中华骨科杂志 » 2013, Vol. 33 » Issue (9): 928-934 DOI: 10.3760/cma.j.issn.0253-2352.2013.09.009

腰椎退行性侧凸患者脊柱矢状位参数与骨盆参数的相关性

李方财,陈其昕,陈维善,陈刚

310009 杭州， 浙江大学医学院附属第二医院骨科

Correlation between sagittal spinal and pelvic parameters in degenerative lumbar scoliosis

LI Fang-cai,CHEN Qi-xin,CHEN Wei-shan,CHEN Gang

The Second Hospital of Medical College, Zhejiang University, Hangzhou 310009, China

全文: PDF (777 KB) HTML (1 KB) 输出: BibTeX | EndNote (RIS) 背景资料

摘要 目的 探讨不同类型腰椎退行性侧凸患者脊柱矢状位参数与骨盆参数的相关性。方法 70名脊柱形态正常的志愿者与110例腰椎退行性侧凸患者，摄站立位脊柱全长正侧位X线片，测量胸椎后凸角、胸腰段后凸角、腰椎前凸角、矢状位垂直轴、骨盆投射角、骶骨倾斜角和骨盆倾斜角。根据SRS测量标准，将腰椎退行性侧凸患者按脊柱矢状位形态分为三型：Ⅰ型45例、Ⅱ型48例、Ⅲ型17例。比较志愿者与各型退变侧凸组间的脊柱矢状位参数及骨盆参数，分析脊柱矢状位参数与骨盆参数的相关性。结果 骨盆投射角，Ⅲ型退行性侧凸组低于其他三组，差异有统计学意义；骨盆倾斜角，Ⅱ型、Ⅲ型退行性侧凸组高于志愿者组及Ⅰ型退行性侧凸组，差异有统计学意义，其中Ⅱ型与Ⅲ型的差异也有统计学意义；骶骨倾斜角，Ⅱ型、Ⅲ型退行性侧凸组小于志愿者组及Ⅰ型退行性侧凸组，差异有统计学意义。在志愿者组、Ⅰ型退行性侧凸组中未发现脊柱矢状位失平衡；Ⅱ型与Ⅲ型退行性侧凸组脊柱矢状位失平衡的发生率分别为17.8%、29.4%。志愿者组与Ⅰ型退行性侧凸组的脊柱矢状位参数间、骨盆参数间及矢状位脊柱-骨盆参数间存在相关性；Ⅱ、Ⅲ型退行性侧凸组的脊柱矢状位参数间的相关性逐渐减小，矢状位脊柱-骨盆参数间的相关性也减小甚至消失，而骨盆参数间的相关性存在；各型退行性侧凸组的腰椎前凸角、骨盆倾斜角均与矢状位垂直轴相关，其中后两者的相关性更大。结论 脊柱矢状位形态呈阶梯样改变，Ⅱ、Ⅲ型退行性侧凸患者的骨盆参数、脊柱矢状位参数与骨盆参数的相关性发生变化，更容易出现脊柱矢状位失平衡。

关键词： 脊柱侧凸 骨盆测量 放射摄影术

Abstract： Objective To investigate the correlation between sagittal spinal and pelvic parameters in different types of degenerative lumbar scoliosis (DLS). Methods Standing anteroposterior and lateral radiographs of the whole spine including hip joints were carried out in 70 volunteers without spinal deformity and 110 patients with DLS. The following parameters were measured: thoracic kyphosis (TK), thoracolumbar kyphosis (TL), lumbar lordosis (LL), sagittal vertical axis (SVA), pelvic incidence (PI), pelvic tilt (PT) and sacral slope (SS). According to the sagittal spinal alignment, the patients with DLS were classified into 3 types: type Ⅰ (45 cases), type Ⅱ (48 cases) and type Ⅲ (17 cases). The sagittal spinal and pelvic parameters were compared between control group and different types of DLS group, and the relationship between the sagittal spinal parameters and pelvic parameters in different groups were also investigated. Results PI in type Ⅲ patients was lower than those in other groups; PT in type Ⅱ and Ⅲ patients was higher than those in controls and type Ⅰ patients, and there was a significant difference between type Ⅱ and Ⅲ patients; SS in type Ⅱ and Ⅲ patients was lower than those in controls and type Ⅰ patients, and there was no significant difference between type Ⅱ and Ⅲ patients. Sagittal spinal imbalance was found in 17.8% of type Ⅱ patients and 29.4% of type Ⅲ patients. There were significant correlations in sagittal spinal parameters, pelvic parameters and spinopelvic parameters in controls and type Ⅰ patients. However, in type Ⅱ and Ⅲ patients, the correlations in sagittal spinal parameters and spinopelvic parameters decreased, even disappeared, though significant correlations were still found in pelvic parameters. In any group, SVA showed a significant correlation with LL and PT, especially with PT. Conclusion The sagittal spinal alignment has a ladder-like change in patients with DLS, and the correlations in pelvic parameters and spinopelvic parameters also change in type Ⅱ and Ⅲ patients, for whom the sagittal spinal imbalance is more likely to occur.

Key words: Scoliosis Pelvimetry Radiography

收稿日期: 2013-10-21;

作者简介: 陈其昕，E-mail: leerich215@yahoo.com.cn

引用本文:

李方财,陈其昕,陈维善等. 腰椎退行性侧凸患者脊柱矢状位参数与骨盆参数的相关性[J]. 中华骨科杂志, 2013, 33(9): 928-934.

LI Fang-Cai,CHEN Qi-Xin,CHEN Wei-Shan et al. Correlation between sagittal spinal and pelvic parameters in degenerative lumbar scoliosis[J]. Chin J Orthop, 2013, 33(9): 928-934.

链接本文:

http://www.chinjorthop.com/Jwk_zhgkzz/CN/10.3760/cma.j.issn.0253-2352.2013.09.009 或
http://www.chinjorthop.com/Jwk_zhgkzz/CN/Y2013/V33/I9/928

没有找到本文相关图表信息

[1] Glassman SD, Berven S, Bridwell K, et al. Correlation of radiographic parameters and clinical symptoms in adult scoliosis. Spine (Phila Pa 1976), 2005, 30(6): 682-688.

[2] Glassman SD, Bridwell K, Dimar JR, et al. The impact of positive sagittal balance in adult spinal deformity. Spine (Phila Pa 1976), 2005, 30(18): 2024-2029.

[3] Mehta VA, Amin A, Omeis I, et al. Implications of Spinopelvic Alignment for the Spine Surgeon. Neurosurgery, 2012, 70(3): 707-721.

[4] 钱邦平, 季明亮, 邱勇, 等. 经椎弓根截骨对强直性脊柱炎胸腰椎后凸畸形脊柱-骨盆参数的影响. 中华骨科杂志, 2012, 32(5): 398-403. 浏览

[5] Mac-Thiong JM, Labelle H, Berthonnaud E, et al. Sagittal spinopelvic balance in normal children and adolescents.Eur Spine J, 2007, 16(2): 227-234.

[6] Roussouly P, Gollogly S, Berthonnaud E, et al. Sagittal alignment of the spine and pelvis in the presence of L5-S1 isthmic lysis and low grade spondylolisthesis. Spine (Phila Pa 1976), 2006, 31(21): 2484-2490.

[7] Boulay C, Tardieu C, Hecquet J, et al. Sagittal alignment of spine and pelvis regulated by pelvic incidence: standard values and prediction of lordosis.Eur Spine J, 2006, 15(4): 415-422.

[8] Lafage V, Schwab F, Patel A, et al. Pelvic tilt and truncal inclination: two key radiographic parameters in the setting of adults with spinal deformity. Spine (Phila Pa 1976), 2009, 34(17): E599-606.

[9] Vialle R, Levassor N, Rillardon L, et al. Radiographic analysis of the sagittal alignment and balance of the spine in asymptomatic subjects. J Bone Joint Surg Am, 2005, 87(2): 260-267.

[10] Le Huec JC, Aunoble S, Philippe L, et al. Pelvic parameters: origin and significance. Eur Spine J, 2011, 20 Suppl 5: S564-571.

[11] Schwab FJ, Smith VA, Biserni M, et al. Adult scoliosis: a quantitative radiographic and clinical analysis. Spine(Phila Pa 1976), 2002, 27(4): 387-392.

[12] 李方财, 陈其昕, 陈维善, 等. 选择性经椎间孔椎间融合结合后路融合术治疗退行性腰椎侧凸. 中华骨科杂志, 2009, 29(9): 806-810.

[13] 李方财, 陈其昕, 陈维善, 等. PLF与TLIF治疗腰椎退行性侧凸的对照研究. 中华骨科杂志, 2012, 32(12): 1121-1126. 浏览

[14] Schwab F, Farcy JP, Bridwell K, et al. A clinical impact classification of scoliosis in the adult. Spine (Phila Pa 1976), 2006, 31(18): 2109-2114.

[15] Lowe T, Berven SH, Schwab FJ, et al. The SRS classification for adult spinal deformity: building on the King/Moe and Lenke classification systems. Spine (Phila Pa 1976), 2006, 31(19 Suppl):S119-125.

[16] Bess S, Schwab F, Lafage V, et al. Classifications for adult spinal deformity and use of the scoliosis research society-schwab adult spinal deformity classification. Neurosurg Clin N Am, 2013, 24(2): 185-193.

[17] Ploumis A, Liu H, Mehbod AA, et al. A correlation of radiographic and functional measurements in adult degenerative scoliosis. Spine (Phila Pa 1976), 2009, 34(15): 1581-1584.

[18] Barrey C, Jund J, Noseda O, et al. Sagittal balance of the pelvis-spine complex and lumbar degenerative diseases. A comparative study about 85 cases. Eur Spine J, 2007, 16(9): 1459-1467.

[19] Labelle H, Mac-Thiong JM, Roussouly P. Spino-pelvic sagittal balance of spondylolisthesis: a review and classification. Eur Spine J, 2011, 20 Suppl 5: S641-646.

[20] Li WS, Li G, Chen ZQ, et al. Sagittal plane analysis of the spine and pelvis in adult idiopathic scoliosis. Chin Med J (Engl), 2010, 123(21): 2978-2982.

[21] Hong JY, Suh SW, Modi HN, et al. Correlation of pelvic orientation with adult scoliosis. J Spinal Disord Tech, 2010, 23(7): 461-466.

[22] Legaye J, Duval-Beaupère G, Hecquet J, et al. Pelvic incidence: a fundamental pelvic parameter for three-dimensional regulation of spinal

sagittal curves. Eur Spine J, 1998, 7(2): 99-103.

[23] Legaye J, Duval-Beaupere G. Sagittal plane alignment of the spine and gravity:a radiological and clinical evaluation. Acta Orthop Belg, 2005, 71(2): 213-220.

[24] Gottfried ON, Daubs MD, Patel AA, et al. Spinopelvic parameters in postfusion flatback deformity patients. Spine J, 2009, 9(8): 639-647.

[25] Mac-Thiong JM, Roussouly P, Berthonnaud E, et al. Age-and sex-related variations in sagittal sacropelvic morphology and balance in asymptomatic adults. Eur Spine J, 2011, 20 Suppl 5: S572-577.

[26] Upasani VV, Tis J, Bastrom T, et al. Analysis of sagittal alignment in thoracic and thoracolumbar curves in adolescent idiopathic scoliosis: how do these two curve types differ? Spine (Phila Pa 1976), 2007, 32(12): 1355-1359.

[27] Mac-Thiong JM, Labelle H, Charlebois M, et al. Sagittal plane analysis of the spine and pelvis in adolescent idiopathic scoliosis according to the coronal curve type. Spine(Phila Pa 1976), 2003, 28(13): 1404-1409.

[28] Lonner BS, Auerbach JD, Sponseller P, et al. Variations in pelvic and other sagittal spinal parameters as a function of race in adolescent idiopathic scoliosis. Spine(Phila Pa 1976), 2010, 35(10):E374-377.

[1] 郝定均,贺宝荣,刘团江,惠华,李辉. 脊柱截骨治疗先天性脊柱侧凸合并脊髓纵裂畸形的安全性和近期疗效[J]. 中华骨科杂志, 2013, 33(8): 803-808.

[2] 朱泽章,江龙,邱勇,刘臻,钱邦平,吴涛,伍伟飞,闫煌. 青少年Chiari畸形伴胸椎侧凸远端融合范围的选择及疗效比较[J]. 中华骨科杂志, 2013, 33(5): 433-439.

[3] 姚子明,仉建国,邱贵兴,王升儒,翁习生,郭建伟. 一期后路全脊椎切除治疗重度脊柱畸形围手术期并发症及其相关危险因素分析[J]. 中华骨科杂志, 2013, 33(5): 440-446.

[4] 李危石,孙卓然,陈仲强. 正常脊柱-骨盆矢状位参数的影像学研究[J]. 中华骨科杂志, 2013, 33(5): 447-453.

[5] 王景明,张永刚,郑国权,齐登彬,张雪松,毛克亚,王征,董天翔,王岩. 中国青少年特发性脊柱侧凸患者胸椎椎弓根形态学三维CT分析[J]. 中华骨科杂志, 2013, 33(5): 459-466.

[6] 王文军,薛静波,晏怡果,左建宏,姚女兆,王程,王麓山,李学林,欧阳智华. 新型滑槽钉生长棒内固定系统治疗儿童脊柱侧凸的初步报告[J]. 中华骨科杂志, 2013, 33(2): 147-151.

[7] 张宏其,王昱翔,郭超峰,刘少华,唐明星,刘金洋,吴建煌,陈静. 脊柱侧凸三维矫形并发症的临床分析[J]. 中华骨科杂志, 2013, 33(1): 32-38.

[8] 江华,邱旭升,邱勇,朱泽章,钱邦平,王渭君,刘臻. 青少年特发性脊柱侧凸胸椎椎弓根螺钉误置与主动脉损伤的风险评估[J]. 中华骨科杂志, 2013, 33(1): 65-70.

[9] 肖瑜,张福江,马信龙,任凯晶,于建华,高志国. 全髋关节置换术后股骨偏距减小与聚乙烯内衬磨损的关系[J]. 中华骨科杂志, 2012, 32(9): 849-854.

[10] 姜宇,赵宇,王以朋,邱贵兴,翁习生,李晔. 生长棒技术治疗早发性脊柱侧凸术后的肺功能变化[J]. 中华骨科杂志, 2012, 32(9): 862-866.

[11] 宋凯,张永刚,郑国权. 强直性脊柱炎后凸畸形矫形前后 生活质量与影像学参数分析[J]. 中华骨科杂志, 2012, 32(5): 404-408.

[12] 于斌,王以朋,仉建国,沈建雄,赵宇,李书纲,邱贵兴. 青少年特发性脊柱侧凸后路矫形术后 新发上胸弯转归分析[J]. 中华骨科杂志, 2012, 32(5): 409-414.

[13] 韩岳,夏群,胡永成,张继东,徐宝山,吉宁. 椎间盘造影压力及形态学变化对椎间盘源性腰痛的诊断意义[J]. 中华骨科杂志, 2012, 32(4): 317-322.

[14] 乔军, 朱泽章, 刘臻, 宋跃明, 海涌, 罗卓荆, 刘祖德, 张宏其, 吕国华, 王以朋, 仉建国, 沈建雄, 孙旭, 邱勇, 邱贵兴. 性别差异对青少年特发性脊柱侧凸SRS-22问卷评分的影响[J]. 中华骨科杂志, 2012, 32(2): 157-160.

[15] 孙旭, 邱勇, 王斌, 俞扬, 朱泽章, 钱邦平, 朱锋, 马薇薇, 刘臻. 近端固定椎的选择对Lenke 5型脊柱侧凸前路矫形疗效的影响[J]. 中华骨科杂志, 2012, 32(2): 161-166.

地址:天津市河西区解放南路406号天津医院内 邮编:300211

电话: 86-22-28334734 86-22-28278929 传真: 86-22-28241184 E-mail:gktougao@126.com