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特发性面神经麻痹患者的运动单位数目评估与临床 *

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摘要 目的:通过对特发性面神经麻痹患者的运动单位数目估计,并与常规面神经传导速度相结合,评估病情的严重程度,以期指导临床治疗和评价预后。**方法:**纳入我院诊断的特发性面神经麻痹患者32例,分别于发病第3天、第7天、第14天、1个月、3个月给予电生理检查,包括面神经传导速度、眼轮匝肌和口轮匝肌的运动单位数目估计,并与健侧做对比。根据House－Brackmann面神经功能分级再将入组患者分为轻(Ⅱ级)、中(Ⅲ级)、重度(Ⅳ~Ⅵ级)三组。同时纳入10名健康成年人作对照组,检测方法相同。**结果:**发病第3天、第7天32例患者全部出现患侧运动波幅下降,与健侧对比差异有统计学意义(*P<0.05*)。于发病第14天开始,患者运动波幅开始逐渐恢复,至3个月时,绝大部分患者运动波幅与健侧对比差异无统计学意义(*P>0.05*)。而运动单位数目的减少在整个病程中与健侧相比较差异均具有统计学意义(*P<0.05*),第14天、1个月、3个月运动波幅开始恢复时,运动单位数目并未随之恢复,且与运动波幅不呈线性关系,与临床症状也不成正比关系。面神经运动单位数目下降的程度与患者面神经运动波幅的恢复呈正相关。**结论:**运动单位数目估计检查应用于特发性面神经麻痹患者,可以反映病情的严重程度,并能在一定程度上评估预后。

关键词:特发性面神经麻痹;面神经传导速度;运动单位数目估计
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Estimation of the Number of Motor Units in Patients with Idiopathic Facial Paralysis *

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ABSTRACT Objective: To assess the severity of disease by estimating the number of motor units in patients with idiopathic facial paralysis and combining it with the conventional facial nerve conduction velocity, and guide the clinical treatment and prognostic evaluation. **Methods:** Thirty -two patients with idiopathic facial paralysis diagnosed in our hospital were given electrophysiological examinations on the 3rd, 7th, 14th day, 1st and 3rd month of onset, including the estimation of facial nerve conduction velocity, the number of motor units of orbicularis oculi and orbicularis oris muscle, and compared with the healthy side. According to House - BrackMann's facial nerve function classification, patients in the group were divided into three groups: mild (Ⅱ), moderate (Ⅲ) and severe (Ⅳ-Ⅵ). At the same time, 10 healthy adults were included as the control group, and the test methods were the same. **Results:** On the 3rd and 7th day of onset, all the 32 patients showed a decrease in the amplitude of movement on the affected side, which was statistically significant compared with the healthy side (*P<0.05*). From the 14th day of onset, the patient's movement amplitude began to recover gradually, and by the 3rd month, there was no statistical difference between the majority of patients' movement amplitude and the healthy side (*P>0.05*). However, the decrease in the number of exercise units was statistically significant compared with the healthy side during the whole course of the disease (*P<0.05*). when the amplitude of exercise began to recover at the 14th day, 1st month and 3rd month, the number of exercise units did not recover with it, and there was no linear relationship with the amplitude of exercise, nor was it proportional to the clinical symptoms. The degree of decrease in the number of facial nerve movement units is positively related to the recovery of facial nerve movement amplitude in patients. **Conclusion:** The number of motor units can contribute to the reflect the severity of the disease and evaluate the prognosis of patients with idiopathic facial paralysis.

Key words: Idiopathic facial paralysis; Facial nerve conduction velocity; Motor unit number estimate
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前言

特发性面神经麻痹(idiopathic facial nerve palsy)也称 Bell 麻痹,是临床上常见的颅神经病变,是周围性面瘫最常见的原因之一[1]。尽管目前对于特发性面神经麻痹的患者不主张常规进行影像学和神经电生理检查,但当临床需要进行评估病情的严重程度和(或)判断预后时,神经电生理检查仍可以提供其他辅助检查不可替代的帮助[2]。

常规肌电图和神经传导研究为周围神经疾病的定位诊断、损伤类型提供了客观、可靠的临床资料,但不能定量测量运动单位的减少。而运动单位数目估计(motor unit number estimate, MUNE) 技术则弥补了这方面的不足。运动单位数目估计(MUNE)是一种定量检查支配某一骨骼肌或肌群有功能的下运动神经元数目的电生理技术[3]。目前的研究主要集中于肌萎缩侧索硬化、糖尿病周围神经病等[4]。尽管该项检查也仍有本身的局限性,如操作方法不规范、检测方式不统一、缺乏科学可靠的正常值范围[5,6],但仍未能阻止专家学者们不断探索的脚步,目前越来越多的研究正将该项检查逐步推向临床应用。

1 材料与方法

1.1 一般资料

纳入我院诊治的特发性面神经麻痹患者 31 例。其中,男 17 例,女 14 例,平均年龄 27-59 岁。所有患者选择相同治疗方案。入组标准:(1)年龄 20-60 周岁;(2)单侧周围性面瘫;(3)急性起病,病程≤ 3 天;(4)除外吉兰 - 巴雷、肿瘤、脑卒中、中耳炎及乳突炎等导致面瘫的其他疾病;(5) 诊断标准参考 2016 年中华医学会神经病学分会发布的《中国特发性面神经麻痹诊治指南》[7]。同时,纳入 10 名健康成年人作对照组,检测方法相同。

1.2 研究方法

应用尼高力 EDX 8 通道肌电图与诱发电位仪, 分别于发病第 3、7、14 天、1 个月、3 个月给予电生理检查,并以此将患者分为 5 组。根据 House－Brackmann 面神经功能分级[8]将入组患者分为轻(Ⅱ级)、中(Ⅲ级)、重度(Ⅳ~Ⅵ级)三组。

患者放松、平卧,检测面神经传导速度,刺激电极置于乳突下方,记录电极分别于眼轮匝肌和口轮匝肌,测量结果取二者平均值,参考电极旁开约 2 cm,并与健侧做对比;眼轮匝肌、额肌和口轮匝肌的运动单位数目估计(递增刺激法),运动单位数目测得结果三者相加取其和, 记录电极和参考电极位置不变,于乳突下方刺激,先以超强刺激诱发出最大 M 波,再以阈刺激强度获取最小 M 波, 逐渐增大刺激强度并记录 9 个递增的 M波,然后计算出运动单位数目,并与健侧做对比。扫描速 5 ms/Div,灵敏度 5 mv/Div,刺激时限 0.1 ms,带通 2Hz-10KHz[9-11]。

1.3 统计学分析

采用 SPSS 统计软件处理测得数据, 所有数据均以 $\bar{x}\pm s$ 表示, 组间比较采用单因素方差分析。相关性检验采用 Mann Whitney 检验和 Spearman 相关性分析, 以 *P<0.05* 为差异具有统计学意义。

2 结果

31 例患者于发病第 3 天、第 7 天全部出现患侧运动波幅下降,于发病第 14 天开始,患者运动波幅开始逐渐恢复,至 3 个月时,绝大部分患者患侧运动波幅与健侧对比差异已经不具有统计学意义(*P>0.05*),见表 1。而患侧在发病后的各个时间点运动单位数目减少,与健侧相比较差异均有统计学意义,而且变化不明显,见表 2。此外,患者于于发病第 14 天、1 个月、3 个月运动波幅开始逐渐恢复时,运动单位数目并未随发病时间而恢复,与运动波幅恢复的曲线不呈比例关系。当于发病第 3 个月时,部分患者运动波幅已经恢复时,但仍少部分患者临床症状并未完全缓解。而运动单位数目的减少在发病初期与临床症状则成正比关系,运动单位丢失越明显,临床症状越重,三组不同程度的面神经麻痹患者的 MUNE 组间比较, 差异具有统计学意义。见表 3。

3 讨论

特发性面神经麻痹是周围性面瘫最常见的原因, 根据 House－Brackmann 面神经功能分级仍有主观的局限性, 因此

表 1 31 例患者不同时间点面神经运动波幅变化(眼轮匝肌、口轮匝肌平均值)(单位:mv)

Table 1 Changes of facial nerve movement amplitude (average of orbicularis oculi muscle and orbicularis oris muscle) at different time points in 31 patients (unit: MV)

Groups	Amount(n)	Time of onset				
		3days	7days	14days	Month 1	Month 3
Affected side amplitude	31	2.6± 0.4▲	3.1± 0.3▲	3.5± 0.3▲	5.4± 0.4	6.7± 0.3△
Healthy side amplitude	31	6.5± 0.3	6.6± 0.4	6.4± 0.4	6.5± 0.2	6.4± 0.3

Note: compared with the Healthy side amplitude group,▲: *P>0.05*; △ : *P<0.05*.

表 2 31 例患者不同时间点面神经 MUNE 变化

Table 2 MUNE changes of facial nerve in 31 patients at different time points

Groups	Amount(n)	Time of onset				
		3days	7 days	14days	Month 1	Month 3
Affected side MUNE	31	505± 14△	500± 21△	502± 17△	506± 19△	505± 13△
Healthy side MUNE	31	752± 27	763± 19	744± 23	779± 14	761± 18

Note: compared with the Healthy side MUNE group, △ : *P<0.05*.

表 3 不同程度面神经麻痹患者各时间点的 MUNE 与运动波幅比较

Table 3 Comparison of MUNE and Motor Amplitude in Different Degree Facial Paralysis Patients at Different Time Point

Groups	Amount(n)		Time of onset				
			3 days	7 days	14 days	Month 1	Month 3
Mild	13	Amplitude	3.2± 0.2	3.5± 0.1	3.9± 0.2	6.0± 0.2	6.9± 0.2
(ClassⅡ)		MUNE△	545± 25	544± 21	552± 14	549± 17	541± 19
Moderate	11	Amplitude	2.4± 0.3	3.6± 0.1	3.7± 0.2	5.8± 0.1	6.7± 0.2
(ClassⅢ)		MUNE△	500± 17	495± 21	493± 13	502± 16	503± 11
Severe	7	Amplitude	2.1± 0.1	2.3± 0.2	2.9± 0.2	4.6± 0.2	6.5± 0.2
(ClassⅣ~Ⅵ)		MUNE△	470± 19	461± 21	463± 14	468± 11	471± 10

Note: comparison among groups, △:$p<0.05$.

当临床需要评估病情的严重程度和(或)判断预后时，常无可靠的辅助检查来量化病情，而神经电生理检测仍可提供其他检查不可替代的帮助[12,13]。运动单位数目估计(MUNE)是一种定量测定支配某一骨骼肌或肌群的有功能的下运动神经元数目的电生理技术，可以对一条神经所支配的运动单位进行量化。目前多应用于肌萎缩侧索硬化、糖尿病周围神经病等研究，并取得了一定进展，国内尚无将此项技术应用于特发性面神经麻痹的患者，也无面神经运动单位数目估测的临床研究。

在本研究中，当特发性面神经麻痹导致的面神经损害在发病早期时，尤其是 14 天之内，所有患者均与健侧比较不同程度的出现面神经运动波幅下降，这与面神经在面神经管内狭窄的骨性通道发生缺血、水肿导致面神经受压，继而发生神经纤维脱髓鞘有关[14]。而病情严重时还可发生轴索变性[15]。但我们发现少部分患者的运动波幅下降的程度，并不完全与 House－Brackmann 面神经功能分级的程度相关，临床症状也与波幅下降并不完全一致，这可能与个体差异有关[16]。因此，我们推测单纯依靠面神经运动波幅来判定或者是去量化患者的严重程度和评估预后并不十分可靠。从所有入组患者来看，于发病第 14 天开始，运动波幅开始逐渐并相继恢复，至发病第 3 个月时，大部分患者运动波幅与健侧对比已经不具有统计学意义。但从我们的实验数据来看，这并不意味着患者的运动神经都已经恢复，因为运动单位数目在损伤早期和恢复期一直无明显变化，至 3 个月运动单位波幅恢复时，患侧运动单位数目与健侧对比差异仍有统计学意义，说明后期患者临床症状的恢复和运动波幅的恢复与周围神经的侧枝芽生有关，因为特发性面神经麻痹的面神经损害以脱髓鞘为主，并非轴索的完全断裂，因此神经损伤的修复方式主要靠侧枝芽生，侧枝芽生导致运动单位增大，以利于恢复发病前的神经生理功能，从而导致症状缓解，运动神经传导速度的波幅逐渐升高。这也符合周围神经损伤后恢复的病理生理机制[17-20]。尽管面神经波幅与临床症状并不一致，但大体来看，运动单位数目则与临床症状呈比例关系，运动单位数目减少的越明显，临床症状越重[21-23]。同时，本研究还发现运动单位数目损伤的程度与预后恢复呈一定相关性，运动单位数目减少越明显，恢复时间越延长。

综上所述，应用面神经运动单位数目估计法可以客观的为临床预后的判断提供依据，并能作为量化指标，可操作性强。然而，运动单位数目估计方法众多，所得出的结论也不尽一致，操作差异性较大，无法做到更为精确的范围。因此，一方面需要大样本的数据，另一方面需要应用得到广泛一致认可的检测该去，确定正常值范围，为进一步临床研究奠定基础。

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