

•Lecture•

Post-traumatic headache: a neurorehabilitation perspective (Part III)

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PAIN ASSESSMENT

History

Historical information regarding mechanism of injury can help distinguish types of headache. The physical forces involved in post-traumatic headache include impact and/or acceleration/deceleration (inertial) loading; the latter typically involves “whiplash” type injury to the neck. In more generalized post-traumatic headache, surgical intervention provides yet another “external physical force” that may produce head pain. The primary points to address in the context of taking a pain history include:

- Time of onset of pain
- Progression of pain over time
- Treatment history relative to pharmacologic and non-pharmacologic approaches that have either helped pain and/or have made it worse.
- Frequency of pain.
- Severity of pain, typically rated using some type of pain scale (i.e. pain faces).
- “COLDER” mnemonic—character, onset, location, duration, exacerbation, relief.
- Functional consequences of pain (i.e. how this pain affects ability to perform work and non-work related activities).
- In the context of assessing pain, it is always important to determine if the patient had similar pain complaints pre-dating the injury and, if so, whether they have been altered by the injury in any way (i.e. better or worse).
- Review relevant medical records to increase understanding of potential pain generators.

• Interview corroboratory sources, as persons with TBI may not have adequate insight into or memory regarding their condition and/or its functional consequences.

There are also a number of well-validated and reliable pain assessment batteries that can be considered for use to supplement information derived during the interview, including measures of behavioral and cognitive coping, measures of general health functioning, specific pain domain inventories and/or general psychological measures, in particular, the Minnesota Multiphasic Personality Inventory (MM-PI). There are also additional pain assessment measures with built-in response bias indicators. Clinicians should also be familiar with non-organic indicators on interview that may suggest the need for further assessment of functional contributors to the pain presentation.

Examination

The physical examination should include observation (for traumatic changes, asymmetries and general posture), neurological examination, cervical ROM, palpation of cervical and cranial musculature, palpation of GON and LON egress points, provocative movements, ocular examination and auscultation for carotid, mastoid, temporal and ocular bruits. Although an in-depth discussion of myofascial pain is beyond the scope of this chapter, the reader is referred to other more extensive resources. Myofascial pain is very common in the sternocleidomastoids and trapezius after whiplash or inertial injury. It is interesting to note that the zone of referred pain for the sternocleidomastoid extends to retro-orbital and periorbital areas; associated “autonomic”

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symptoms include vertigo, tinnitus, and a sense of fullness in the ear, as well as, ear pain (commonly confused for otitis externa). These symptoms may be explained by convergence projection theory in that there is overlap in the sensory dermatomes for the SCM and the trigeminal tract as discussed above. The cervical musculature is also a major source of afferents to the vestibular systems integrating eye, head and neck movement, thereby making dizziness a common complaint in this patient population (so called cervical vertigo). The zone of referred pain to the ear overlaps the sensory area for the vagus; theoretically, peripheral sensitization in the SCM could lead to central sensitization within the vestibular and possibly vagal systems.

It is also important to evaluate for effort and pain response bias in the context of both clinical and medicolegal assessments with these matters being of particular import when there are identifiable secondary gain incentives such as worker's compensation benefits, legal settlement potential, avoidance of work, or other factors that may perpetuate disability behaviors. The clinical tests pertinent to assessment of the patient with post-traumatic headache may also include cerebral and/or cervical imaging, electrophysiological testing, psychoemotional and coping testing, as well as general functional assessment testing. Tests should only be ordered when it is anticipated that the results will have an impact on clarifying a diagnosis and/or treatment plan or facilitating prognostication.

POST-TRAUMATIC HEADACHE PAIN MANAGEMENT

Primary Goals in Pain Management

Clinicians should attempt to modulate and ideally negate associated physical and psychological signs and symptoms associated with the pain condition/disorder. The aforementioned is best achieved through early assessment post-injury focused on identifying pain generators and treating them directing as opposed to just treating the symptom of pain. Prevention of chronicity and secondary complications thereof, such as central sensitization and/or chronic affective and maladjustment issues should also be a priority therapeutic goal. There should be a focus on reduction of functional disability and facilitation of productive activity including, as possible, return-to-work. The treater should establish realistic treatment end points for the specific pain

disorder and get appropriate "buy-in" from both the patient and guardian, as the latter is involved/present. There should also be education regarding treatment options including risks versus benefits. The simplest, least invasive, lowest risk, and most cost effective management approaches that allow for optimization of patient compliance and maximal functional restoration should be used whenever possible. When pharmacologic agents are used, analgesia should be delivered with minimal adverse effects and inconvenience to the patient, with clearly defined treatment expectations, including education regarding medication side-effects. Proper communication should be maintained between the patient, the caregiver, and treater regarding response to individual pain treatment interventions. The treating clinician should maintain ongoing communication with any other clinicians involved with the patient's health management to adequately coordinate clinical care. One should try to avoid use of opiates to modulate pain unless other options have failed as not all pain is opiate sensitive and opiates may compound other TBI related impairments including cognitive difficulties. If opiates are used, they should be used judiciously and with appropriate screening (i.e. Opiate Risk Tool) and monitoring procedures (including use of opiate agreements and random urine screens).

Pharmacological Methods of Treatment

General Guidelines

Pharmacological approaches should be hierarchically divided based upon the intensity and type of pain being treated:

Mild: Mild pain medicines which should be considered typically include aspirin, acetaminophen, and non-steroidal anti-inflammatory drugs.

Moderate: Moderate pain medications include high dose aspirin or acetaminophen, high dose standard non-steroidal anti-inflammatory drugs (NSAIDS), newer generation NSAIDS such as cyclooxygenase-II inhibitors, injectable non-steroidal anti-inflammatories, mixed narcotic analgesics with aspirin or acetaminophen (with or without caffeine), compounded topical medications, whether trademark or compounded, and Tramadol.

Severe: Medications to consider would include parenteral narcotics, with Morphine Sulfate being considered the standard, mixed agonist antagonists such as pentazocine,

partial opiate agonists such as buprenorphine, ketamine, antidepressants, anticonvulsants, continuous local anesthetic, peripheral nerve block, and/or atypical agents including cannabinoids. Other agents can be considered as adjuncts including atypical antipsychotic agents and NMDA antagonists such as dextromethorphan or memantine.

Medications that have been used for opioid insensitive pain include non-steroidal anti-inflammatory drugs, tricyclic antidepressants, newer generation antidepressants such as venlafaxine or duloxetine, anticonvulsants including carbamazepine derivatives, gabapentin, pregabalin, leviracetam and lamotrigine, as well as less commonly used agents such as mexiletine. Other agents that have more recently been recognized as potential adjuncts in the pharmacological management of pain include tizanidine and sodium amobarbital.

Evidence based guidelines and meta-analyses should be referred to as guides to the specific use of pharmacological and non-pharmacological interventions for specific post-traumatic headache disorder conditions as available.

Attempts should be made to minimize polypharmacy as this will improve compliance, decrease drug-drug interactions, and improve quality of life at the same time as decreasing cost to patient. Additionally, whenever possible, use of medications whose mechanism of action may impede neural plasticity (e.g. opiates, barbiturates, certain anticonvulsants) should be minimized or avoided.

Non-Pharmacological Methods

Physical Approaches

- Physical agents such as superficial heat and cold can be used to modulate pain.

- There are a number of electrical stimulation techniques used in pain management:

- Transcutaneous electrical nerve stimulation and iontophoresis are commonly employed as adjuncts for pain control.

- Cranioelectrical stimulation(CES) is an FDA approved treatment for pain reduction that can complement other interventions.

- Acupuncture may also serve as an adjunctive treatment for pain management.

- Physical modalities tend to play a more predominant role in the treatment of pain complaints of musculoskeletal

origin, and may include traction, manual medicine techniques, as well as massage.

- Injection therapy, including intra-articular, peri-articular, peri-tendinous, ligamentous/ fibrous tissue, and trigger point injections can all be used in various types of musculoskeletal pain disorders.

- Older techniques such as prolotherapy and newer techniques such as injection of platelet rich plasma (PRP) seem promising for treatment of post-traumatic musculo-tendinous pain.

- Anesthetic injections, either alone or in conjunction with steroids may be helpful in certain post-traumatic, neuralgic, or neuritic pain conditions.

- Axial injections (e.g. epidural, zygapophyseal, sympathetic) may be relevant considerations for particular post-traumatic pain disorders.

- Exercise is an under-prescribed treatment intervention in pain management. Beneficial effects can include pain modulation on both a central and peripheral basis, weight control, positive affective modulation, benefits to brain function, improvement of general sense of well-being, and improved general state of health.

- Appropriate prescription of adaptive equipment, as well as an ergonomically modified work environment, may also add to overall management of posttraumatic pain conditions to facilitate greater pain modulation and tolerance.

- Novel techniques, such as vestibular stimulation and deep brain stimulation (DBS) are also being used for treatment of certain types of pain conditions.

Psychological Approaches

A variety of psychological methods may be appropriate to consider in the context of pain management, either in conjunction with other interventions or as the sole intervention. Psychological interventions are under-utilized treatment options for patients with chronic post-traumatic pain disorders. Behavioral treatment interventions for pain in persons with TBI should focus on coping with pain, modulation of affective responses to chronic pain and associated disability, as well as primary pain modulation. Behavioral interventional techniques including biofeedback, relaxation training, operant treatments, cognitive behavioral interventions, as well as social and assertiveness skills and training, imagery and hypnosis and habit reversal should also

be considered.

CONCLUSIONS AND RECOMMENDATIONS

There is much to be learned about post-traumatic headache conditions. There must be a greater effort at bringing together the multiple disciplines involved with PTHA assessment and treatment to address many of the issues discussed in this article as well as others not discussed because of space limitations. Education regarding PTHA for "front line" clinicians in the disciplines of emergency medicine, neurology and family practice is essential if these individuals are to receive appropriate treatment. There must be development of multidisciplinary (including not only M.D.s but also psychologists, osteopathic physicians, chiropractors and physical therapists, among others) consensus opinion regarding issues dealing with nomencla-

ture, screening examination, classification and accepted algorithms for treatment. PTHA classification must be more in-depth and specific than that currently provided by ICD-10 or IHS with better data to justify modifiers related to chronicity, as well as, time of onset. Better and more objective impairment and disability assessment techniques need to be developed for PTHA, preferably ones that have face validity and good inter-rater reliability with internal "checks" for symptom magnification, as well as, response bias. Research efforts should be directed at examining PTHA sub-types in primary not tertiary PTHA patient populations that have been identified relative to historical factors and specific sub-populations (e.g. cerebral, cranial, cranial adnexal, cervical, post-traumatic psychologic or mixed impairments).

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译文:

创伤后头痛:神经康复观点(Ⅲ)

疼痛的评估

病史

了解头痛发病机制的病史有助于区分头痛类型。与创伤后头痛有关的物理因子包括冲击力、加速/减速性负荷(惯性负荷),后者主要与颈部挥鞭样损伤有关。从创伤后头痛的更广义定义来说,手术治疗也是一种可能引发头痛的外力因素。病史采集中需要注意的关键点主要包括:

- 疼痛发作的时间;
- 疼痛的进展情况;
- 治疗经过,包括药物治疗、非药物治疗的效果是改善了症状,抑或使头痛加剧;
- 疼痛发作频率;
- 疼痛程度,可以选择疼痛评估量表(即疼痛的表现);
- “COLDER”原则:特征、发作诱因、部位、持续时间、加重或恶化因素、缓解因素;
- 疼痛引起的功能性后果,也就是疼痛如何影响患者的工作能力和其他活动能力;
- 了解患者外伤前是否有类似的疼痛病史,如有疼痛,其性质和程度是否在外伤后发生变化;

•复习相关病历记录,了解引起疼痛的可能原因;

•从患者家属等处获取相关信息,因为颅脑外伤患者可能对其疼痛情况、对功能的影响记忆不准确或回忆不清。

另外,在病史采集的时候还可以考虑使用一些已经经过信效度验证的疼痛评估量表,比如行为和认知应对状况评估、总体健康功能水平评估、特异性的疼痛评估量表,以及综合性心理评估,特别是明尼苏达多项人格检查表(Minnesota Multiphasic Personality Inventory, MMPI)。有些疼痛评估量表内容还包括了应答偏倚的指标。临床医生应该对可能需要进一步评估疼痛时的一些非器质性疾病所致功能障碍的征象非常熟悉。

体格检查

体格检查包括观察(创伤性改变及非对称性表现和身体姿势)、神经系统检查、颈椎活动度检查、头颈部肌肉触诊、枕大神经和枕小神经出口点的触诊、激发运动、目镜检查 and 颈动脉、乳突、颞部以及眼部听诊是否有杂音。肌筋膜性疼痛的详细讨论不属于本文主要内容,读者可以参阅其他相关文献。挥鞭样损伤或惯性损伤后胸锁乳突肌和斜方肌的肌筋膜性疼痛是比较常见的;胸锁乳突肌的牵涉痛范围可以包括眶后和眶周区域,伴随的自主神经症状包括眩晕、耳鸣、耳内发胀感及耳痛,后者容易与外耳炎相混淆。这可以用汇聚投

射学说来解释,因为胸锁乳突肌与三叉神经通路的皮区存在部分重叠。颈部肌肉也是前庭系统信号传入的主要来源,而前庭系统是整合来自眼、头部和颈部运动的信号从而容易引起患者主诉头晕、即颈性眩晕。涉及耳后的牵涉痛与迷走神经存在部分重叠,理论上来说,胸锁乳突肌的外周敏化可以引起前庭和迷走系统的中枢敏化。

如果患者存在根据评估结果能得到额外补偿和利益,如工伤补偿、法律安置利益、工作回避,以及其他可能使患者可以表现出残疾行为的情形时,临床评估和法律评估中需要评定患者的应答偏倚。创伤后头痛患者恰当的临床测试包括大脑和/或颈部影像学检查、电生理学测试、心理情绪测试和应对测试以及整体功能评估等。一般只有在测试结果有助于甄别诊断或制定、修改治疗计划或预后判断的情况下才考虑选用相应测试。

创伤后头痛治疗

疼痛治疗的主要目的

临床医师应该尝试对与疼痛有关的躯体及心理症状和体征进行调整和合理的否定,最佳的实现途径就是在创伤后早期进行完整评估以期早期识别疼痛产生的原因并针对原因进行有效治疗,而不是仅仅控制疼痛症状。慢性化和继发性并发症,如中枢敏化、长期的情感和适应不良等问题同样应该作为主要的治疗目标;另外还要关注减少功能障碍情况和促进患者创造性活动能力,如果可能,回归工作等能力的恢复。因此,治疗者应针对特定患者设定恰当和现实的治疗目标,并且得到患者及其监护人的认可。患者教育的内容包括可供选择的治疗方案,包括其风险和益处。在可能的情况下为了提高患者的依从性和获得最大限度的恢复,应尽可能选择最简单、侵入性最小和风险最低以及耗益比最高的治疗手段。如果使用药物治疗,应该尽可能选用副作用小、使用方便的止痛药,设定明确的期望值并进行包括药物副作用在内的健康教育。治疗期间,医护人员、患者及其照料者之间应该就患者个性化治疗方案实施以后的反应进行及时沟通;临床医生还需要与参与治疗的其他专业医护人员保持必要的沟通,以确保多学科合作治疗模式的延续。并非所有疼痛都对阿片类制剂有良好治疗反应,而且阿片类制剂可能使脑外伤患者的认知等功能障碍复杂化,因此除非患者对其他治疗均无良好反应,否则应该尽量避免使用阿片类药物。在使用阿片类药物过程中需要对患者进行密切观察、使用恰当的筛选量表和使用协议及随机尿样等监测手段。

药物治疗

一般原则

根据疼痛的强度和类型进行分级药物治疗。

轻度疼痛:轻度疼痛的治疗药物可以考虑阿司匹林、对乙酰氨基酚和非甾体类抗炎药。

中度疼痛:用于中度疼痛治疗的药物包括大剂量阿司匹林或对乙酰氨基酚、大剂量标准非甾体类抗炎药(NSAIDs),新型NSAIDs如环加氧酶-Ⅱ抑制剂、NSAIDs注射剂、麻醉镇痛剂(含或不含咖啡因)与阿司匹林或对乙酰氨基酚联合使用以及曲马多等复方制剂。

重度疼痛:可以考虑使用硫酸吗啡等肠道外麻醉剂、阿片受体激动拮抗剂喷他佐辛、部分阿片受体激动剂如丁丙诺啡、氯胺酮、抗抑郁药、抗惊厥药、局部麻醉药连续使用、外周神经阻滞以及较少使用的大麻酚类等。另外还可以考虑作为辅助用药的药物包括非典型抗精神病药物,和NMDA拮抗剂如右美沙芬与美金刚等。

阿片类制剂治疗效果不佳时可以考虑选用NSAIDs、三环类抗抑郁药、新型抗抑郁药如文拉法辛、度洛西汀,抗惊厥药如卡马西平衍生物、加巴喷丁、普瑞巴林、左乙拉西坦(开浦兰、leviracetam)和拉莫三嗪(lamotrigine)及较少使用的美西律等。最近人们还发现可以将替扎尼定和异戊巴比妥钠作为辅助治疗药物。

某些特殊类型的创伤后头痛,可能的情况下应该根据循证医学指南或荟萃分析结果作为选择药物、非药物治疗的指南。

尽力避免同时使用多种药物,以增高患者的依从性、减少药物之间的反应、改善生存质量,同时降低患者的费用和经济负担。此外,在可能的情况下,应该尽量减少或避免使用那些药理机制上可能影响神经可塑性的药物如阿片类制剂、巴比妥酸盐类以及部分抗惊厥药等。

非药物治疗方法

物理治疗方法

- 物理因子治疗如体表热疗或冷疗可用于调制疼痛。
- 多种电刺激疗法可用于疼痛治疗。
- 经皮电神经刺激和药物离子导入常用做疼痛的辅助治疗措施。
- FDA已经批准将颅电刺激(CES)用于缓解疼痛的辅助治疗。
- 针灸治疗也可以作为疼痛的辅助治疗。
- 物理因子治疗在肌肉骨骼性疼痛治疗中可能有更大作用,包括牵引、手法治疗以及推拿等。

注射疗法

- 根据肌肉骨骼性疼痛的不同类型,可以考虑选用关节腔内、关节周围、腱鞘周围、韧带/纤维组织或扳机点注射治疗。

•增生注射疗法(prolotherapy)和较新的富含血小板血浆(platelet rich plasma, PRP)对创伤后肌腱疼痛治疗可能有较好效果。

•单纯麻醉剂注射,或与皮质类固醇合用对某些创伤后神经痛、神经炎疼痛可能有效。

•硬膜外、关节突关节或交感神经等中轴注射对特定类型创伤后疼痛治疗可能较为重要。

运动疗法

•运动治疗目前在疼痛治疗中应用不足。运动治疗的治疗效应包括从中枢和外周机制上调节疼痛、控制体重、正性情感调节,有助于改善脑功能、增强身体健康的自身满意度和改善健康一般状况等。

其他疗法

•合理使用辅助器具、人类工程学环境改造调整工作环境也可以作为创伤后疼痛的综合治疗措施以进一步促进疼痛缓解和提高耐受能力。

•一些新技术如前庭刺激、深部脑刺激(deep brain stimulation, DBS)也已经用于特定类型疼痛的治疗。

心理学方法

心理学治疗方法可以考虑单独应用或作为其他治疗的辅助手段。目前在慢性创伤后疼痛的治疗中对于心理学治疗应用仍嫌不足。脑外伤后疼痛患者的行为治疗应着重关注患者对疼痛及伴随的功能障碍的应对策略、情绪反应的调节和疼痛的调节。行为治疗技术包括生物反馈、放松练习、操作性治疗、认知行为疗法以及社交技能和自信能力训练,此外,还可以考虑采用意念疗法、催眠疗法和习惯消除等治疗。

结论和建议

创伤后头痛的很多认识还有待进一步提高。将本文所阐述的创伤后头痛的有关问题,以及由于篇幅限制而未提及的有关的多学科团队整合起来参与评定和治疗是一个艰巨的任务。为了保证患者能得到合理治疗,对急诊医学、神经病学和家庭医学的医生进行创伤后头痛的专题教育具有非常重要的意义。应该尽快建立包括医生、心理学家、整骨疗法医生、整脊治疗人员以及物理治疗师在内的关于创伤后头痛的命名法、筛查、分类和治疗方案的专家共识。创伤后头痛的分类方法应该比目前ICD-10或IHS的分类标准更加准确和具有特异性,同时考虑那些可能引起疾病慢性化的调节因素以及症状发作时间。还要发展用于创伤后头痛伴随的功能障碍和残疾更佳和更客观的评估技术,尤其是那些表面

效度和施测者间信度良好,并且具有用以反映症状夸大和应答偏倚的内控指标。研究重点应该主要关注原发性创伤后头痛的各种类型,而不是那些根据病史情况和特定的亚人群(如脑、颅骨、颅骨附属结构、颈部、创伤后心理性的以及混合型功能障碍患者等)可以明确甄别的创伤后继发性头痛。

推荐阅读(摘登)

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