

2 讨论

皮质发育畸形(MCD)为一大组中枢神经发育障碍的疾病,根据不同发育阶段分为3大类:(1)继发于神经元及胶质细胞增殖或凋亡的畸形;(2)神经元移行异常所致的畸形;(3)移行后发育异常所致的畸形。PNH 归属于第2类^[10]。PNH 在一般人群及癫痫患者中的发生率尚不了解^[9,11]。据报告在难治性癫痫术前评估中PNH 占7%^[1],在MCD 中占15%~20%^[12],在成人难治性癫痫中为2%^[1]。本文报告5例。研究PNH 癫痫的文献很少^[13]。PNH 80%~90%有癫痫发作^[1],多起病于10~20岁^[14],女性明显多于男性,台湾报告男女之比为9:13^[2],Raymond等^[14]总结过去文献为4:30。本文5例中3例为女性,除例5起病于4岁外,其他患者均起病于20~30岁。双侧对称PNH 神经系统检查大多无异常,IQ在平均以上^[15]。双侧PNH 及双侧不对称或一侧性PNH 可有轻度神经系统异常及轻度智力低下^[16]。IQ正常者神经心理测试可发现阅读速度障碍及阅读困难^[9]。此外尚可合并其他颅内畸形,多小脑回畸形最为常见^[12]以及全身其他脏器发育障碍^[2,16]。本文5例神经系统检查均无异常,MRI亦未发现大脑有其他异常。

PNH 的癫痫发作可有多种类型,发作类型与灰质异位的侧别或部位不一定相关^[8]。灰质异位与相关皮质(overlying cortex)其他部位(特别是颞叶内侧结构)甚至对侧皮质形成复杂的癫痫网络^[11]。癫痫发作最常起源于灰质异位及相关皮质,相关皮质,其他部位皮质,仅起源于灰质异位本身者仅为6%^[17]。癫痫发作最基本的原因异常的神经元间的联系而非异位神经元^[18]。癫痫发作的类型主要为局限性发作和继发全面性发作^[2,14]。部分性发作可始于内侧边缘系统、颞叶内侧、颞枕区、顶叶及额叶^[3]。其中以颞叶内侧发作最常见,其次为枕叶^[14,16]。幼儿期起病者可表现为婴儿痉挛^[2]。本文报告5例其中2例为部分性发作(例1为颞叶内侧发作,例4为枕叶发作),例2临床表现虽为“抽搐”发作,但脑电图表现为右侧中后颞特高波幅(300 μv)以上的尖慢复合波,例3、例5为全身抽搐。

与其他MCD(如FCD)不同,PNH 头皮脑电图多无异常。Battaglia等^[3]总结过去文献200例灰质异位清醒及睡眠时背景均正常,但他本人报告54例PNH 中36例有发作间癫痫样发放。多位于双侧不对称PNH 的灰质异位显著侧,或一侧性PNH 的同侧。其中5例为多灶性异常。54例中10例还有非特异性异常,慢波增多,54例中32例于闪光刺激时有后头部节律同化(双侧15例,单侧17例)。其中5例节律同化现象出现于一侧PNH 的对侧。本文5例中2例(例2、例4)背景α频率慢以8-10 Hz为主,1例(例1)右侧后头部α节律少于左侧。4例均有癫痫样发放,例1:临床为颞叶发作,脑电图于右后颞、枕区周期性尖波(见图3),PNH 表现为周期性尖波者尚未见报告;例2:MRI为双侧PNH,而脑电图为右颞癫痫样发放;例3:脑电图为双侧癫痫样发放;例4:MRI为右侧后角结节状灰质异位为主,脑电图为双侧不同步发放;例5:双额叶皮质下带状灰质异位,脑电图为广泛双侧不规则棘慢复合波。脑电图癫痫样发放部位与灰质异位可不一致与文献报告一致^[3,13-15]。

深部电极(包括SEEG)对确定PNH 发作的起源及扩布过程对外科治疗术前设计有重要价值,并有助于研究灰质异

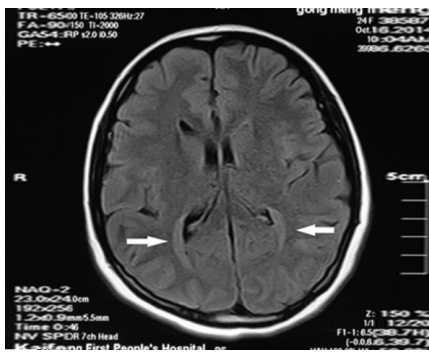


图2 T₂ FLAIR 轴位,双后角后有结节状灰质信号



图3 清醒期右枕、后颞稍多高幅负相尖波、双相尖波呈周期性发放

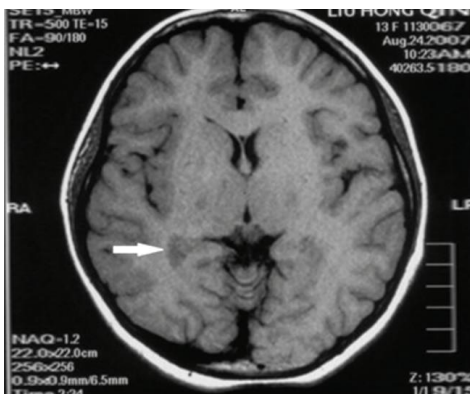


图4 T₁ 轴位,双枕白质内有团状灰质异常信号,右侧著

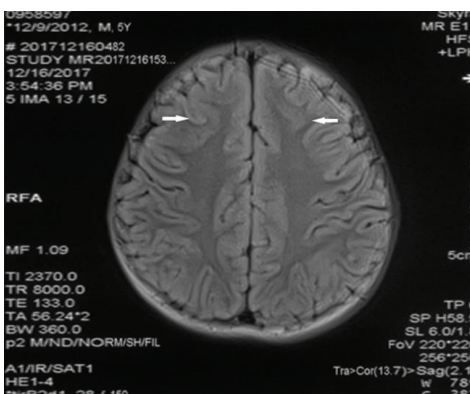


图5 T₂ FLAIR 轴位,双侧额叶可见带状灰质信号,右著

位的功能及异常网络^[3,11,12,20~21]。近年颅内电极的 fMRI (iEEG-fMRI) 可以发现异位灰质在癫痫异常网络中的作用^[22]。本文 5 例由于患者不同意做术前评估未能做颅内电极监测。

PNH 临床发作及头皮脑电图无特殊性,临床诊断主要依靠 MRI,CT 无能为力^[9,14]。灰质异位的 MRI 表现在各序列均与正常皮质密度(信号)相同(isointense)。结节呈圆形或椭圆形(<5 mm 为小结节,>5 mm 为大结节),多个结节可融在一起沿整个脑室壁排列并突入脑室,使脑室壁呈凸凹不平状,但不涉及Ⅲ、Ⅳ脑室。连续结节可位于双侧脑室壁,对称或不对称,亦可位于一侧脑室壁,多为右侧^[14],亦可为单个结节多位于脑室后角或三角区,较少见于颞角。少数病例结节可深入白质,甚至侵犯正常皮质。PNH 可以合并其他大脑发育障碍如:脑室扩大、胼胝体发育障碍、小脑发育障碍、枕大池扩大、相关皮质萎缩、多小脑回畸形、颞叶内侧体积小或扭转以及海马硬化^[1,2,5,9,11,14,15,23,24]。本文 5 例中 2 例(例 1、例 2)为双侧对称 PNH,1 例(例 3)为双侧 PNH,右侧著;1 例(例 4)为双侧单个结节,右侧著;1 例(例 5)为双额叶皮质下带状灰质异位。5 例 MRI 均未见大脑其他异常。

灰质异位的癫痫发作几乎均为药物难治者^[9,15]。在癫痫源区明确者手术治疗有效,由于灰质异位的致病机制非常复杂,不但涉及异位灰质及其相关皮质,甚至涉及其他部位灰质,所以术前评估非常重要,SEEG 是必不可少的。只有 SEEG 可以发现致痫区的范围,有助于设计手术方案。其他颅内电极(硬膜下电极、深部电极)难以完全达到此目的^[12,15,20]。如 Mai 等^[16]报告 1 例灰质异位发作性黑矇及视错觉,根据 SEEG 定位仅切除右颞下回后 1/3 及梭状回,未切除结节,术后发作基本消失。Stefan 等^[15]报告 1 例颞叶发作,MRI、DTI、PET、颅内电极发现两个致痫区,右侧颞枕区底部及脑室周灰质异位结节,由于该结节接近视通路,仅切除颞枕叶底部皮质,发作消失。亦有射频热凝(radiofrequency thermocoagulation)异位结节有效的报告^[19]。

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