·综述·

修订版昏迷恢复量表简介及临床研究进展

沈抒

随着急救医学和重症监护技术的迅速发展,许多重度颅脑损伤患者得到及时救治,病死率明显下降,但也有相当一部分患者出现不同形式的严重意识障碍(disorder of consciousness, DOC),包括昏迷、持续性植物状态(persistent vegetative state, PVS)、植物状态(vegetative state, VS)、最小意识状态(minimally conscious state, MCS)等,不同类型的意识障碍预后有很大差异[1]。有研究表明,严重意识障碍的误诊率高达 30% ~ 45%[2-3],尤其是 VS 和 MCS 更易被误诊。植物状态是指患者虽有睡眠-觉醒周期,但完全丧失对自身及周围环境的觉知能力[4]。最小意识状态是指患者存在很微弱的觉知能力,虽然意识的行为表现可能很细微且有波动性,但却是明确的和可再现的[5]。准确诊断 DOC 对判断预后,制订有效的个体化康复干预方案,合理利用医疗资源有着重要的临床价值和社会意义[6]。

修订版昏迷恢复量表(coma recovery scale-revised, CRS-R)是由 Giacino 等[7]学者于 2004 年编制,融入了当今 VS、MCS 以及脱离 MCS 的诊断标准,并可在床旁操作的标准化的神经行为学评定工具[8],是目前广泛应用于严重意识障碍患者诊断性评定和结局评估的最具前途的神经行为评定量表[3,9-10]。CRS-R 共有 6 个分量表,前 5 个分量表所提供的有序分类得分均与 VS、MCS 及脱离 MCS 的诊断有关,因此可作为这些意识状态的诊断标准,而其总分可用于追踪意识水平的变化[11]。有学者对 CRS-R 的心理测量学特性进行了研究,结果显示,该量表有良好的信度和效度[8,12-14],且无论患者是否有病因和病程的差别、年龄和性别的差异,甚至处于不同性质的医疗机构,CRS-R 的评定结果均具有较好的稳定性和可比性[13]。

CRS-R 是美国康复医学会脑损伤专业委员会意识障碍工作组唯一推荐的,适用于象 MCS 那样仅有很细微功能保留的 DOC 患者的评定量表,其最大的应用价值在于可有效地区分 VS、MCS 和脱离 MCS 等不同水平的意识状态,是首选的可用于 VS 和 MCS 鉴别诊断的神经行为检测工具[8],使用标准化的 CRS-R 量表可降低对严重意识障碍患者误诊的可能性[3,7,9],其还可用于评估促醒治疗方案的疗效[7]。本文拟对此量表以及临床应用时的注意事项做一介绍,并简要阐述该量表临床应用的新进展,旨在促进严重 DOC 患者的康复。

CRS-R 量表的组成及实施时应注意的事项

一、CRS-R 量表的组成

CRS-R 量表包含 6 个分量表,分别为听觉、视觉、运动、口腔运动或言语、交流和唤醒。每个分量表最低水平的条目代表反射功能,而最高水平的条目是与认知功能有关的行为反应,得分范围 0 ~ 23 分,得分越高,意识障碍程度越轻。其评分是基于对特定的标准化的感觉刺激后是否出现相应的靶行为来判断的。下面分别介绍 6 个分量表。

(一)听觉功能量表

4 分:对指令有始终如一的运动反应,其功能意义表示有能力与环境保持相互作用,是准备行主动康复的信号,可耐受更复杂的认知评定;3 分:对指令有可复制的运动反应,其功能意义表示保留一种基于皮质的信息处理和认知行为的能力,是意识恢复最清晰的迹象;2 分:声音定位,其功能意义表示具有发现和粗略判断声音位置的能力;1 分:听觉惊吓,其功能意义表示有察觉声音的能力;0 分:无反应。其中 3 分和 4 分表示 MCS。

(二)视觉功能量表

5 分:物品识别,其功能意义表示有执行指令和辨别视觉刺激的能力;4 分:物品方向定位,可伸手够,其功能意义表示具有在环境中发现、定位并理解刺激的能力;3 分:视觉追踪,其功能意义表示具有视觉探索周围环境的能力;2 分:视觉固定,其功能意义表示有察觉和定位视觉刺激的能力;1 分:视觉惊吓,表示有察觉运动的能力;0 分:无反应。2 分以上为 MCS。

(三)运动功能量表

6 分:功能性物品的使用,表示有基本的 IADL 能力;5 分:自动运动反应,表示保留了习惯性的行为模式(超学习的);4 分:物品操作,表示有探索性的感觉运动行为;3 分:对有害刺激定位,表明有身体构架的意识,有自我防卫行为;2 分:屈曲回缩,表示有主动运动(但也许不能自我启动和调控);1 分:不正常姿势,表明不能启动或调控继发于缺乏抵抗性伸肌张力的运动;0 分:无反应/肌张力呈弛缓性,表示不可能运动。3 ~ 5 分为 MCS,6 分表示脱离 MCS。

(四)口腔运动或言语功能量表

3 分:可理解的言语表达,表明有表达性语言;2 分:发声或口腔运动,表明有语言器官功能;1 分:反射性口腔运动,表明缺乏对原始口腔运动反射活动的抑制和调控;0 分:无反应,表示无任何口头交流能力。3 分表示 MCS。

(五)交流量表

2 分:功能准确性,表明瞬间记忆完好,言语理解和表达可靠;1 分:非功能性,有意的,表示交互式交流能力的再度出现;0 分:无反应。1 分为 MCS,2 分表示脱离 MCS。如果没有证据表明患者可遵循指令或有自发的交流行为,此交流分量表可不实施。

(六)唤醒量表

3 分:注意,表明有基本的维持注意集中的能力;2 分:无刺激下睁眼,表示睡眠-觉醒周期再建立;1 分:刺激下睁眼;0 分:不可唤醒。

(七)补充条目

除了上述 6 个分量表以外,CRS-R 还有一个对偶发行为进行评定的补充条目,此条目并不记入总分。对患者偶然发生的发音、姿势或情感反应行为的评定,可通过综合患者家属及临床医生的报告获得,也可由评定者直接观察而获得。应询问患者

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家属及临床医生患者的这些发声、姿势或情感反应(如微笑、大笑、皱眉、哭泣等)是自发的,还是对某一特定刺激的反应。如果这些反应的信息是由家属及临床医生口头报告得来,则应试图在报告者的协助下再直接引出该反应;如果在检查过程中直接观察到一些情感反应,检查者则应试图再用与先前同样的刺激重新引出该行为反应。恰当的诱发刺激包括言语问话("你叫什么名字?")、肢体姿势(挥手)、面部姿势(伸舌)和图片(家庭照片)等。检测者应记录以下内容:①诱发刺激的性质,如言语"你感到悲哀吗?",肢体姿势(挥手)等;②行为反应的特性(如挤眉弄眼、扮鬼脸、微笑、呻吟等);③在引发刺激后的 10 s 内所观察到行为反应的次数;④观察到自发的行为反应的次数;⑤上述③和④的时段应大致相同。当特定刺激后出现的发声、姿势或情感反应等情况明显多于无刺激时,此类偶发的行为反应不包括疼痛刺激下引发的反应。

二、实施 CRS-R 评定时应注意的事项

在行 CRS-R 评定记分时需注意以下几点:①每个条目均有明确的记分标准,只有当引出了靶行为时方可记分,对自发行为可关注但不记分;②若反应模棱两可、含糊不清时不记分;③若刺激后 10 s 内未见反应,不记分;④在每个分量表内只对最佳反应记分。

尽管 CRS-R 的信度、效度良好,但我们须谨记,判断患者的意识水平是一项复杂的工作,需仔细考量诸多其它因素,如唤醒水平不可预知的波动性、体位、相关的感觉、运动及认知功能方面的损害、所用药物的影响等[8]。

在评定过程中,若连续 3 次满足下列条件时,可中止评定:对指令有始终如一的运动反应;功能性交流准确无误;注意力良好。

在行 CRS-R 评定前,应先对患者进行 1 分钟的基线观察,内容包括肢体的休息位;睁眼情况;是否存在自发性视觉固定或追踪;自发性运动反应的类型及频率等。其目的是确定觉醒水平,以便选择恰当的指令;区分随意运动与非随意运动。若患者处于持续性闭眼状态或停止执行指令 1 min 以上时,可行促醒程序:①深压觉刺激——对一侧身体从面部到足趾行肌肉的挤压;②床边前庭觉刺激——将患者从仰卧位转到侧卧位,每侧均行 3 ~ 5 次;使患者从仰卧位到坐直位前后往返 3 ~ 5 次;③轮椅上前庭觉刺激——将轮椅向一侧转 3 整圈,然后再向对侧也转 3 整圈;在患者可耐受情况下快速加速前行 6 ~ 9 m;在患者可耐受下将轮椅向后倾斜 45° ~ 60°,3 ~ 5 次。

关于 CRS-R 临床应用的新进展

MCS 症状的核心特性是不一致的、有目的的行为[8],基于患者神经行为表现的复杂性和多样化,有学者提出将 MCS 进行再分类,分为较低水平的行为反应 MCS^- 和较高水平的行为反应 MCS^+。MCS^- 患者仅显示有最低水平的相互作用的行为,以非反射性运动为特征,例如①对有害刺激的定位;②对移动着的、醒目的刺激出现视觉追踪;③出现恰当的与环境刺激有关的运动或情感行为,如在感人的言语或视觉内容的刺激时出现恰当的微笑或哭泣,而不是对中性的、有主题的发声或姿势性的刺激发生反应。而 MCS^+ 是指存在以下情况:①遵循指令;②清晰可辨的言语表达;③能用手势或言语作出是/否反应[15]。在临床实践中,基于患者神经行为表现的复杂性,将 MCS 再分为 MCS^- 和 MCS^+,能更敏感地反映患者在康复治疗中功能状态的细微变化[16],增加了 CRS-R 的应用价值。

也有学者对 MCS^- 和 MCS^+ 患者进行了功能性神经影像学研究[17],发现两者在脑部功能激活区和局域糖代谢方面均存在差异,证实了两者之间有着不同的神经解剖学和神经生理学基础,这有助于我们更好地理解意识障碍的神经机制。

总结与展望

总之,CRS-R 量表可协助临床医师准确判断 VS、MCS 和脱离 MCS 等不同的意识水平,且可对制订个体化的康复治疗方案提供现实的临床指导[14,18],在严重意识障碍患者的康复诊疗中具有现实的应用价值,值得在临床上推广。展望未来,在今后的临床实践中,应进一步对中文版的 CRS-R 量表进行信度和效度的研究,为其在临床康复医疗中的广泛应用打下基础。

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· 外刊撷英 ·

Repeated head trauma and thalamic volumes

BACKGROUND AND OBJECTIVE Previous studies of boxers have reported that the frequency and duration of fighting seems to be associated with cognitive or neurologic problems. This study included data from the Professional Fighters Brain Health Study (PFBHS), a longitudinal cohort of boxers and mixed martial arts fighters designed to understand the effects of repeated blows over time.

METHODS Participants were at least 18 years of age and were licensed to fight professionally in either boxing or mixed martial arts. A control group was recruited, matched for age and education, with no history of head trauma. Participants were seen for baseline evaluation and on an annual basis thereafter over the next four years. Baseline demographics and cognitive function were determined for all subjects. A high-resolution T1 weighted anatomical MRI was obtained with volumes of the hippocampus and amygdala, as well as the subcortical gray matter, calculated. Fighting exposure was determined by professional records.

RESULTS Data were collected for 224 male fighters, including 93 boxers and 131 mixed martial artists, as well as 22 controls. The number of years of professional fighting ranged from zero to 24, with a mean of four years. Increased exposure, as measured by the number of professional fights or years of professional fighting, was associated with lower brain structure volumes, particularly subcortical structures. The most consistent relationships between exposure variables and brain volume involved the thalamus and caudate. Among the cognitive domains, only processing speed was related to volume of exposure. A significant relationship was seen between the number of professional fights and speed of processing ($P = 0.041$), with an estimated 0.19% reduction in processing speed per fight.

CONCLUSION This study of professional boxers and mixed martial artists found that increased exposure is associated with lower brain volume, particularly in the thalamus and caudate, and with a decrease in processing speed.

【摘自:Bernick C, Banks SJ, Shin W, et al. Repeated head trauma is associated with smaller thalamic volumes and slower processing speed: the professional fighters brain health study. Br J Sp Med. 2015, 49(15): 1007-1011.】

Statin induced carotid plaque progression

BACKGROUND AND OBJECTIVE Cardiovascular disease is a major factor in the mortality gap between patients with and those without rheumatoid arthritis (RA). Despite this, no specific cardiovascular prevention guidelines have been created for patients with inflammatory joint disease. This study was designed to determine whether aggressive statin treatment affects cardiovascular risk factors in patients with inflammatory arthritis.

METHODS Subjects were patients with inflammatory arthritis who were statin naïve, and for whom carotid plaque had been identified. The participants were initiated on rosuvastatin, 20 mg per day, with increasing doses titrated to achieve an LDL cholesterol level of 1.6 to 1.8 mmol per liter. The patients were evaluated by a cardiologist at three months and 18 months, with blood drawn to assess lipid profiles, liver enzymes, creatine kinase, sedimentation rate and C-reactive protein. Carotid ultrasound was used to assess carotid plaque.

RESULTS After 18 months of treatment, the mean change in carotid plaque height was 1.9 mm. ($P < 0.0001$). No significant change was seen in intima media thickness. In 72% of the patients with multiple carotid plaques, a reduction in height was seen in more than half of the plaques. No changes in measures of RA disease activity were noted. Further, no significant relationship was found between the degree of carotid plaque height reduction and LDL measurements or changes in measurements. A logistic regression analysis revealed that the change in carotid plaque height was not related to changes in body mass index, smoking status or treatment with anti-rheumatic medication.

CONCLUSION This uncontrolled study of patients with inflammatory arthritis found that intensive lipid lowering treatment with rosuvastatin induced atherosclerosis regression.

【摘自:Rollefstad S, Ikdahl E, Hisdal J, et al. Rosuvastatin-induced carotid plaque regression in patients with inflammatory joint diseases. Arthr Rheum. 2015, 67(7): 1718-1728.】