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足月缺氧缺血性脑病患儿¹H-MRS与新生儿神经行为测定评分的相关性

Correlation between ¹H-MRS and neonatal behavioral neurological assessment score in full-term neonates with HIE

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作者	单位	E-mail
杜奕	宁夏医科大学,宁夏 银川 750004	
李艳	宁夏医科大学,宁夏 银川 750004	
陈志强	宁夏医科大学总医院放射科,宁夏 银川 750004	czq642000@163.com
刘玲玲	宁夏医科大学,宁夏 银川 750004	
李鹏	宁夏医科大学总医院放射科,宁夏 银川 750004	
田淑萍	宁夏医科大学总医院新生儿科,宁夏 银川 750004	
吴玉华	宁夏医科大学总医院新生儿科,宁夏 银川 750004	
陈兵	宁夏医科大学总医院放射科,宁夏 银川 750004	
金国宏	宁夏医科大学总医院放射科,宁夏 银川 750004	
杨文君	宁夏医科大学生育力保持教育部重点实验室,宁夏 银川 750004	ywjo_o@126.com

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中文摘要:

目的 探讨足月缺氧缺血性脑病(HIE)患儿¹H-MRS与NBNA评分的相关性。方法 纳入足月HIE患儿101例,29例日龄≤3天、33例日龄4~7天、39例日龄8~14天;另选取同期足月健康新生儿37名作为正常对照。行常规MR及¹H-MRS检查,根据MRI表现对HIE进行分级,比较不同程度HIE患儿和正常新生儿N-乙酰天门冬氨酸(NAA)/胆碱复合物(Cho)、NAA/肌酸(Cr)及Cho/Cr差异;对HIE患儿行新生儿神经测定(NBNA)评分,比较不同程度HIE患儿NBNA评分差异;评价¹H-MRS指标与NBNA评分的相关性。结果 ≤3天重度HIE患儿,4~7天和8~14天中、重度患儿基底节NAA/Cho低于相应日龄正常新生儿($P < 0.05$),所有日龄中、重度HIE患儿基底节NAA/Cr和额叶NAA/Cho均低于相应日龄正常新生儿($P < 0.05$);≤3天和8~14天不同程度HIE患儿基底节NAA/Cho、4~7天不同程度HIE患儿额叶NAA/Cho差异有统计学意义($P < 0.05$)。不同日龄重度HIE患儿NBNA评分均低于中度HIE患儿($P < 0.05$)。HIE患儿基底节NAA/Cho和NAA/Cr、额叶NAA/Cho与NBNA评分呈正相关($r = 0.238, 0.221, 0.202; P < 0.05$)。结论 HIE患儿¹H-MRS与NBNA评分具有相关性,二者结合有助于早期检出足月儿HIE及评价脑损伤严重程度。

英文摘要:

Objective To investigate the correlation between ¹H-MRS and neonatal behavioral neurological assessment (NBNA) score in full-term neonates with hypoxic-ischemic encephalopathy (HIE). **Methods** Totally 101 neonates with HIE were enrolled, among whom, 29 was ≤3 days, 33 was 4—7 days and 39 was 8—14 days. In addition, 37 healthy neonates at the same period were enrolled as normal controls. Routine MRI and ¹H-MRS examination were performed, and HIE were graded according to MRI findings. N-acetylaspartate (NAA)/choline (Cho), NAA/creatine (Cr) and Cho/Cr in neonates of different grades of HIE and healthy neonates were compared. NBNA was conducted on HIE neonates and compared among neonates with HIE of different grades. The correlation between ¹H-MRS and NBNA score in full-term neonates with HIE were analyzed. **Results** NAA/Cho of the basal ganglia in severe HIE neonates of ≤3 days, moderate and severe HIE neonates of 4—7 days and 8—14 days were all lower than that in healthy neonates (all $P < 0.05$). NAA/Cr of the basal ganglia and NAA/Cho of the frontal lobe in all HIE neonates were lower than those in healthy neonates (all $P < 0.05$). NAA/Cho of the basal ganglia in neonates of ≤3 days and 8—14 days, and NAA/Cho of the frontal lobe in neonates of 4—7 days were found to be different between moderate and severe HIE (all $P < 0.05$). In neonates of different days of age, NBNA score of severe HIE was lower than that of moderate HIE. NAA/Cho and NAA/Cr of the basal ganglia and NAA/Cho of the frontal lobe were positively correlated with NBNA score in HIE neonates ($r = 0.238, 0.221, 0.202, all P < 0.05$). **Conclusion** ¹H-MRS is correlated with NBNA score in HIE neonates, which is helpful to early detecting HIE in full-term neonates and evaluating the extent of brain injury.

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地址：北京市海淀区北四环西路21号大猷楼502室 邮政编码：100190 电话：010-82547901/2/3 传真：010-82547903

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