

腰部及其周围关节与慢性腰痛关系的研究进展

王伟¹, 周红海²

(1. 广西中医药大学第一附属医院, 广西 南宁 530023;

2. 广西中医骨伤科生物力学与损伤修复重点实验室, 广西 南宁 530001)

摘要 慢性腰痛是一种常见的退变性疾病,严重影响患者的生活质量。慢性腰痛的病因较为复杂,临床医生在诊治慢性腰痛时,主要关注腰部的病理改变,而对腰部周围关节的病理改变关注较少。随着对慢性腰痛研究的不断深入,腰部及其周围关节与慢性腰痛的关系逐渐引起学者们的注意。本文对腰椎关节突关节、骶髂关节、胸椎、髋关节与慢性腰痛关系的研究进展进行了综述,以期为临床上慢性腰痛的诊治提供新思路。

关键词 腰痛;椎关节突关节;骶髂关节;胸椎;髋关节;综述

慢性腰痛是一种常见的退变性疾病,通常是指持续时间在 12 周以上的肋骨以下至臀横纹区域的疼痛^[1]。成年人慢性腰痛的患病率为 12% ~ 33%,严重影响患者的生活质量^[2-3]。慢性腰痛的发病机制较为复杂,临床医生在诊治慢性腰痛时,主要关注腰部的病理改变,而对其周围关节的病理改变关注较少,导致对部分慢性腰痛的病因诊断不明、治疗效果欠佳。根据区域相互依存理论,人体各个关节在运动时相互关联,局部关节的疼痛不仅与疼痛关节本身有关,也与其周围的关节存在密切联系^[4-7]。本文对腰椎关节突关节、骶髂关节、胸椎、髋关节与慢性腰痛关系的研究进展进行了综述,以期为临床上慢性腰痛的诊治提供新思路。

1 慢性腰痛的概述

慢性腰痛是临床常见病,对于慢性腰痛来源的阐释一直是临床研究的重要内容。随着研究的不断深入,临床上将慢性腰痛分为椎间盘源性腰痛、关节突关节源性腰痛、骶髂关节源性腰痛和腰肌劳损性腰痛,其中椎间盘源性腰痛占比约 42%、关节突关节源性腰痛占比约 31%、骶髂关节源性腰痛占比约 18%^[1]。在以前慢性腰痛的研究中,学者们大都集中于腰椎局部结构的病理改变,而对其周围关节的研究较少。随着研究的不断深入,胸椎和髋关节在躯干屈伸、旋转过程中的重要性逐渐引起学者们的重视。Huang 等^[4]研究发现,胸椎和髋关节的灵活性下降导

致日常活动时腰部代偿,腰椎稳定性下降,进而导致慢性腰痛。Sueki 等^[7]研究发现,慢性腰痛患者的胸椎和髋关节活动度均降低。

2 腰椎关节突关节与慢性腰痛的关系

Gong 等^[8]通过分析关节突关节源性腰痛患者的 CT 和 MRI 检查结果发现,腰椎关节突关节的矢状方向和关节突关节源性腰痛之间存在显著的相关性。Yang 等^[9]研究发现,关节突关节不对称是慢性腰痛的独立危险因素,可能在慢性腰痛的发病过程中起重要的作用。Manchikanti 等^[10]认为,腰椎关节突关节退变、炎症和损伤是导致慢性腰痛的主要原因;腰痛会导致腰椎活动受限,进而导致继发性肌肉痉挛及关节突关节神经支配障碍的发生。此外,关节突关节囊内的神经末梢在机械刺激下也可能促进腰痛的发展^[11]。相关研究^[12-13]表明,年龄、性别、体质指数等均是关节突关节源性腰痛的影响因素。Atalay 等^[14-15]研究发现,腰椎椎板切除术后患者有氧运动减少可能导致慢性腰痛的发生,其与运动减少导致关节突关节病变有关。

3 骶髂关节与慢性腰痛的关系

骶髂关节源性腰痛和关节突关节源性腰痛常同时发生。Rimmalapudi 等^[16]研究发现,在关节突关节源性腰痛患者中,同时合并骶髂关节源性腰痛的患者占比为 70%。DePalma 等^[17]研究发现,骶髂关节病变是腰椎融合术后腰痛的重要影响因素。此外,年龄是影响骶髂关节源性腰痛的危险因素,老年人更易出现骶髂关节源性腰痛^[18-19]。骶髂关节病变或损伤引起局部炎症,刺激骶髂关节周围的关节囊、韧带以及

基金项目:国家自然科学基金项目(81660800);广西研究生教育创新计划项目(YCBZ2021078)

通讯作者:周红海 E-mail:1310803699@qq.com

软骨下骨中的神经末梢,进而引起腰部疼痛^[20]。临床上对于骶髂关节源性腰痛的诊断主要依据临床症状和体征。Gakhal 等^[21]采用 Oswestry 功能障碍指数问卷表确定腰部疼痛来源,研究发现骶髂关节源性腰痛患者在行走和站立方面的得分低于关节突关节源性腰痛患者。

4 胸椎与慢性腰痛的关系

胸椎活动受限会导致腰椎代偿而增加腰椎活动,进而诱发慢性腰痛;而久坐、年龄等因素可能导致胸椎后凸角增加,进而导致胸椎活动受限^[22]。Christe 等^[23]研究发现,慢性腰痛患者的下胸椎在横断面上呈现不对称运动。胸椎结构改变和软组织延展性降低是导致胸椎活动受限的主要原因,临床上可以通过软组织延展性训练、正骨手法等改善胸椎活动度,进而增强腰椎的稳定性^[22]。Sim 等^[24]研究发现,胸廓活动训练能够缓解慢性腰痛患者的腰痛症状、改善胸椎活动功能。Kiran 等^[25]研究发现,拉伸上背部肌群及筋膜能够缓解腰椎间盘突出引起的慢性腰痛。Hwangbo 等^[26]研究发现,上背部的拉伸运动能够改善胸椎的活动度,改善胸椎后凸,进而减少腰椎代偿、增强腰椎稳定性。

5 髋关节与慢性腰痛的关系

髋关节活动度降低会导致腰椎负荷增加,进而导致慢性腰痛^[27]。Hicks 等^[28]研究表明,老年慢性腰痛患者普遍合并髋关节疼痛、晨僵等症状,且此类老年人的体能较差、生活质量较低。Shin^[29]调查了从事办公室工作的慢性腰痛患者的髋关节活动度,结果显示两侧髋关节活动度不一致与慢性腰痛具有相关性。因此,髋关节活动度降低、两侧髋关节活动度不一致与慢性腰痛关系密切。Kim 等^[30]研究发现,两侧髋关节屈曲活动度不一致会引起腰椎旋转代偿,与髋关节活动度降低比较,其导致慢性腰痛的风险更高。临床上常通过改善髋关节结构和软组织延展性来提高髋关节活动度及两侧髋关节活动度的一致性,而髋关节活动度的改善能够减少腰椎旋转代偿,增强腰椎的稳定性。Patel 等^[31]研究发现,对于合并髋关节损伤的慢性腰痛患者,采用髋关节活动训练联合拉伸运动能够显著缓解腰部疼痛、改善腰椎功能。Bade 等^[32]研究发现,在进行慢性腰痛治疗时,联合针对髋关节的手法治疗能够显著提高慢性腰痛的临床疗效。

6 小 结

目前临床上诊治慢性腰痛主要关注腰部的病理改变,然而区域相互依存理论提示慢性腰痛与腰部及其周围关节均存在相关性。腰椎关节突关节、骶髂关节、胸椎、髋关节与慢性腰痛均存在密切联系。临床上诊治慢性腰痛,不能单纯局限于腰部的治疗,联合腰部及其周围关节进行诊治才能取得更佳的临床疗效。目前对于胸椎、髋关节等对慢性腰痛的影响及相应的治疗方法,尚缺少高质量的临床研究,但其可能成为慢性腰痛治疗的新方向。

参考文献

- [1] MA K, ZHUANG Z G, WANG L, et al. The Chinese Association for the Study of Pain (CASP): consensus on the assessment and management of chronic nonspecific low back pain [J/OL]. Pain Res Manag, 2019, 2019: 8957847 [2022-01-06]. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6714323/>.
- [2] YAMADA K, MATSUDAIRA K, TAKESHITA K, et al. Prevalence of low back pain as the primary pain site and factors associated with low health-related quality of life in a large Japanese population: a pain-associated cross-sectional epidemiological survey [J]. Mod Rheumatol, 2014, 24(2): 343-348.
- [3] SHMAGEL A, FOLEY R, IBRAHIM H. Epidemiology of chronic low back pain in US adults: data from the 2009-2010 National Health and Nutrition Examination Survey [J]. Arthritis Care Res (Hoboken), 2016, 68(11): 1688-1694.
- [4] HUANG L, LIU H, ZHAO L, et al. The effect of exercise intervention based upon the selective functional movement assessment in an athlete with non-specific low back pain: a case report and pilot study [J]. Front Psychol, 2020, 11: 2010.
- [5] FAUNTROY V, FYOCK M, HANSEN-HONEYCUTT J, et al. Using the selective functional movement assessment (SFMA) for the evaluation of dancers' functional limitations and dysfunctions: a critically appraised topic [J]. J Sport Rehabil, 2019, 28(8): 891-896.
- [6] GOSHTIGIAN G R, SWANSON B T. Using the selective functional movement assessment and regional interdependence theory to guide treatment of an athlete with back pain: a case report [J]. Int J Sports Phys Ther, 2016, 11(4): 575-595.
- [7] SUEKI D G, CLELAND J A, WAINNER R S. A regional interdependence model of musculoskeletal dysfunction: re-

- search, mechanisms, and clinical implications [J]. J Man Manip Ther, 2013, 21(2): 90 – 102.
- [8] GONG G X, GONG D H, WANG H, et al. Association of chronic degenerative arthritis related chronic low back pain with altered lumbar facet joint orientation [J]. Radiol Infect Dis, 2019, 6(1): 15 – 20.
- [9] YANG M, WANG N, XU X, et al. Facet joint parameters which may act as risk factors for chronic low back pain [J]. J Orthop Surg Res, 2020, 15(2): 185.
- [10] MANCHIKANTI L, SINGH V. Review of chronic low back pain of facet joint origin [J]. Pain Physician, 2002, 5(1): 83 – 101.
- [11] 王磊, 李家谋, 刘宝戈, 等. 慢性小关节源性腰痛与小关节囊神经纤维数量及神经肽 Y 表达变化的病例对照研究 [J]. 中国骨伤, 2014, 27(8): 663 – 667.
- [12] MANCHIKANTI L, PAMPATI V, RIVERA J, et al. Role of facet joints in chronic low back pain in the elderly: a controlled comparative prevalence study [J]. Pain Pract, 2001, 1(4): 332 – 337.
- [13] DEPALMA M J, KETCHUM J M, SAULLO T R. Multivariable analyses of the relationships between age, gender, and body mass index and the source of chronic low back pain [J]. Pain Medicine, 2012, 13(4): 498 – 506.
- [14] ATALAY A, TURHAN N, ATALAY B. Deconditioning in chronic low back pain: might there be a relationship between fitness and magnetic resonance imaging findings? [J]. Rheumatol Int, 2012, 32(1): 21 – 25.
- [15] MANCHIKANTI L, PAMPATI V, BAHA A G, et al. Contribution of facet joints to chronic low back pain in postlumbar laminectomy syndrome: a controlled comparative prevalence evaluation [J]. Pain physician, 2001, 4(2): 175 – 180.
- [16] RIMMALAPUDI V K, KUMAR S. Lumbar radiofrequency rhizotomy in patients with chronic low back pain increases the diagnosis of sacroiliac joint dysfunction in subsequent follow – up visits [J/OL]. Pain Res Manag, 2017, 2017: 4830142 [2022 – 01 – 06]. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5309398/>.
- [17] DEPALMA M J, KETCHUM J M, SAULLO T R. Etiology of chronic low back pain in patients having undergone lumbar fusion [J]. Pain Med, 2011, 12(5): 732 – 739.
- [18] LAPLANTE B L, KETCHUM J M, SAULLO T R, et al. Multivariable analysis of the relationship between pain referral patterns and the source of chronic low back pain [J]. Pain Physician, 2012, 15(2): 171 – 178.
- [19] DEPALMA M J, KETCHUM J M, SAULLO T. What is the source of chronic low back pain and does age play a role? [J]. Pain Med, 2011, 12(2): 224 – 233.
- [20] CHUANG C W, HUNG S K, PAN P T, et al. Diagnosis and interventional pain management options for sacroiliac joint pain [J]. Ci Ji Yi Xue Za Zhi, 2019, 31(4): 207 – 210.
- [21] GAKHAL D K, REYNOLDS E M, CHAKRAVERTY R C, et al. Patterns of self reported pain and disability for three sources of chronic low back pain [J]. Orthopaedic Proceedings, 2008, 90 – B(SII): 112 – 119.
- [22] YANG S R, KIM K, PARK S J, et al. The effect of thoracic spine mobilization and stabilization exercise on the muscular strength and flexibility of the trunk of chronic low back pain patients [J]. J Phys Ther Sci, 2015, 27(12): 3851 – 3854.
- [23] CHRISTE G, KADE F, JOLLES B M, et al. Chronic low back pain patients walk with locally altered spinal kinematics [J]. J Biomech, 2017, 60: 211 – 218.
- [24] SIM J H, JEONG U C, CHOI H Y, et al. The immediately effects of thoracic mobilization by segment on pain and range of motion in chronic low back pain patients [J]. Korean J Intern Med, 2017, 12(2): 33 – 42.
- [25] KIRAN R, MOHANTY P, PATTNAIK M. Thoracic mobilisation and periscapular soft tissue manipulations in the management of chronic Prolapsed Intervertebral Disc (PIVD) – An innovative manual therapy approach [J]. Australas Med J, 2017, 10(10): 838 – 847.
- [26] HWANGBO P N, HWANGBO G, PARK J, et al. The effect of thoracic joint mobilization and self-stretching exercise on pulmonary functions of patients with chronic neck pain [J]. J Phys Ther Sci, 2014, 26(11): 1783 – 1786.
- [27] LEJKOWSKI P M, POULSEN E. Elimination of intermittent chronic low back pain in a recreational golfer following improvement of hip range of motion impairments [J]. J Bodyw Mov Ther, 2013, 17(4): 448 – 452.
- [28] HICKS G E, SIONS J M, VELASCO T O. Hip symptoms, physical performance, and health status in older adults with chronic low back pain: a preliminary investigation [J]. Arch Phys Med Rehabil, 2018, 99(7): 1273 – 1278.
- [29] SHIN D. Correlation between non – specific chronic low back pain and physical factors of lumbar and hip joint in office workers [J/OL]. Med Hypotheses, 2020, 144: 110304 [2022 – 01 – 06]. <https://www.sciencedirect.com/science/article/abs/pii/S0306987720324397?via%3Dihub>.

(下转第 80 页)

(pigmented villonodular synovitis) and giant cell tumour of tendon sheath (nodular tenosynovitis) [J]. J Bone Joint Surg Br, 2012, 94(7): 882 – 888.

- [7] 韩燕鸿, 潘建科, 刘军. 踝关节色素沉着绒毛结节性滑膜炎的诊疗进展[J]. 医学研究生学报, 2018, 31(1): 98 – 103.
- [8] PEREIRA V L, BALDAN A R, ANDREOLI C V, et al. Subacromial pigmented villonodular synovitis: case report and review [J/OL]. J Surg Case Rep, 2021, 2021(3) [2022 – 03 – 17]. <https://pubmed.ncbi.nlm.nih.gov/33732422/>.
- [9] 朱敬先, 张辛, 敖英芳. 色素沉着绒毛结节性滑膜炎病因学研究进展[J]. 中国运动医学杂志, 2013, 32(6): 545 – 548.
- [10] HE Q, ZAN X, CHEN F, et al. Pigmented villonodular synovitis of the temporomandibular joint with skull base extension: a retrospective case series [J]. Sci Rep, 2022, 12(1): 5763.
- [11] WANG K, ZHU B, YANG S, et al. Primary diffuse – type tenosynovial giant cell tumor of the spine: a report of 3 cases and systemic review of the literature [J]. Turk Neurosurg, 2014, 24(5): 804 – 813.
- [12] MADRUGA DIAS J, COSTA M M, DUARTE A, et al. Localized pigmented villonodular synovitis of the shoulder: a rare

presentation of an uncommon pathology [J]. Acta Med Port, 2013, 26(4): 459 – 462.

- [13] 黄惠君. 磁共振成像在色素沉着绒毛结节性滑膜炎临床诊断中的应用[J]. 实用医技杂志, 2022, 29(4): 409 – 411.
- [14] ZHAO W Q, ZHAO B, LI W S, et al. Subtalar joint pigmented villonodular synovitis misdiagnosed at the first visit: A case report [J]. World J Clin Cases, 2021, 9(6): 1379 – 1385.
- [15] BRAHMI M, VINCENEUX A, CASSIER P A. Current systemic treatment options for tenosynovial giant cell tumor/pigmented villonodular synovitis: targeting the CSF1/CSF1R Axis [J]. Curr Treat Options Oncol, 2016, 17(2): 10.
- [16] MOLLON B, LEE A, BUSSE J W, et al. The effect of surgical synovectomy and radiotherapy on the rate of recurrence of pigmented villonodular synovitis of the knee: an individual patient meta – analysis [J]. Bone Joint J, 2015, 97 – B(4): 550 – 557.
- [17] TAP W D, GELDERBLOM H, PALMERINI E, et al. Pexidartinib versus placebo for advanced tenosynovial giant cell tumour (ENLIVEN): a randomised phase 3 trial [J]. Lancet, 2019, 394(10197): 478 – 487.

(收稿日期: 2022-03-18 本文编辑: 郭毅曼)

(上接第 74 页)

- [30] KIM W D, SHIN D. Correlations between hip extension range of motion, hip extension asymmetry, and compensatory lumbar movement in patients with nonspecific chronic low back pain [J/OL]. Med Sci Monit, 2020, 26: e925080 [2022 – 01 – 06]. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7523415/>.
- [31] PATEL C, BABU K V, KUMAR N S, et al. Effect of HIP mo-

bilization with exercises for subjects with chronic non specific low back pain associated with HIP impairment [J]. International Journal of Physiotherapy, 2015, 2(1): 376 – 385.

- [32] BADE M, COBO – ESTEVEZ M, NEELEY D, et al. Effects of manual therapy and exercise targeting the hips in patients with low – back pain – a randomized controlled trial [J]. J Eval Clin Pract, 2017, 23(4): 734 – 740.

(收稿日期: 2022-02-06 本文编辑: 吕宁)

(上接第 77 页)

- [15] BOFFELI T J, ABBEN K W. Modified Dwyer osteotomy with rotation and reinsertion of autograft bone wedge for residual heel deformity despite previous delayed subtalar joint arthrodesis after calcaneal fracture [J]. J Foot Ankle Surg, 2014, 53(6): 799 – 805.
- [16] AMANI A, SHAKERI V, KAMALI A. Comparison of calcaneus joint internal and external fractures in open surgery and minimally invasive methods in patients [J]. Eur J Transl Myol, 2018, 28(2): 7352.
- [17] WHITE E A, SKALSKI M R, MATCUK G R Jr, et al. Intra-articular tongue – type fractures of the calcaneus: anatomy, injury patterns, and an approach to management [J]. Emerg

Radiol, 2019, 26(1): 67 – 74.

- [18] 郭建华, 郭立平, 马志刚. 微创撬拨和切开复位内固定治疗 Sanders II 型跟骨骨折疗效分析 [J]. 中国矫形外科杂志, 2017, 25(6): 561 – 564.
- [19] 夏燊, 赵泽雨, 吕乾, 等. 跟骨骨折外固定技术的发展 [J]. 创伤外科杂志, 2020, 22(2): 148 – 150.
- [20] 熊浩, 刘伟, 林伟文, 等. 撬拨和切开复位后植入物内固定治疗 Sanders II 型跟骨骨折疗效比较 [J]. 中国组织工程研究, 2013, 17(26): 4919 – 4925.
- [21] 王鑫, 何斌, 黄攀, 等. 解剖锁定钛板、空心钉、外固定架固定治疗跟骨骨折的疗效比较 [J]. 中国骨与关节损伤杂志, 2017, 32(12): 1266 – 1269.

(收稿日期: 2021-11-20 本文编辑: 吕宁)