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## 二维及彩色多普勒超声诊断新生儿缺氧缺血性脑病

### Two-dimensional and color Doppler flow imaging in diagnosis of neonatal hypoxic-ischemic encephalopathy

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#### 中文摘要:

目的 评价二维超声及彩色多普勒超声诊断新生儿缺氧缺血性脑病(HIE)的价值。方法 对85名日龄3~15天的新生儿行颅脑二维及彩色多普勒超声检查,检出39例新生儿HIE,分为轻度、中度及重度HIE;另选正常对照组10名,对比分析HIE患儿的超声特点及大脑中动脉(MCA)的血流参数。结果 轻度HIE超声表现为脑实质回声增强,回声低于脉络丛;中度HIE表现为脑实质回声强度接近脉络丛回声,脑室正常或轻度扩张;重度HIE表现为脑实质弥漫性回声增强,超过脉络丛回声强度,脑实质结构模糊、不清晰。随访示22例HIE患儿7~10天后脑实质回声接近正常;14例HIE患儿10天后脑实质回声仍增强、粗糙,提示可能存在脑白质损伤;3例放弃治疗而失访。与正常对照组比较,不同程度HIE患儿双侧MCA舒张期血流速度差异均有统计学意义( $P<0.05$ )。HIE的严重程度与左侧MCA的舒张期血流速度、阻力指数,右侧MCA的舒张期血流速度、收缩期血流速度、搏动指数及阻力指数相关。不同程度HIE之间MCA的血流参数差异无统计学意义( $P>0.05$ )。结论 颅脑超声检查可较清晰显示新生儿HIE颅内结构及侧脑室变化;结合MCA血流动力学参数,可对新生儿HIE的病情及预后进行评估。

#### 英文摘要:

**Objective** To observe the value of 2D and color Doppler flow imaging in diagnosis of neonatal hypoxic-ischemic encephalopathy (HIE). **Methods** Eight-five infants aged 3—15 days underwent ultrasonography. HIE was detected in 39 infants. Infants with HIE were divided to mild HIE, moderate HIE and severe HIE, and the other 10 normal infants were enrolled as controls (control group). Ultrasonic characteristics and blood flow parameters of middle cerebral artery in 39 infants were analyzed. **Results** Mild HIE neonates showed high-echo in brain parenchyma, while the echo intensity was lower than that of choroid plexus. Brain parenchyma were high-echo in moderate HIE too, and the echo intensity was close to that of choroid plexus. The lateral ventricle was normal or mildly dilated. Infants with severe HIE showed diffuse parenchymal echogenicity, and the echo intensity exceeded to that of choroid plexus. The image of craniocerebra was illegibility and unclear. Twenty-two infants with HIE recovered closely to normal in the following 7—10 days, and 14 infants still showed high-echo and coarse in brain parenchyma after 10 days, which might be prompted the white matter damage. Three infants were lost during follow-up. Compared to control group, significant differences of end diastolic velocity of bilateral middle cerebral artery in different HIE groups were found ( $P<0.05$ ). The severity of HIE had correlation with end diastolic velocity, resistance index of left middle cerebral artery, and peak systolic velocity, end diastolic velocity, resistance index, as well as pulse index of right middle cerebral artery. Differences of flow parameters of middle cerebral artery in different severity of HIE groups were not significant ( $P>0.05$ ). **Conclusion** Ultrasound can clearly show encephalic structure and lateral changes, also can evaluate the severity of HIE and prognosis combining with flow parameters of middle cerebral artery.

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