

慢性肾功能衰竭和血液透析患者脑干听觉诱发电位及“肾”与耳关系探讨

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内容提要 根据中医学“肾开窍于耳”的理论,我们分别测定了慢性肾功能衰竭(肾衰)和维持血液透析患者的脑干听觉诱发电位(BAEP)。20例慢性肾衰患者BAEP明显异常者13例,异常4例,主要表现为I、III、V主波潜伏期(PLs)延长及I-III、I-V峰间潜伏期(IPLs)延长;8例平均血液透析4.2月者透析前后同体比较,透析后III、V PLs和I-III、I-V IPLs缩短有显著性意义。各PLs及IPLs与生化指标无显著相关性。BAEP测定及其动态观察为判断肾衰时内耳和听觉神经系统损害提供了客观指标,亦为中医“肾”与耳关系学说提供了电生理研究的佐证。

关键词 慢性肾功能衰竭 血液透析 脑干听觉诱发电位

中医学素有“肾开窍于耳”之学说,临床亦常见肾与耳同时受累,近20年来已有不少报道分别从解剖组织结构、生理功能、免疫、药理等方面探讨“肾”与耳间的关系^①,但有关脑干听觉诱发电位(BAEP)研究不多。我们对慢性肾功能衰竭(肾衰)及维持血液透析(血透)患者分别进行BAEP测定,以了解慢性肾衰与脑干听觉系统和耳蜗神经损害的关系以及血透对其的影响,探讨中医“肾”与耳的关系,现报告如下。

资料与方法

一、临床资料 慢性肾衰患者20例,男14例,女6例,年龄 41.6 ± 11.4 岁,原发病分别为慢性肾小球肾炎(17例)、多囊肾(2例)及慢性肾盂肾炎(1例),内生肌酐清除率(Ccr) 23.6 ± 10.8 ml/min,血清肌酐(Scr) 422.6 ± 187.4 μ mol/L。另8例维持血透患者,男6例,女2例,年龄 37.8 ± 7.4 岁,均为慢性肾小球肾炎所致终末期尿毒症,使用国产铜胺膜中空纤维透析器、醋酸盐透析液,每周透析10~12 h,血透前及平均透析4.2月(2.5~6月)后分别行BAEP测定以对比。全部病例均无中耳疾患史,近6个月未使用肾毒性药物,BAEP检查时临床上皆不伴有明显心脑血管病变及听力障碍,平均动脉压小于

15.7 kPa,常规测定血红蛋白、白蛋白、总蛋白和血脂、尿素氮、肌酐、尿酸以及钾、钠、氯、钙、磷、碳酸氢根离子等生化指标。

二、检查方法及诊断标准 应用丹麦产Evomatic-4000型诱发电位仪,按国际10/20系统安放电极,置记录电极于颅顶部,参考电极于两侧乳突部,双耳予Click短声刺激,双侧同时描记,刺激强度90 dB,短声重复率5~10次/s,脉冲宽度0.1 ms,灵敏度5 μ V,叠加1000~2000次,每侧耳重复测定2次,以各波重合为准,分析时间10 ms,自动记录测量各波绝对潜伏期和峰间潜伏期。判断标准参考文献规定,以本院脑功能室健康成人对照组(男12例,女8例,年龄 40.7 ± 10.2 岁)测定值为参量,平均值加2个标准差(2S)为正常上界,>2S者为异常,>3S或I、III、V主波缺失为明显异常,介于1S~2S者为可疑^②。

结 果

慢性肾衰组20例BAEP检查,明显异常13例,异常4例,可疑2例,其中4例(BAEP明显异常2例,听觉和可疑各1例)同时行视觉诱发电位(VEP)测定, P_{100} 潜伏期和波幅均在正常范围;BAEP的改变表现为

I、III、V主波潜伏期(PLs)和I-III、I-V峰间潜伏期(IPLs)延长。维持血透组8例,血透前BAEP明显异常6例,异常和可疑各1例,各PLs和IPLs较慢性肾衰组绝对值延长,但统计学无显著性差异;平均血透4.2月

后BAEP明显异常4例,异常3例,可疑1例,同体比较统计学处理,III、V PLs与I-III、I-V IPLs缩短有显著性意义。慢性肾衰组与正常对照组及血透组透析前后BAEP参量比较见附表。

附表 慢性肾衰组与正常对照组及血透组血透前后BAEP参量比较 (ms, $\bar{x} \pm S$)

组别	例数	主波潜伏期			峰间潜伏期		
		I	III	V	I-III	III-V	I-V
慢性肾衰	20	2.03±0.25 *	4.27±0.26 **	6.24±0.40	2.26±0.18 *	1.98±0.21 **	4.22±0.20 *
正常对照	20	1.87±0.16	4.00±0.12	5.91±0.19	2.13±0.12	1.91±0.14	4.04±0.19
P值		<0.01	<0.001	<0.001	<0.01	>0.05	<0.001
血透前	8	2.09±0.19	4.37±0.20	6.41±0.34	2.30±0.29	2.01±0.25	4.32±0.34
血透后	8	2.06±0.14	4.16±0.22	6.20±0.27	2.12±0.22	2.04±0.30	4.14±0.27
P值		>0.05	<0.01	<0.05	<0.05	>0.05	<0.05

注: * 2例4耳I波缺失; ** 2例3耳III波缺失

BAEP PLs及IPLs对1/Ccr或Scr作散点图有同步增加倾向,但线性回归相关分析无显著性意义,其它前述生化指标与PLs或IPLs无相关性。

讨 论

目前临床应用的BAEP技术对耳蜗神经和上橄榄核、下丘核等听觉通路结构的病理变化具有定位诊断价值,为一客观听觉功能检查方法^[2]。本文应用BAEP检查发现慢性肾衰患者中有85%异常,普遍存在耳蜗和听神经系统损害,其BAEP I-III IPLs明显延长,III-V IPLs基本正常,提示脑干不同听觉中枢受损程度不同,听神经较脑干内诸结构受累更著,此可能与周围神经在慢性肾衰时受尿毒症毒素作用,发生代谢障碍、离子转运异常或神经纤维退变甚至轴突脱髓鞘改变有关,耳蜗由于和肾脏在组织形态、超微结构、抗原性及生理特征等方面极为相似,且慢性肾衰时耳蜗亦发生血管纹退变、内耳液质与量异常及耳蜗神经元兴奋性降低、突触递质释放受抑、动作电位传导障碍等尤甚,脑干中枢神经系统由于解剖和生理特点损害相对较轻,发生也较晚。上述病理改变为多种因素长期综合作用的结果,本文及文献报道均示尚无单一生理或生化

因素与BAEP异常及其严重程度有关,血液透析亦只能部分改善BAEP,可能与常用中空纤维透析膜对中分子毒素消除不佳有关,而长期血透后由于铝中毒、血管病变,内分泌及代谢紊乱等还可能使BAEP一过性改善后再度恶化。最近报道即便肾移植后亦未使BAEP完全恢复,可能与移植排异反应产生耳蜗抗体,应用肾毒性免疫抑制剂如环孢素A等有关^[3]。

作为神经系统电生理、尤其是耳蜗和听觉神经与脑干损害的检查手段,BAEP测定及其动态观察为临床判断慢性肾衰时上述结构的病变和药物治疗效果提供了客观指标,在评价血液净化及其生物膜对尿毒症中分子物质清除能力方面具有一定实用价值,同时也为研究中医“肾”与耳关系理论提供了电生理佐证。

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suffocation, fatigue, chest pain, improved in reducing the size of enlarged heart, the effective rate of EKG, particularly ST-T and various blocks, as well as in improving the function of left ventricular and abnormal systolic time interval (STI), the 1st group was better than that of 2nd one in all above-mentioned five aspects ($P < 0.05-0.01$). Therefore, it was assumed that therapy of activating the blood circulation to relieve stasis, the Tong-Mai oral liquid might be a good approach in treating infantile acute viral myocarditis.

Key words infantile viral myocarditis, activating the blood circulation to relieve stasis, Tong-Mai oral liquid

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Significance of Brainstem Auditory Evoked Potential Determination in Chronic Renal Failure and Maintenance Hemodialysis Patients

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Brainstem auditory evoked potentials (BAEP) were measured in 20 chronic renal failure patients and 8 maintenance hemodialysis patients. The BAEP in chronic renal failure patients was showed that wave I, III, V peak latencies (PL) and I-III, I-V interpeak latencies (IPL) were markedly increased. The significant reductions, although not to normal, of wave III, IV PL and I-III, I-V IPL were recorded in postdialysis (average 4.2 months) compared with that in predialysis. A correlation analysis revealed no consistent relationships between plasma proteins, hemoglobin, urea, creatinine serum electrolytes and BAEP PL or IPL. The authors realize that BAEP could be used as a subjective index in deciding the inner ear and nervous system damage in chronic renal failure, and it also provided an electrophysiologic evidence for the relationship of Kidney and ear in traditional Chinese medicine.

Key words chronic renal failure, hemodialysis, brainstem auditory evoked potentials

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Effects of T_4 Monomer of *Tripterygium Wilfordii* and Artificial Musk on Experimental Allergic Neuritis

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Both T_4 monomer of *Tripterygium wilfordii* and artificial musk had effects in regulating immune system and anti-inflammation. The effect of using artificial musk was the earlier the stronger. According to pharmacological features of the two drugs and pathogenesis of experimental allergic neuritis (EAN), 5 experimental groups were established, i.e., artificial musk prevented and treated groups, dexamethasone and T_4 monomer treated groups, and control group. Results: T_4 monomer could reduce the clinical score of model rabbits of EAN and significantly ameliorated inflammatory cell infiltration and demyelination. It was similar to dexamethasone. Although artificial musk had mild preventing and treating effects on the clinical and pathological changes of EAN, but was not statistically significant in comparing with control group. Our clinical or pathological data suggested that T_4 monomer and dexamethasone were effective in the treatment of EAN, and that of artificial musk in preventing and treating EAN as indefinite.

Key words experimental allergic neuritis, T_4 monomer of *Tripterygium wilfordii*, artificial musk

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