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产后与非产后抑郁症患者事件相关电位 P300 的对比研究 *

唐英¹ 陈玖^{2△} 黄平¹ 杨来启² 吴兴曲²

(1 成都市新都区妇幼保健院妇产科 四川 成都 610500; 2 解放军第三医院全军精神疾病防治中心 陕西 宝鸡 721004)

摘要 目的:探讨产后抑郁症与非产后抑郁症患者事件相关电位 P300 的差异,为产后抑郁症的预防提供参考指标。**方法:**选择 2011 年 1 月~2012 年 10 月解放军第三医院精神科收治的 35 例产后抑郁症患者(产后组)和 36 例非产后抑郁症患者(非产后组)为研究对象,并检测其事件相关电位 P300,并与 36 名健康志愿者(对照组)的结果进行比较。**结果:**(1)与对照组相比,产后组、非产后组 P2、N2、P3 潜伏期均显著延迟,P2、N2、P3 波幅均明显降低,差异均有统计学意义($P<0.05$)。(2)与产后组相比,非产后组 P2、N2、P3 潜伏期差异均无统计学意义($P>0.05$)。P2、N2 波幅均偏高,差异均有统计学意义($P2 [(5.0 \pm 2.1) \text{ ms vs. } (3.9 \pm 1.8) \mu\text{V}]$, $N2 [(3.2 \pm 1.7) \mu\text{V vs. } (2.1 \pm 1.0) \mu\text{V}]$, $P<0.05$),P3 波幅差异无统计学意义($P>0.05$)。**结论:**产后与非产后抑郁症患者认知功能均受损,非产后抑郁患者受损程度大于产后抑郁患者;产后抑郁的外界感知能力和早期注意受损程度大于非产后抑郁患者。

关键词: 产后抑郁症;事件相关电位;P300

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Comparative Study on the Event-related Potential P300 between Postpartum and Non Postpartum Depression*

TANG Ying¹, CHEN Jiu^{2△}, HUANG Ping¹, YANG Lai-q², WU Xing-qu²

(1 Department of Obstetrics and Gynecology, Service Centre for Maternal and Child Care in the Xindu District of Chengdu, Chengdu, Sichuan, 610500, China; 2 Center for Mental Disease Control and Prevention, Third Hospital of PLA. Baoji, Shaanxi, 721004, China)

ABSTRACT Objective: To explore the difference of event-related potential P300 between postpartum and non postpartum depression, and provide susceptible index for the prevention of postpartum depression. **Methods:** 35 cases of postpartum depression (postpartum depression group) and 36 cases of non postpartum depressions (non postpartum depression group) hospitalized in Third Hospital of PLA from January 2011 to October 2012 were selected, event-related potentials P300 were tested and compared with 36 cases of healthy subjects (control group). **Results:** (1) Compared with the control group, the postpartum depression group and non postpartum depression group had significant longer latency periods and lower amplitudes of P2, N2, P3($P<0.05$). (2) Compared with the postpartum depression group, no statistical difference of the latency periods of P2, N2, P3 was found in the non postpartum depression group ($P>0.05$); the amplitudes of P2, N2 were lower in the non postpartum depression group ($P2 [(5.0 \pm 2.1) \text{ ms vs. } (3.9 \pm 1.8) \mu\text{V}]$, $N2 [(3.2 \pm 1.7) \mu\text{V vs. } (2.1 \pm 1.0) \mu\text{V}]$, $P<0.05$), and no statistical difference of the amplitude of P3 was found in the non postpartum depression group ($P>0.05$). **Conclusion:** Both postpartum and non postpartum depression presented a defect on the cognitive function, and the extent of damage in the non postpartum depression was worse than those in the postpartum depression. The extent of external perception and early attention damage in the postpartum depression was worse than those in the non postpartum depression.

Key words: Postpartum depression (PPD); Event-related potential (ERP); P300

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前言

产后抑郁症(postpartum depression, PPD)是指产妇在产褥期内出现抑郁症状,具有一定的认知功能障碍,对产妇及患儿身心健康均可产生不良影响^[1]。事件相关电位(event-related Potential, ERP)是一种长潜伏期的脑诱发电位,是在受试者注意到某客体并对其进行高级认知加工时,如思维、情感、记忆、判断等,在受试者头皮记录下来的电位。国内外研究表明^[2-5],抑郁

症患者均存在认知功能的损害,但尚无产后与非产后抑郁患者进行对比研究的文献报道,其认知功能差异并不清楚。本研究通过 ERP 技术观察首发产后与非产后抑郁症患者 P300 指标的差异,旨在探讨其认知功能的差异,以便为评估产后抑郁患者提供易感性指标。

1 对象与方法

1.1 研究对象

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作者简介:唐英(1985-),女,本科,护士长,主要研究方向:产后抑郁症患者的预防、治疗、康复研究

△通讯作者:陈玖,电话:0917-8957435, E-mail: academicchen@163.com

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所有研究对象为 2011 年 1 月~2012 年 10 月解放军第三医院精神科收治的患者。入组标准:①符合《精神疾病诊断与统计手册》(第四版)中首发抑郁发作诊断标准;②治疗前 2 周末进行抗抑郁治疗或服用其他精神类药物;③裸视或矫正视力达到正常;④患者合作;⑤受试者和(或)监护人知情同意并签署同意书。排除标准:①有脑血管病、其他脑部疾病及重大躯体疾病;②有严重的自杀倾向;③有酒或其他物质依赖或滥用。符合入组标准的患者,产后组共 35 例,年龄 22~35 岁,平均年龄(24.4 ± 4.7)岁;平均受教育达(13.6 ± 3.8)年,病程 2~24(10 ± 3)周,17 汉密尔顿抑郁量表 (Hamilton Depression Rating Scale, HAMD)总分 25~37(29 ± 5)分。非产后组共 36 例,女性,年龄 18 岁~36 岁,平均(25.2 ± 4.2)岁;平均受教育达(14.3 ± 4.2)年,病程 2~24(11 ± 6)周;HAMD 评分总分 24~39(30 ± 5)分。本研究经医院伦理委员会批准。对照组:为本单位工作人员、临床进修人员,无精神病和精神病家族史,其他标准同患者组,共 36 名,女性,年龄 21~37 岁,平均年龄(25.9 ± 4.6)岁,平均受教育达(13.9 ± 4.2)年。三组在年龄、教育程度上差异无统计学意义,具有可比性($P>0.05$)。

1.2 方法

1.2.1 量表评定 ①抑郁症患者用 17 项汉密尔顿抑郁量表评定。②对照组用《DSM-IV-TR 轴 I 障碍临床定式检查》筛查。

1.2.2 电生理测定 实验采用德国 BrainAMP MR32 便携式事件相关电位脑电系统,记录电极参照国际脑电学会 10/20 标准

系统,记录电极置于 Cz 点,双耳 TP9,TP10 为参考电极,AFz 接地,采样率为 500 Hz,头皮阻抗 $< 5 \text{ k}\Omega$,灵敏度 $5 \mu\text{V}$,带通低频滤波 0.1 Hz,高频滤波 30 Hz。分析时程为刺激呈现后 800 ms,基线为刺激前 200 ms,离线矫正眨眼等伪迹,波幅大于 $\pm 70 \mu\text{V}$ 者视为伪迹被剔除。实验采用短音刺激,非靶刺激(频率为 1000 Hz),概率为 80%,强度为 80 dB,规律出现。靶刺激(频率为 3000 Hz),概率为 20%,强度为 90 dB,随机出现,穿插于非靶刺激中,受试者需对靶刺激作按键反应。测量靶刺激 P2, N2, P3 潜伏期及波幅。

1.3 统计学方法

所有统计计算均在 SPSS17.0 统计软件包中进行,方差分析比较组间年龄、教育程度、P300 指标的差异,两两之间用 LSD-t 检验比较,检验水准为双侧 $\alpha=0.05$ 。

2 结果

2.1 三组 P300 潜伏期的比较

单因素方差分析结果显示,与对照组相比,产后组、非产后组 P2、N2、P3 潜伏期均显著延迟($P<0.05$);而产后组与非产后组 P2、N2、P3 潜伏期差异均无统计学意义($P>0.05$)。见表 1。

2.2 三组 P300 波幅的比较

单因素方差分析结果显示,与对照组相比,产后组、非产后组 P2、N2、P3 波幅均显著降低($P<0.05$);而非产后组 P2、N2 波幅显著高于产后组 ($P<0.05$),两组 P3 波幅差异不显著($p>0.05$)。见表 1。

表 1 产后与非产后抑郁症患者与对照组 P300 电位 Cz 点潜伏期及波幅比较($\bar{x} \pm s$)

Tabel 1 Comparison of the P300 latency and amplitude at Cz point electrode between the two patient group and control group ($\bar{x} \pm s$)

Group	Case	Latency (ms)			Amplitude (μV)		
		P2	N2	P3	P2	N2	P3
PPDG	35	212.3 ± 65.3^a	281.4 ± 70.8^a	385.8 ± 75.8^a	3.9 ± 1.8^a	2.1 ± 1.0^a	5.7 ± 2.2^a
NPPDG	36	201.6 ± 57.6^a	276.8 ± 71.8^a	370.4 ± 75.2^a	5.0 ± 2.1^{ab}	3.2 ± 1.7^{ab}	5.8 ± 2.0^a
CG	36	171.5 ± 53.6	213.6 ± 61.6	305.8 ± 58.7	8.2 ± 2.5	4.8 ± 1.4	9.9 ± 2.7

*注:产后组:PPDG;非产后组:NPPDG;对照组:CG;与对照组相比,^a $P<0.05$;与产后组相比,^b $P<0.05$ 。

*Note: postpartum depression group: PPDG; non postpartum depression group: NPPDG; Control group: CG; Compared with CG, ^a $P<0.05$; Compared with PPDG, ^b $P<0.05$ 。

3 讨论

产后抑郁症是最常见的分娩后并发症,其发生与生理、心理、家庭、社会等因素密切相关,往往由生理因素与心理因素相互影响^[6,7]。事件相关电位(event-related potential, ERP)是一种长潜伏期的脑诱发电位,是在受试者注意到某客体并对其进行高级认知加工时,如思维、情感、记忆、判断等,在受试者头皮记录下来的电位,其潜伏期提示大脑在识别刺激中对事件进行编码、分类、识别的速度,可客观地反映大脑认知功能和判断功能等高级思维活动;其波幅则反映了大脑进行这些活动时的动员程度或加工深度^[8-10]。本研究主要探讨了产后和非产后抑郁症患者与正常健康者事件相关电位 P300 的差异。

结果显示,与对照组相比,产后、非产后组 P2、N2、P3 潜伏期延长;P2、N2、P3 波幅降低,与 Hetzel^[2,3]、陈玖^[12]、Coul

laut-Valera Garcia^[13]、Zhang^[14]、Karaas-lan^[15]等研究一致。说明产后、非产后抑郁症患者的认知功能都存在损害,即对外界信息加工的编码、分类、识别的速度受损,大脑皮层被激活的程度降低,加工深度也受损。事件相关电位中 P2、N2 分别是反映接受刺激的外界感知能力和早期注意,即一种反应准备状态, P3 是反应对外界刺激信息的高级认知加工能力,与其精神运动性迟滞及联想困难或自觉思考能力下降等临床症状有关^[16-18]。本组研究结果显示,与产后组相比,非产后组 P2、N2、P3 潜伏期差异不显著,P2、N2 波幅偏高,P3 波幅差异不显著,表明产后与非产后抑郁患者信息加工受损的程度不同,非产后抑郁患者受损程度更大,产后抑郁症患者可能反应准备状态只是轻微受损,即信息加工的前期阶段或自动加工阶段受损程度轻^[19,20]。这些结果提示产后与非产后抑郁患者可能采用不同的认知加工系统,两者有交叉的部分,产后抑郁是处于健康与非健康之间

的一种亚健康状态,产后抑郁的外界感知能力和早期注意受损程度大于非产后抑郁患者,P2、N2 受损指标可能是产后抑郁患者的易感性指标。产后抑郁患者的情感投入过少及对信息感受能力较差等更多的是一种状态性受损,更多是由于生活事件的影响,如社会生活角色的转换。本研究观察例数较少,下一步本研究组将扩大样本量,结合高空间分辨的 fMRI 技术去深入探讨产后抑郁症患者的易感性客观指标。

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