

论 著

手法治疗脊柱滑脱症的临床与实验研究

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摘要:应用位移传感器测量新鲜尸体标本模拟运动及旋转复位时位移情况,可见腰椎下关节突产生向上及侧方位移,使椎间孔扩大,椎体产生相应向后回位趋势;肉眼观察峡部裂脊柱标本在手法作用下出现峡部裂间距加大。对 35 例腰椎滑脱症病人手法治疗,效果较为满意,尤对退变型滑脱为佳;仰卧屈膝,屈髋擦腰起坐锻炼和等张肌力锻炼是治疗该病的重要措施。

关键词:脊柱滑脱 生物力学 手法治疗 等张肌力锻炼

我们应用位移传感器测量新鲜尸体标本模拟脊柱运动及坐姿旋转复位时位移情况及峡部裂裂隙处的变化情况,现概述如下。

临床资料

35 例中,峡部裂型脊柱前滑脱 18 例,平均年龄 33 岁,退变型脊柱前滑脱 17 例,平均年龄 46 岁;全部病例均为 I 度滑脱。所有病人均有腰及臀外侧疼痛,其中 8 例伴下肢放射痛,30 例病人腰后伸时疼痛加重,24 例仰卧屈膝屈髋疼痛可减轻,直腿抬高阳性 7 例,间歇性跛行 14 例。CT 检查:10 例病人行 CT 检查,所有检查的病人在滑脱间隙均有间盘突出。

治疗方法

1. 解痉镇痛:采用俯卧提腰法,加局部按、揉法。

2. 穴位镇定:取痛点(常为肌肉,韧带,筋膜的附着点,皮神经或坐骨神经行经路线)及环跳、秩边、承扶、风市、委中、承山等穴。

3. 理筋正骨:采用斜扳及坐姿旋转复位法。但对峡部裂型的手法要轻柔,避免使用暴力。

4. 屈膝屈髋擦腰起坐法:患者仰卧,屈双膝、双髋,双手抱膝,令患者尽量在此姿势下坐起,然后再缓缓躺下,不要运动过快。初时患者不能自行完成时,医生可一手扶患者小腿,一手扶患者肩部,在患者进行锻炼时,轻轻帮助推,每次做 5 分钟。早晚自行锻炼。

5. 腰背肌锻炼(改良燕飞):病人俯卧,腹

部垫一薄枕,使腰部变平直,减少腰后伸,腰椎彼此间保持较平行的位置,然后上身抬起作腰背肌锻炼。

6. 腹肌锻炼(改良仰卧起坐):患者仰卧,屈膝屈髋,以减少下肢伸直时,腰大肌对腰椎前凸牵拉,然后再仰卧坐起。

7. 等张肌力锻炼:嘱患者取坐位,双髋双膝均屈曲 90°,缓慢尽力深呼气,以腹式呼吸为主导让腹肌收缩,膈肌上升,腹压上升,然后屏气数秒,再缓缓呼气,重复多次,以锻炼腹肌及腰背肌。

治疗结果

优:腰腿疼痛症状缓解,可从事正常工作、生活,峡部裂型脊柱滑脱 3 例,退变型脊柱滑脱 6 例;良:腰腿疼痛基本缓解,可从事轻工作,但行走 2~3 里地后感疼痛略加重,峡部裂型的为 6 例,退变型的为 7 例;可:腰腿疼痛大部分缓解,可坚持从事轻工作,峡部裂型 7 例,退变型 4 例;差:腰腿疼痛症状无改变,不能工作,峡部裂型 2 例,退变型 0 例,总优良率,峡部裂型 50%,退变型为 76.6%。

实验研究

1. 脊柱运动及坐姿旋转复位手法时的位移测定

依据位移传感器的制作原理,制成可直接测量腰椎某一节段的前后、左右、上下各方向位移的新型传感器,并在新鲜尸体脊柱标本上检测腰 4~5 小关节在前屈,后伸,左右侧弯及

旋转复位时上下、左右、前后位移情况,以判断该间隙椎体及椎间孔的位移及形态变化。

结果:在作坐姿旋转复位手法使脊柱屈曲达 8°时,左侧下关节突产生向下、右、前方的移动,此时右侧下关节突则产生向下、右、后方的移动,而当前屈达 16°时两侧下关节突均出现向上、左及后的位移,且右侧下关节突向上及后的位移程度比左侧的要大,说明向右侧作旋转复位手法对右侧小关节活动的调整幅度要大。以后随手法使脊柱屈曲角度的加大,下关节突向上、向后位移也明显增加,当手法使脊柱回到原始位置时,关节突的活动也逐渐恢复到原来位置。

2. 新鲜尸体脊柱标本伸屈活动时椎间孔与神经根的关系变化

方法:剔除新鲜尸体脊柱标本椎旁肌肉及腰 3、4,腰 4、5,腰 5 骶 1 双侧椎间孔周围组织,保留韧带,分清椎间孔的周缘,找到由椎间孔走出的脊神经,然后作前屈、后伸,观察椎间孔的变化及其与神经根的关系。

结果:当脊柱由中立位作前屈活动时,每个椎体的下关节突逐渐上移,椎间孔的矢状径明显加大,面积亦变大,神经根与椎间孔上缘的空隙也扩大。反之,当脊柱由中立位作后伸活动时,椎体的下关节突均向下移,椎间孔的矢状径、面积及神经根在椎间孔上缘空隙均缩小,椎弓根骑压于神经根上。此外,当脊柱前屈时可使上下小关节突与椎弓峡部的间距明显加大,可知峡部受力程度也将缩小,反之,两侧上下小关节突明显靠拢于椎弓峡部,峡部受力增大,这与周秉文等^[1]所作观察相符。

3. 峡部裂脊柱标本模拟手法时的实验观察

方法:将实验标本分离出双侧腰 4 椎弓峡部,经其下方穿一线锯,锯断双峡部,制成双侧腰 4 峡部裂模型,然后再作直立时左右旋转(模拟斜扳)及坐姿旋转手法,观察在此情况下,腰 4 峡部裂的变化情况。

结果:(1)腰 4 峡部裂模型处于中立位静止状态时,双侧峡部裂缘基本紧贴,无明显分

离。(2)将处于中立位的脊柱标本作左侧旋转时,右侧峡部裂间距明显加大,左侧轻度加大;右侧旋转时,左侧峡部裂间距明显加大而右侧轻度加大,左侧最大可达 2mm。(3)模拟坐姿旋转手法时,可见从手法旋转开始时起,同侧峡部裂间距明显加大,最大可达 3mm,而另一侧轻度加大,回位到原始位置时,峡部裂间距基本恢复到原样。

讨 论

通过对新鲜尸体标本腰 4、5 节段的小关节在腰椎运动及坐姿旋转复位手法下的位移测定。可知,坐姿旋转复位可使椎后关节的下关节突产生向上、侧方及后方的位移,使椎间孔扩大,缓解神经根压迫,同时产生相应椎体后移趋势,这有助于改善脊柱滑脱,椎后小关节的这种综合位移可使脊柱滑脱所造成的小关节紊乱(骨错缝)得到纠正,使失稳的脊柱内在平衡得到恢复。根据测量结果可知,旋转手法向那侧旋转,那侧小关节活动范围就大,这提示我们治疗时主要针对病变重的一侧进行旋转手法。

根据对峡部裂脊柱标本模型旋转手法观察发现,这可使双侧峡部裂间距加大,这似乎不利上述手法治疗峡部裂性脊柱滑脱,但事实上,峡部裂并非一定是病症产生的原因,许多病人有峡部裂而无症状,甚至可以从事重体力劳动^[2]。产生病症的原因很可能为椎后关节紊乱而造成的。手法可纠正此病理改变,因此具有治疗作用,当然要避免重手法。而由于有峡部裂的存在,病变处又常有增生组织可压迫神经,或不连处可能有异常活动刺激神经,这些都可能影响治疗效果,造成临床上峡部裂型脊柱滑脱治疗效果不如退变型的原因。

CT 检查显示脊柱滑脱病人的腰椎间盘突出发生率相当高,尽管典型腰突症的症状体征并不常见,但有研究证明,腰突也可能引起腰痛而无坐骨神经痛^[3]。因此,我们认为腰间盘突出也是脊柱滑脱后的一个致痛因素。这也是手法治疗该症的机理之一。

脊柱滑脱病人由于脊柱内在平衡失调,因

此有效地锻炼腰背肌、腹肌及韧带加强其外在平衡是极为重要的。而当腰椎在屈曲时,腰椎下关节突上移,椎间隙后缘增大,椎间盘向腰椎屈伸弧的凹侧膨出,凸侧扁平。黄韧带拉伸变直,减少向椎管内突出;椎管容量也可增加。同时纤维环后部营养增加⁽⁴⁾;两侧小关节的应力及压缩载荷减小有利椎管内血循的改善。但直立位弯腰使滑脱分力加大。针对这些情况我们采取让病人仰卧屈膝屈髋擦腰起坐锻炼,既克服上述不利因素,又能使患者经常处于脊柱屈曲位锻炼腰背肌、腹肌及韧带,有利于脊柱滑脱病理变化及椎管内血循环的改善。因此,此项锻炼是治疗和康复该症的重要措施。由于

腰后伸时,会导致脊柱滑脱病理及临床症状的加重,在治疗上及锻炼时均应尽量避免,改良燕飞式,改良仰卧起坐及等张肌力锻炼就是避免上述不利因素,而采取的正确锻炼肌力的方法。

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外伤性骨骺早闭肢体短缩 2 例

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外伤致股骨骨骺早闭, 下肢短缩, 临床少见, 我院收治 2 例, 报告如下。

例 1, 李××, 男, 13 岁, 学生, 住院号: 829, X 片号: 1674, 于 1990 年 1 月 16 日以“右下肢短缩跛行 3 年”为主诉入院。患者 10 岁时右膝部摔伤轻度肿痛, 当时照片未发现异常。1 年后右下肢逐渐短缩跛行。查体: 一般情况好, 右大腿短 3.5cm, 照片示: 右股骨下端骨骺早闭, 较左股骨短 3.5cm。透视下于股骨远端骺线下 0.5cm 处交叉穿 2 根 4mm 骨圆针, 中上段平行穿 2 根骨圆针, 在无菌下横形切断干骺端, 上好延长器, 第 4 天开始以每天 1mm 速度延长, 40 天 X 线片示: 延长达 3.5cm, 延长区见均匀一致新骨阴影, 70 天照片示延长区大量骨痂形成, 100 天后出现骨皮质阴影, 130 天后 X 线征示骨性愈合, 去除外固定架, 进行功能锻炼, 配合中药熏洗, 逐渐负重行走。3 年后随访, 双下肢等长无跛行。

例 2, 何××, 男, 12 岁, 住院号: 1041, X 片号: 2432。右下肢短缩跛行 4 年, 于 1991 年 2 月 14 日入院。患者 8 岁时从 1m 多高晒楼上坠下, 右足先着地, 当时感右膝关节轻度肿痛, 活动正常, 未加注意, 半年

后右大腿逐渐短缩跛行。查体: 右大腿短 3cm, 余正常。照片示: 右股骨远端骨骺早闭, 短 3cm, 经股骨下干骺端截骨逐渐延长达 3cm, 半年后骨性愈合, 随访至二年半, 双下肢等长无跛行。

讨 论

儿童时期骺软骨板的强度远不及韧带和关节囊, 关节部位的损伤很容易造成骨骺损伤, 由于临床症状轻微, X 片无阳性所见, 很易误诊为软组织损伤。下肢长度增加主要发生在股骨下端及胫骨上端, 骨骺损伤无论是破坏了骺板的血运或软骨细胞本身, 都会影响骺板的正常发育, 如果软骨损伤较轻或仅为血供不足, 则软骨细胞增殖能力减退, 局部生长速度减慢, 若操作严重则软骨增殖停止, 骨骺早期闭合, 该骨端不再向长度增长, 肢体短缩超过 2.5cm, 将影响下肢生理平衡。干骺端是长管状骨血液循环最丰富的部位, 此处细胞增殖活跃, 松质骨成骨力强, 新物的生物力学性能好, 采用股骨下干骺端截骨延长较股骨干延长安全, 创伤小, 并发症少, 骨愈合快, 逐步延长便于观察, 避免神经、血管损伤。

Abstract of Original Articles

Clinical and experimental studies on spondylolithiasis treated by manipulation

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Displacement microsensors were applied to measure fresh cadaver specimens in mimic the displacement in movement and rotatory reduction. It was found that the inferior facet joint of the lumbar spine producing an upward and lateral displacement to enlarge the intervertebral foramen, the vertebral body producing a tendency of relatively backward and retaining to its original position. Through naked eye observation, there was increasing of the width of the isthmus under the action of manipulation of the gap of isthmus. Thirty-five cases of spondylolithiasis were treated by manipulation with satisfactory results, especially for those suffering with degenerative type. It showed that lying in supine position with flexion of knees and hip joints, by rolling the waist, sitting up exercise and iso-tension training are important procedures in therapy.

Key Words Spondylolithiasis Bio-mechanics Manipulation Iso-tension training

Clinical analysis of twenty-two cases of tower-door type of fracture of ankle joint

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Tower-door type fracture of the ankle joint is a rare and intra-articular fracture which is difficult to be treated. Twenty-two cases of such kind of fracture were treated with simple manipulative reduction and application of plaster of Paris as external fixation, prizing dispelling reduction and internal fixation with steel wire, steel wire internal fixation via open reduction, fusion of the ankle joint etc. Better results were gained with prizing-dispelling reduction and internal fixation with steel wire via open reduction. But simple manipulation with plaster of Paris as external fixation and joint fusion had worse results. Pathogenesis of the fracture diagnosis, therapeutic etc. problems were discussed.

Key Words Intra-articular fracture Reduction of tower-door type fracture
Internal fixation with steel wire Joint fusion

Cartilage callus in bone healing

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Through light microscopic non-decalcified bone histological, histochemical and electron microscopic observations on formation, evolution and ultrastructure of cartilage callus of rabbit radial bone fracture standard defect model during healing process, the results showed that the cartilage callus comes from differentiation of granular tissue of the fracture ends, its formation and reconstruction did not completely similar with ossification in the epiphyseal chondrium. There are five evolutionary stages of cartilage callus cells, the callus under electron microscopic

findings, i. e chondroblasts, chondrocytes hypertrophic chonocytes, degenerative chonocytes and remnant chondrocytes. We realized that 1)the chondrial callus is differentiated from interstitial cells surrounding the fracture end ,2)during reconstruction process, chondrial callus can directly form bone trabeculae. We support the hypothesis that hypertrophied chonocytes. can transfer to bone cells,3)chondrial callus bears important action during healing process. it can fulfil bone defect in the early stage, connect fracture ends, the fracture healing process is completed under the burden of gravity.

Key Words Cartilage callus Fracture healing Morphology

Experimental and clinical observation on Gao Wu Jia Su Shang Cha Ji in treating acute soft tissue injury

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Externally applied Gao Wu Jia Su, extract of Chinese herb Gao Wu Tou frost ointment was introduced to treat acute soft tissue injury . Through an observation of animal experiment and 500 patients ,the results indicated that the drug bears better dispelling action of edema, analgesic action and dispelling stasis, and it has no toxic and side—effect. The total effective rate reaches 99. 2%. It is easy to be applied ,so it is an ideal external used drug in treating acute soft tissue injury.

Key Words Soft tissue injury Gao Wu Jia Su External therapeutic method with Chinese herb Experimental study Clinical appilcation

Clinical observation of elastic external fixation and functional exercise under burder in treating non—union of tibia

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Li Kexin et al (李可心)

Twenty—two cases of non—union of tibia treated by external fixation with wire and functional exercise under burder. Among them, 10 cases were proliferative type, 12 atrophic type. The causes of tailure are 11 cases for defext in internal fixation, 4 for plaster of Paris fixator, 2 for self—made splint fixation with bad fixation , and 5 for infection of the fracture ends. Through a course of therapy from 87—189 days, with an average of 103 days, 19 cases healed within months ,3 with worse effectiveness. The result of analysis showed that, the maincause of non—union was due to insufficient therapy interference to natural healing process, with limitation of the ability of bone growth. Elasticexternal fixation can improve the stability of fracture ends, offer elastic and interrupted physiological pressure stress. It dons't limit the blood supply action of the muscle pump during functional exercies. It facilitaes recovery the ability of growth of the fracture ends .

Key words Non—union External fixator for fracture