 2013-04-16 修回日期 网络版发布日期

DOI: 10.11847/zgggws2013-29-07-03

基金项目:

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