

子宫脱垂患者骶主韧带MR三维重建模型的研究(PDF)

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Title: Study of three-dimensional reconstruction model of cardinal and uterosacral ligaments by MRI in patients with uterine prolapse

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摘要: 目的 通过盆底磁共振成像(MRI)建立三维重建模型,将子宫脱垂患者骶韧带(uterosacral ligaments, USL)和主韧带(cardinal ligaments, CL)测量各参数与健康女性比较,探讨骶主韧带解剖改变的主要几何参数,从MRI三维重建角度客观评价子宫脱垂的各种盆底重建术。方法 选择2010年10月至2011年10月确诊为子宫脱垂患者20例为研究对象,选取健康女性20例为对照组。对2组进行盆底MRI薄层扫描建立图像集,在计算机三维重建软件上行骶主韧带及盆腔器官三维重建,测量并比较2组骶主韧带起止点、长度、体积、骶韧带弯曲度、骶韧带之间角度、同侧骶主韧带角度等参数的变化。结果 子宫脱垂患者组骶韧带长度小于对照组($P<0.05$),骶韧带角度大于对照组($P<0.05$),主韧带测量参数无显著性差异。20例子宫脱垂患者中骶韧带起自骶骨2例(10%)、尾骨肌/骶棘韧带复合体16例(80%)、坐骨棘2例(10%);插入宫颈8例(40%)、阴道2例(10%)、宫颈和阴道10例(50%);主韧带起自同侧骨盆侧壁坐骨大孔,8例插入到宫颈(40%),4例到阴道(20%),8例到宫颈和阴道(40%);健康对照组中骶韧带起自骶骨6例(30%)、尾骨肌/骶棘韧带复合体13例(65%)、坐骨棘1例(5%);插入宫颈6例(30%)、阴道2例(10%)、宫颈和阴道12例(60%);主韧带起自同侧骨盆侧壁坐骨大孔,8例到宫颈(40%),2例到阴道(10%),10例到宫颈和阴道(50%)。结论 MRI三维重建能清楚显示盆底器官与子宫骶主韧带解剖关系及三维几何量化关系;骶韧带之间角度、骶韧带长度是子宫脱垂病变的重要参数,主韧带解剖几何参数变化与子宫脱垂无显著性意义,治疗子宫脱垂各种盆底重建术的中心是骶韧带重建。

Abstract: Objective To investigate the geometric parameter changes in anatomy abnormalities of cardinal ligaments (CL) and uterosacral ligaments (USL) in uterine prolapse, and to evaluate different types of pelvic floor reconstruction for uterine prolapse treatment by MRI-based three-dimensional (3D) reconstruction. Methods Twenty patients with diagnosed uterine prolapse from October 2010 to October 2011 and 20 healthy volunteers were assigned as a patient group and a control group, respectively. The 3D reconstruction models of CL, USL and pelvic organs were constructed from the MRI data of the two groups of subjects by 3D reconstruction software. The origin, end point, length, volume and curvature of CL and USL, the angle of USL and the angle between the same side of CL and USL were compared between the two groups. Results The length of USL in the patient group was shorter than that in the control group ($P<0.05$). The angle of USL in the patient group was larger than that in the control group ($P<0.05$). There was no significant difference in the measurement parameters of CL between the two groups ($P<0.05$). In the patient group, the USL origins were 2 cases (10%) on sacrum, 16 cases (80%) on coccygeus/sacrospinous complex, and 2 cases (10%) on ischial spine, and its endpoints attached to cervix in 8 cases (40%), to vagina in 2 cases (10%), and to both cervix and vagina in 10 cases (50%). The CL originated from greater sciatic foramen at the same side of pelvic sidewall, and its endpoints attached to cervix in 8 cases (40%), to vagina in 4 cases (20%), and to both cervix and vagina in 8 cases (40%). In the control group, the USL origins were 6 cases (30%) on sacrum, 13 cases (65%) on coccygeus/sacrospinous complex, and 1 case (5%) on ischial spine, and its endpoints attached to cervix in 6 cases (30%), to vagina in 2 cases (10%), and to both cervix and vagina in 12 cases (60%). The CL originated from greater sciatic foramen at the same side of pelvic sidewall, and its endpoints attached to cervix in 8 cases (40%), to vagina in 2 cases (10%), and to both cervix and vagina in 10 cases (50%). Conclusion The MRI 3D reconstruction model can clearly demonstrate the geometrical and anatomical relationships between pelvic organs and the ligaments of CL and USL. The angle and the length of USL are the main parameters associated with uterine prolapse, but not the parameters of CL. The reconstruction of USL is the key point of different types of pelvic floor reconstruction for uterine prolapse treatment.

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