

# P300

P300  
Nicdet Viking Quste

82                      52

P300                      P300

(TMI- A TMI- B) Stroop    (                      )                      WMS-

(P 0.01)

P300                      (t=22.990 P 0.01)                      (t= 9.699)

P 0.01)                      P300                      TMI- A                      (r=0.481 P 0.01

r=0.245 P 0.05)                      P300                      (r=- 0.338 P 0.01)

P300

P300

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**Correlation between cognitive function and event-related potential P300 in male long-term hospitalized patients with schizophrenia** GAO Mao-jun, XIAO Wen-huan, TANG Xiao-wei, et al. Wutaishan Hospital of Medical College of Yangzhou University, Yangzhou 225009, China

**Abstract Objective** To investigate the relationship between cognitive function and event-related potential P300 in male long-term hospitalized patients with schizophrenia. **Method** Totals of 82 male long-term hospitalized patients with schizophrenia and 52 healthy controls were recruited. The event-related potential P300 was analyzed by the United States Nicolet Viking Quest evoked potential instrument. The cognitive function was tested by animal naming test category fluency test digital cancellation test trail taking test (TMI- A TMI- B) stroop test (word colour word-colour interference test) block design test and WMS- spatial span test. **Results** There were significant differences between patient group and control group in all items of cognitive function assessment scales (P 0.01). There were longer latency of P300 (t=22.990 P 0.01) and lower amplitude of P300 (t= 9.699 P 0.01) in patient group than that in control group. The P300 latency was positively correlated with digital cancellation test and the score of TMI- A in patient group (r=0.481 P 0.01 r=0.245 P 0.05). Moreover P300 amplitude was negatively correlated with digital cancellation test in patient group (r=- 0.338 P 0.01). **Conclusion** The male long-term hospitalized patients with schizophrenia still have cognitive impairment even when their psychiatric symptoms are stable. The latency and amplitude of event-related potential P300 may be an electrophysiological marker of cognitive function in schizophrenic patients which were correlated with the results in the cognitive assessment scales.

**Keywords** Schizophrenia Event-related potentials P300 Cognitive function

1-2

3

48.0%~53.3%

45.9%~70.5%

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P300

1  
1.1 2015 8 ~2016 7 Q5~100 Hz 600 ms 5 K

(1)  
(DSM 5)

(2) 5 80%

(3) P300 ( P300

(4) (1) ) ( P300

(2) (3)

(4) 1.3 SPSS 16.0

(5) ± (x̄ ± s)

82 (52.0 ± 7.5) t

(8.9 ± 3.0) (28.35 ± 6.85)

(47.241 ± 21.99) mg/d

Pearson P 0.05

(PANSS) 91-120 7 61-90 24 2

60 51 (58.51 ± 18.94) 2.1 1

(10.83 ± 4.75) (18.28 ± 8.73)

(29.66 ± 8.77)

(1) (P 0.01)

DSM 5 (2) (x̄ ± s)

(3) (1) 1

(2) (x̄ ± s)

(3) (2) t值

52 (52.9 ± 5.7)

(9.8 ± 2.9) (P 0.05)

1.2

1.2.1 10

4 (1)

(2)

A(TMT- A) Stroop

(3) B(TMT- B) Stroop

(4) WMS- III

TMT- A TMT- B 2.2 P300

2 P300

1.2.2 P300 (P 0.01)

Nicolet Viking Quste 2.3 P300

P300 3 4

10/20 Cz P300 TMT- A

A1 FPz (P 0.05)

Oddball (P 0.01) P300

80% 85 dB 1 000 Hz

20% 95 dB 2 000 Hz PANSS (P 0.05)

2		P300	( $\bar{x} \pm s$ )
组别	例数	潜伏期(ms)	波幅( $\mu V$ )
患者组	82	409.38 $\pm$ 27.34	4.69 $\pm$ 1.02
对照组	52	309.69 $\pm$ 22.44	7.32 $\pm$ 1.78
t值		22.990*	-9.699*

\*P Q01

P300

P300

3		(r )	
项目	潜伏期	波幅	
言语流畅性功能			
范畴流畅	-0.104	0.124	
动物命名	-0.231	0.137	
注意功能			
数字划消	0.481**	-0.338**	
TMT-A	0.245*	0.046	
单词测验	-0.164	0.178	
颜色测验	-0.081	0.034	
执行功能			
色词干扰测验	0.044	-0.023	
TMT-B	0.317	-0.126	
空间功能			
木块图	-0.004	0.072	
WMS-III总分	-0.219	0.183	

\*P Q05 \*\*P Q01

6

P300

P300

P300

8 9

10

4		(r )	
项目	潜伏期	波幅	
年龄	0.201	-0.054	
受教育年限	-0.099	0.102	
病程	0.198	0.007	
氯丙嗪当量	-0.057	0.099	
PANSS总分	0.072	0.052	
阳性症状总分	-0.159	0.176	
阴性症状总分	0.118	0.004	
一般精神病理总分	0.155	-0.016	

P Q05

Mathis 12

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P300

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3

P300

13

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4

P300

5 6

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TMT- A

P300

TMT- A

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- placebo-controlled trial[J]. *Am J Clin Nutr*, 2006, 84(2):361-370.
- [ 11 ] Mabrouk H, Douki W, Meehri A, et al. [Hyperhomocysteinemia and schizophrenia: case control study] [J]. *L' Encéphale*, 2011, 37(4):308-313.
- [ 12 ] 郝玲, 田熠华, 谭明, 等. 我国部分地区 35 ~ 64 岁人群血浆叶酸水平与年龄性别差异比较[J]. *营养学报*, 2002, 24(4):352-356.
- [ 13 ] 冯磊光, 邵春青, 祁萍萍, 等. 同型半胱氨酸、叶酸和维生素 B<sub>12</sub> 与精神分裂症的关系[J]. *中国神经精神疾病杂志*, 2009, 35(1):40-41.
- [ 14 ] 王琦, 吴艳鹏. 同型半胱氨酸作为精神分裂症早期诊断指标的研究[J]. *世界中医药*, 2016(B06):1684.
- [ 15 ] Mitchell ES, Conus N, Kaput J. B vitamin polymorphisms and behavior: Evidence of associations with neurodevelopment, depression, schizophrenia, bipolar disorder and cognitive decline [J]. *Neurosci Biobehav Rev*, 2014, 47:307-320.
- [ 16 ] Kim TH, Moon SW. Serum Homocysteine and Folate Levels in Korean Schizophrenic Patients[J]. *Psychiatry Investig*, 2011, 8(2):134-140.
- [ 17 ] 陈旭梅, 朱琪玥, 张伟, 等. 首发精神分裂症患者血清叶酸、同型半胱氨酸水平及其与认知功能的关系[J]. *中华医学杂志*, 2014, 94(13):990-993.
- [ 18 ] 刘岱岳, 李乐华. 叶酸辅助治疗精神分裂症阴性症状患者的疗效观察[J]. *医学临床研究*, 2015, 32(4):737-739.
- [ 19 ] 郭强, 李会琪. 血清尿酸和铁蛋白水平在预测脑出血预后中的应用价值[J]. *中华神经外科疾病研究杂志*, 2015, 14(6):510-513.
- [ 20 ] Pérez de la Ossa N, Sobrino T, Silva Y, et al. Iron-related brain damage in patients with intracerebral hemorrhage[J]. *Stroke*, 2010, 41(4):810-813.
- [ 21 ] Sørensen HJ, Nielsen PR, Pedersen CB, et al. Association between prepartum maternal iron deficiency and offspring risk of schizophrenia: population-based cohort study with linkage of Danish national registers[J]. *Schizophr Bull*, 2011, 37(5):982-987.
- [ 22 ] Yanik M, Kocyigit A, Tutkun H, et al. Plasma manganese, selenium, zinc, copper, and iron concentrations in patients with schizophrenia[J]. *Biol Trace Elem Res*, 2004, 98(2):109-117.

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N1 P2

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( PANSS )

- [ 1 ] Medalia A, Lim R. Treatment of cognitive dysfunction in psychiatric disorders [J]. *J Psychiatr Pract*, 2004, 10(1): 17-25.
- [ 2 ] 刘军军, 邵阿林, 吴兵, 等. 长期住院的男性精神分裂症患者认知功能与社会功能研究[J]. *临床精神医学杂志*, 2016, 26(1): 38-40.

- [ 3 ] 陈诚, 王惠玲, 王高华, 等. 精神分裂症患者认知功能损害的相关研究[J]. *神经疾病与精神卫生*, 2015, 15(2): 112-114.
- [ 4 ] 石晶, 司翠平, 刘茜, 等. 事件相关电位(P300)在脑认知功能评估中的研究进展[J/CD]. *中华脑科疾病与康复杂志(电子版)*, 2015, 5(4): 60-63.
- [ 5 ] 段维维, 唐小伟, 杨韦, 等. 男性慢性精神分裂症患者血清脑源性神经营养因子和胶质源性神经营养因子水平及认知功能的对照研究[J]. *临床精神医学杂志*, 2016, 26(5): 329-331.
- [ 6 ] Krakowski MI, Czobor P. Proneness to aggression and its inhibition in schizophrenia: Interconnections between personality traits, cognitive function and emotional processing[J]. *Schizophr Res*, 2016.
- [ 7 ] Sui J, Pearson GD, Du Y, et al. In search of multimodal neuroimaging biomarkers of cognitive deficits in schizophrenia[J]. *Biol Psychiatry*, 2015, 78(11): 794-804.
- [ 8 ] Jeon YW, Polich J. Meta-analysis of P300 and schizophrenia: patients, paradigms, and practical implications[J]. *Psychophysiology*, 2003, 40(5): 684-701.
- [ 9 ] 赵瑾, 杨来启, 陈玖, 等. 精神分裂症患者事件相关电位P300的对照研究[J]. *临床精神医学杂志*, 2012, 22(6): 403-404.
- [ 10 ] Higuchi Y, Sumiyoshi T, Kawasaki Y, et al. Electrophysiological basis for the ability of olanzapine to improve verbal memory and functional outcome in patients with schizophrenia: a LORETA analysis of P300 [J]. *Schizophr Res*, 2008, 101(1/3): 320-330.
- [ 11 ] 米国琳, 蒋燕敏, 梁习云, 等. 利培酮和氯氮平对精神分裂症患者P300影响的随机对照研究[J]. *精神医学杂志*, 2009, 22(4): 259-261.
- [ 12 ] Mathis KI, Wynn JK, Jahshan C, et al. An electrophysiological investigation of attentional blink in schizophrenia: separating perceptual and attentional processes[J]. *Int J Psychophysiol*, 2012, 86(1): 108-113.
- [ 13 ] 杜好瑞, 穆俊林, 李六一, 等. 精神分裂症患者注意状态对事件相关电位P300的影响[J]. *中国现代医学杂志*, 2015, 25(5): 49-52.

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