青少年特发性脊柱侧凸症的临床病理研究

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摘要 对 30 例特发性脊柱侧凸症病变组织进行了光镜、电镜及免疫组织化学的观察。结果表明：主弯段躯干凹侧面凹陷区的筋膜肌肉有粘连变性现象。其病理变化特点为感染，肌纤维变性，结缔组织增生，粘连和瘢痕形成。为综合治疗提供了依据。

关键词 脊柱侧凸 免疫化学 超微结构

特发性脊柱侧凸症的病因至今不清[1]。我院在采取手术治疗此类畸形过程中，发现主弯段躯干凹陷区的筋膜、肌肉有粘连变性现象，将其组织进行光镜、电镜和免疫组织化学的研究，其结果报道如下。

材料与方法

在主弯段躯干凹侧面凹陷区中心处取肌肉标本(主为背阔肌、腹外斜肌及骶棘肌)，同时在凸侧与凹陷区相对称的部位取肌肉标本作对照，以 10%福尔马林液固定，石蜡常规切片，HE 染色，光镜检查。

电镜：取材与光镜一样，组织以 4%戊二醛固定液，4℃下固定 2～3 小时，用缓冲液冲洗数次，用 1%锇酸缓冲液，4℃下作后固定 1～2 小时，用缓冲液冲洗数次，用 1%醋酸铀盐水液固定组织块 30～40 分钟，用生理盐水冲洗数次，环氧树脂包埋，超薄切片，醋酸铀和枸橼酸染色。

免疫组织化学：于 1～2%福尔马林缓冲液固定的组织，在 2μm 厚的石蜡切片上，用兔抗人抗血清(抗人 IgG、IgA、IgM、IgD)作 PAP 法显示；同时作空白对照，以 PBS 取代一抗。高倍显微镜下见细胞膜或细胞质有棕黄色颗粒为阳性，判断标准：(一)各视野均无阳性细胞；(±)很少视野有 1～2 个阳性细胞；(＋)较多视野有 2～3 个以上阳性细胞。

结果

1. 一般资料：男 14 例，女 16 例，年龄 13～19 岁，侧凸 cobb 角 57～115°，术中发现凹陷区脂肪筋膜纤维化，肌肉呈淡红色，弹性差，与胸壁紧密粘连，以凹陷区中心处最为严重，向周围逐渐减轻。

2. 光镜观察：30 例凹陷区中心处的浅层骨骼肌组织学改变的共同特点是：纵切面上肌纤维横纹模糊，部分肌核呈链状排列(见图$_1$)，横切面肌核位于肌纤维中央，肌纤维水肿，轻度萎缩，以肌束外围明显；纵切面上凹侧与凸侧的肌纤维横径(M±SD. n＝100)分别为 0. 303±0. 110 及 0. 439±0. 122μm，t＝9. 159(P＜0. 001)，两者差异非常显著。30 例肌纤维间及血管周围均有不同程度的淋巴细胞及浆细胞浸润，其中 6 例偶见中性白细胞；30 例均有大小不一、多少不等的瘢痕组织形成(见图$_2$)；12 例纤维组织增生；16 例血管增生、扩张瘀血、血管壁增厚和管腔狭窄(见图$_3$)；15 例肌纤维间脂肪细胞浸润(见图$_4$)；21 例肌纤维玻璃样变性、3 例颗粒变性、6 例空泡变性及粘液变性、11 例灶性坏死(图$_5$ 见 14 页)。凸侧相对称部位的骨骼肌组织学形态正常，凹侧骶棘肌组织学形态无明显改变。

3. 透射电镜观察：凹陷区中心位的背阔肌和腹外斜肌显示：肌纤维纽曲，排列不整齐，M 线、Z 线、A 带、I 带及 H 带变形移位，肌核呈卵圆形、位于肌纤维中央，肌丝少，有少数空化线粒体，肌膜周围有疏密不均电子密度透明区(图$_6$ 见 14 页)。

4. 免疫组织化学观察：30 例全部作 IgG、IgA、IgM、IgD 四种试剂染色。其结果：IgG(＋)30 例(100%)；IgA(＋)29 例(96. 6%)，(±)1 例(3. 4)；IgM(＋)27 例(90%)，(±)3 例(10%)；IgD(＋)24 例(80%)，(±)4 例(13. 0%)，(一)2 例(7. 0%)。经统计学处理，四

图 1　肌核呈链状排列

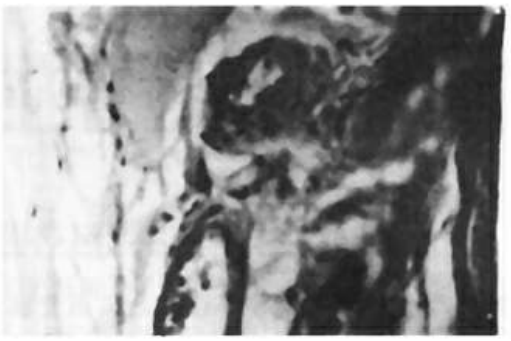

图 3　血管增生，管壁增厚

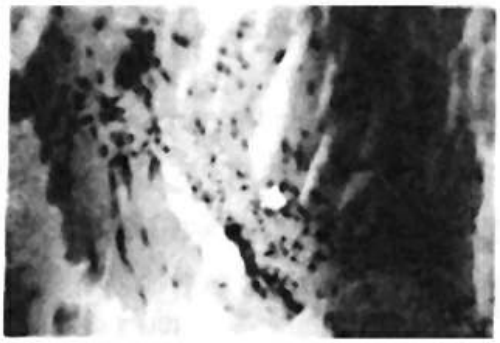

图 2　瘢痕组织

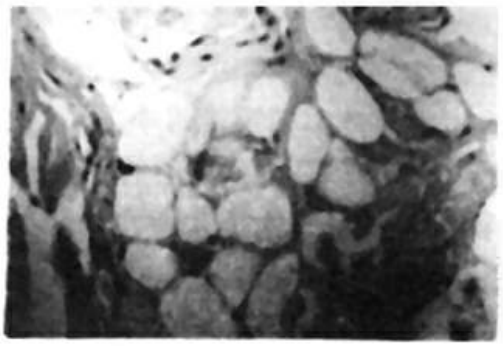

图 4　肌纤维间脂肪细胞浸润

种试剂的阳性出现率没有显著差异（$P>0.05$）。对照试验均为（一）。

讨论

Sahgal 等人对特发性脊柱侧凸患者的椎旁肌（骶棘肌）和臀大肌进行了形态学的研究，在 15 例中，发现主弯段凹侧骶棘的Ⅱ型肌纤维减少及萎缩，肌细胞内含糖原、线粒体较高等改变，这些变化不是侧凸的原因，而是由于侧凸肌肉得不到充分锻炼的结果[2,3]。对未曾研究的躯干凹侧面凹陷区的背阔肌及腹外斜肌，所作的观察表明，不仅在电镜下见肌核位于肌纤维中央，肌丝少，空化线粒体等病理变化；而且在光镜下见到肌纤维变性、灶性坏死、结缔组织增生、粘连、瘢痕形成及炎性细胞浸润等改变；免疫组织化学检查也同样提示有感染、损伤、肌营养不良等改变[4]。而在同侧（凹侧）骶棘肌处，未见到 Sahgal 所描述的Ⅱ型肌纤维减少及萎缩等变化。因此认为不能用脊柱侧凸肌肉得不到充分锻炼来解释。凹陷区肌肉变性、粘连的最初起因是多方面的复杂的，可能与婴幼儿期保健不当造成局部损伤，而后在生长过程中粘连挛缩的肌肉不能适应身体长高的需要，又反复多次受到自身过度牵拉性损伤，成为继发原因。

传统的治疗方法只是一次性金属棒内固定，来对抗侧凸，以期达到矫正畸形或限制畸形发展的目的，效果均不理想[5]。在研究该症的病理改变后，首先采用手术松解延长凹陷区的瘢痕挛缩组织，切断弓弦，弯曲的脊柱自然会变直，同时下陷的肋骨升高，肋间隙增宽，胸腔扩大，胸廓运动顺应性增大，因此肺功能增加，促进了胸背部肌肉的发育。并同时给患者服活血化瘀中药方剂。有利于凹陷区炎症的消散吸收，减少术后粘连，改善肌肉营养状况，增强体质，大大提高了侧凸矫正效果。

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Abstract of Original Articles

Analysis on pre- and postoperative somatosensory evoked potentials of diastematomyelia

Cheng Bin(程斌) Wang Kun-zheng(王坤正) Chen Jun-chang(陈君长)et al
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Cortical somatosensory evoked potential (CSEP) examination stimulated from posterior tibial nerve were performed on 20 patients suffering disatematomyslia pre- and postoperatively, selecting 20 normal subjects as control group in the meanwhile. We found that CSEP changes were statistically significant between patients and normal subjects ($P<0.05$). Postoperative P_{40} peak latencies and amplitudes changed significantly in patients and CSEP had apparent difference in bilateral lower extremities preoperatively. It showed that CSEP is a sensitive, reliable objective diagnostic parameter that may be used to establish the severity of neural damage and evaluate the operative efficacy. The mechanism of neural defect is discussed in the article.

Key words Diastematomyelia Somatosensory evoked potential

(Original article on page 5)

Clinico-pathological study on juvenile spontaneous scoliosis

Chen Zhong-qi(陈中奇) Yang Guang(杨广) Kong Xia(孔霞) et al
First Hospital of Jining City, Shandong Province(272111)

Thirty cases of spontaneous scoliosis were observed under light and ultra microscopic and immuno-histochemical examinations. The results indicated that the fasia, muscle of main depressive area of the trunk had adhesive degenarative phenomena , the pathological characteristics are infection, muscular fibrotic degeneration, connective tissue proliferation, adhesion and scar formation. It offers an objective foundation for comprehensive treatment.

Key words Scoliosis Ultrstructure Immuno-chemical histology

(Original article on page 7)

Influence of immuno-activity of cellular oxidation metabolic function of the external used Chinese herb during wound healing——Study on the mechanism of Wei Nong Zhang Rou(3)

Li Xiu-lan(李秀兰) Ji Gen-yuan(纪根媛) Zhao Feng-yi(赵凤仪)et al
Tianjin Institute of Orthopaedics(300211)

Oxidation metabolic function of neutrophils, lymphocytes, exudate cells of wound surface and the influence of wound surface exudation on normal neutrophils and lumphocytes were detected by means of chemiluminescence-Cl during application of Chinese herbs on wound healing. The results of experiments indicated that external applying of Chinese herbs can activate neutrophils and lymphocytes to produce-Cl. The difference is very evident ($P<0.01$) as compared with control group. During wound healing neutrophils were activated at first then lymphocytes till healing stage. The exudation cells of the wound surface bears rather strong-Cl activity. Those of the ex-

ternal used Chinese herb group is superior than control group ($P<0.01$). Exudation of external applied Chinese herb group can serve as activator of neutrophils and lymphocytes, it bears similar action as zymosan and canavaline A. There is very weak action in control group.

Key words Trauma and injury Traditional Chinese medicinal therapy Immunology, cellular Wei Nong Zhang Rou

(Original article on page 9)

Biomechanical principal and clinical application of the novab ıular external fixator

Huang Xiao-zhou(黄孝舟) Wang Yi-jin(王以进) Fan bin(凡道斌)et al

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Since June of 1986, 184 cases including 146 cases of fresh fracture; 16 cases, chronic fracture: 4, non-union; 13, elongation of bone; 5, gena varum malformation were treated by self-made novable annular external fixator with satisfactory therapeutic effect. Various modes of fixation with this fixator were examined with biomechanics, it shows that various number of pins, types, directions and locations were related with stability of the fixation.

Key words Fracture fixator, external Biomechanics

(Original article on page 12)

Analysis of remote therapeutic effect on surgical treatment of prolapse of lumbar intervertebral disc

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From 1975 to 1994, 500 cases of prolapse of lumbar intervertebral disc were treated with fenestration operation of vertebral lamina and ligmenturm flavum and total laminectomy two forms of operation. The results indicated that there is no difference between two forms of operation in the releasing of sciatic neuralgia. But the former bears advantage of minor injury, it can not only remove the prolapsed nucleus, removal of complex lesion around the dise and recovery of neuvous funetion but also can maintain the stability of the spine. The rate of excellency and good is 98%.

Key words Prolapse of lumbar intervertebral disc Surgry, operation

(Original article on page 17)