·论　著·

缺血缺氧性脑病新生儿的神经行为评分与血浆神经肽Y水平的相关性

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【摘要】**目的** 探讨缺血缺氧性脑病(HIE)新生儿的神经行为评分与血浆神经肽Y水平的相关性。**方法** 选取62例HIE新生儿作为观察组,另选取60例相同出生日龄的健康新生儿作为对照组。采用新生儿神经行为量表(NBNA)测定神经行为评分,利用放射免疫分析法检测血浆神经肽Y水平。**结果** 观察组NBNA评分[(34.01±0.64)分]显著低于对照组[(38.92±0.71)分;*P*<0.05],血浆神经肽Y水平[(192.74±13.62)ng/L]显著高于对照组[(65.75±10.01)ng/L;*P*<0.05)。治疗后,HIE新生儿NBNA评分[(37.43±0.82)分]显著高于治疗前[(34.01±0.64)分;*P*<0.05],血浆神经肽Y水平[(74.45±9.82)ng/L]显著低于治疗前[(192.74±13.62)ng/L;*P*<0.05)。HIE新生儿NBNA评分与血浆神经肽Y表达水平呈明显负相关(*r*=−0.527,*P*<0.05)。**结论** 与正常新生儿相比,HIE新生儿的神经行为评分与血浆神经肽Y水平存在明显异常,且二者具有明显负相关。

【关键词】缺血缺氧性脑病;新生儿;神经行为;神经肽Y;血浆;相关性

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Relationship between neurological behavior score and plasma level of neuropeptide Y in neonates with hypoxic ischemic encephalopathy

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【**Abstract**】 **Objective** To investigate the relationship between the neurological behavior score and the plasma level of neuropeptide Y in the neonates with hypoxic ischemic encephalopathy (HIE). **Methods** The neurological behavior scores and plasma levels of neuropeptide Y were determined respectively by the neonatal behavioral neurological assessment (NBNA) and radioimmunoassay in 62 neonates with HIE (observed group) and 62 healthy neonates (control group). The outcomes were compared between both the groups. The relationship of NBNA scores with plasma levels of neuropeptide Y was analyzed by Pearson related model. **Results** NBNA scores [(34.01±0.64) points] were significantly lower in the observed group before the treatment than those [(38.92±0.71) points] in the control group (*P*<0.05). The plasma level of neuropeptide Y [(192.74±13.620)ng/L] was significantly higher in the observed group before the treatment than that [(65.75±10.00)ng/L] in the control group (*P*<0.05). The NBNA scores [(37.43±0.82) points] were significantly higher after the treatment than those before the treatment in the observed group (*P*<0.05). The plasma level of neuropeptide Y [(74.45±9.82)ng/L] was significantly lower after the treatment than that before the treatment in the observed group (*P*<0.05). The neonatal Pearson model analysis showed that NBNA score was negatively related to the plasma level of neuropeptide Y in the observed group (*r*=−0.527, *P*<0.05). **Conclusions** The neurological behavior score and the plasma level of neuropeptide Y are significantly abnormal in the neonates with HIE compared to those in the healthy newborns. There is significant negative correlation between NBNA score and plasma level of neuropeptide Y.

【**Key words**】Neonates; Hypoxic ischemic encephalopathy; Neurological behavior; Neuropeptide Y; Plasma level

缺血缺氧性脑病(hypoxic ischemic encephalopathy,HIE)是导致新生儿窒息和残疾的最常见病因之一,常常原因是妊娠期或娩出时受到血液循环和气体交换障碍的不良影响导致局部脑组织血氧浓度降低。据统计,超过50%的HIE新生儿由宫内窒息诱发,约40%病例发生于娩出过程[1]。在HIE新生儿中,血浆神经肽Y水平较正常新生儿异常升高,可评估病情和预后。本文选取62例HIE新生儿和60例健康新生儿做对照,探讨HIE新生儿的神经行为与血浆神经肽Y水平的相关性,为HIE脑损伤程度评估提供参考。

1 资料与方法

1.1 *研究对象* 从我院新生儿科2014年7月至2015

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年12月收治的HIE新生儿中随机选取62例作为观察组，另从体检中心随机选取60例相同出生日龄的健康新生儿记为对照组。纳入标准：①均为足月新生儿，观察组均符合《临床新生儿学》[2]中HIE有关诊断标准，对照组均为健康新生儿；②观察组均未给予相关治疗；③新生儿家属均知情同意。排除标准：①出现严重并发症，如颅内出血、吸入性肺炎等；②合并其它病症，如血液系统、内科系统或外科疾病；③家属拒绝配合研究。观察组男37例，女25例；孕周38~41周，平均(40.07±0.58)周；出生日龄5 h~17 d，平均(12.37±3.12)d；出生体质量1 600~3 900 g，平均(2316.25±129.56)g；发病时间19 h~3 d，平均(27.85±5.36)h；病情严重程度轻度23例，中度27例，重度12例。对照组男34例，女26例；孕周38~41周，平均(40.12±0.43)周；出生日龄3 h~15 d，平均(12.76±3.09)d；出生体质量1 500~3 800 g；平均(2397.83±116.74)g。两组性别、孕周、出生日龄、出生体质量等均无统计学差异(P>0.05)。

1.2 治疗方法 入院后在接受相关检测以及评分确诊后，采取相应治疗。①及时纠正低氧血症，纠正酸中毒，及时进行人工呼吸器呼吸，及时补液，补充葡萄糖液(8 g/kg)，防止出现脑供氧不足。②控制惊厥，及时进行预防性的镇静(静脉注射苯巴比妥，20 mg/kg)；③降低颅内压，使用速尿(1 mg/kg)并加用地塞米松(0.5 mg/kg)控制颅内压；④出现脑神经损伤的患儿进行中枢神经兴奋治疗。

1.3 观察指标 ①神经行为测定方法：采用新生儿神经行为量表(neonatal neurological assessment，NABA)对两组新生儿神经行为进行测定[3]。测定条件：安静、温暖、半暗病房，喂奶后1 h进行测定，新生儿处于睡眠状态。NBNA共分为行为能力(6项)、被动肌张力(4项)、主动肌张力(4项)及原始反射(3项)，总分≥37分记为正常，35~36记为可疑脑损伤，<35记为脑损伤。②血浆神经肽Y检测方法：抽取空腹股静脉血3 ml于抗凝管中，3 500转/min离心10 min后取血浆保存于–20 ℃冰箱中备用。采用放射免疫分析测定血浆神经肽Y水平，由上海酶联免疫生物有限公司提供检测试剂盒，所用仪器为美国Bio~rad公司全自动生化分析仪。

1.4 统计学分析 应用SPSS 18.0软件进行分析，计量资料以$\bar{x}\pm s$表示，采用独立样本t检验；计数资料采用χ^2检验；采用Pearson相关系数检验行为评分和血浆神经肽Y水平的相关性；以P<0.05为差异有统计学意义。

2 结 果

2.1 两组NBNA评分和血浆神经肽Y水平比较 观察组NBNA评分[(34.01±0.64)分]显著低于对照组[(38.92±0.71)分；P<0.05]，血浆神经肽Y水平[(192.74±13.62) ng/L]显著高于对照组[(65.75±10.01)ng/L；P<0.05)。

2.2 HIE新生儿治疗前后NBNA评分与血浆神经肽Y的比较 治疗后，HIE新生儿NBNA评分[(37.43±0.82)分]显著高于治疗前[(34.01±0.64)分]，血浆神经肽Y水平[(74.45±9.82) ng/L]显著低于治疗前[(192.74±13.62)ng/L；P<0.05)。

2.3 HIE新生儿NBNA评分与血浆神经肽Y水平的相关性 HIE新生儿NBNA评分与血浆神经肽Y水平呈明显负相关(r=–0.527，P<0.05)。

3 讨 论

HIE多是局部脑组织发生缺血缺氧性病变导致神经行为功能障碍[4,5]，且常出现各种严重并发症，危及患儿生命安全。加之新生儿机体娇嫩，生理结构特殊，大多组织器官功能尚不完善，一旦发生HIE，若得不到及时治疗将会迅速导致动脉边缘出现缺血性损害。相关研究指出，缺血缺氧可导致血管源性脑水肿，同时还可产生细胞毒性，并随着血压波动幅度不断增强使得血管破裂出血的危险性明显升高[5~7]。此种病理生理改变最终将会导致选择性神经元坏死，多数病例会因此损伤基底节区，遗留不同程度的后遗症。因此，选用特异性指标及时、准确评估HIE新生儿病情严重程度，对确定正确治疗方案、改善患儿预后极其重要[8,9]。

NBNA是常用的评估HIE新生儿神经行为损伤程度的工具。该量表经过多数研究验证均显示良好的可信度[10]。神经肽Y在中枢神经系统中广泛分布，作为一种重要的神经递质，存在于交感神经末梢[11]，并和去甲状腺素产生显著协同作用。当机体交感神经受到外界刺激或处于休克应激状态时，神经肽Y协同去甲状腺素共同作用于局部微小血管，同时还可增强5–羟色胺的缩血管效应，引发血管痉挛。血浆神经肽Y水平越高，对于颅内病灶局部脑血管的刺激越强烈，引发的血管痉挛程度也越严重。神经肽Y在HIE新生儿中升高机制为[12,13]：①缺血缺氧可导致机体代谢功能紊乱，引发微循环障碍可导致血小板聚集式破坏，使得血浆神经肽Y水平异常升高；②HIE急性期大脑皮质矢状旁区较易受

损，对于脑干和丘脑部位的神经核损伤较为严重，均可导致神经肽Y水平升高。HIE新生儿脑组织损伤越严重，血浆神经肽Y水平越高[14,15]。而脑组织损伤越严重[16,17]，NBNA评分越低，间接证实NBNA和血浆神经肽Y水平呈负相关[18]。

综上所述，HIE新生儿神经行为评分越低，血浆神经肽Y水平越高。我们认为可将血浆神经肽Y水平作为HIE新生儿神经损伤程度的重要指标。

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