

# 环枢关节错缝与上颈段解剖的关系

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**摘要** 通过对三具尸体上颈段的介剖观察和分析,认为:1)枢椎是上颈段运动的应力中心,环枢关节错缝以旋转和侧方移位为主;2)对第一至第三颈神经后支的卡压和刺激是颈性头痛的主要原因;3)椎动脉的环枢横突间段在头颈旋转时受到明显牵拉和扭曲,是引起颈性眩晕的原因之一。

**关键词** 环枢关节 骨错缝 颈神经 椎动脉

环枢关节错缝是指由于劳损、外伤、退变、受风寒等原因导致环椎与枢椎之间的轻微错位或失稳。其主要症状是头痛、眩晕、恶心、困倦、耳鸣等。由于其发病部位位于上颈段,临床症状又容易与其他疾病相混淆,故很容易被忽略。为了搞清该病的发病机理,我们对上颈段脊椎作了解剖学的观察和分析。

## 材料和方法

采用一具新鲜尸体和二具福尔马林固定后尸体,截取头部枕骨粗隆上 1 厘米水平至第七颈椎。从颈后方正中切开皮肤后逐层深入,解剖至骨结构。

主要观察:1)第 1 至第 3 颈神经后支的走行,及与相邻结构间的关系;2)上颈段深层肌肉的分布;3)椎动脉自枢椎横突孔至枕骨大孔段的解剖特点。

## 结果

1. 第 1、2、3 颈神经与周围结构的关系:(1)第 1 至第 3 颈神经与椎动脉的关系:第 1 颈神经出自椎动脉下方,紧贴椎动脉。其前支的起始部贴椎动脉内侧行走。第 2 颈神经前支从神经干发出,后紧贴椎动脉从其后缘绕行至前外侧。第 3 颈神经出椎间孔后紧贴椎动脉后方,然后向前绕行发出前后支。(2)第 1 至第 3 颈神经后支与周围软组织、骨结构的关系:第 1 颈神经自枕骨与环椎后弓之间穿出,其走行被夹在椎动脉与后弓之间,与后弓上缘与椎动脉下缘接触紧切。其后支即枕下神经明显粗于前支,自枕下三角穿出。枕下三角比较狭小,枕下神经在其出口处由周围筋膜固定,与枕动脉伴行。第 2 颈神经从环椎后弓下方和枢椎椎板上缘之间穿出。出口较紧。其后支的内侧支枕大神经在头下斜肌的腹侧面发出向下向外贴头下斜肌绕行后在头下斜肌与头半棘肌之间向上向内行走,形同一个攀(图 1)。第 3 颈神经后支在环枢外侧关节的外侧向后绕过关节突时与关节囊之间有明显的筋膜相连,相互之间关系较固定,绕过关节突后再向内侧行走。

2. 枢椎共有十块肌肉作为其起止点,枢椎棘突粗

大,附有六块肌肉,向上为头后大直肌,向外为头下斜肌,向下为颈半棘肌,一侧三块,以棘突为中心向四周放射状排列(图 2),其中以头后大直肌最为强壮。枢椎横突附有中斜角肌、肩胛提肌、一侧各二块。由于这些肌肉都参与了头颈部的旋转,屈伸,侧曲运动,使枢椎成为上颈段的应力中心。环枕之间的肌肉为头上斜肌,头后小直肌、头前直肌、头侧直肌,其肌肉相对较小且弱。

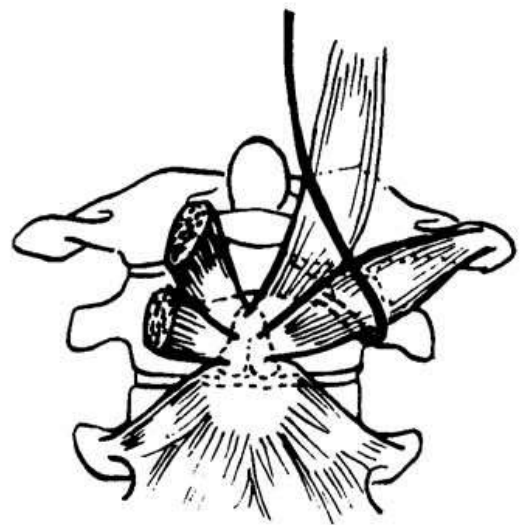


图 1 枕大神经与头下斜肌的关系

3. 对椎动脉枢椎横突孔至枕骨大孔段的观察发现,该段明显弯曲为 4~5 个,同一尸体两侧的弯曲数也不相同。区别主要发生在枢椎横突孔至环椎横突孔段。该段椎动脉有的呈直柱状无弯曲,而有的呈 C 型状或 L 型状。在旋转头部时,无论转向同侧或对侧,直柱状的环枢横突间段椎动脉均受到明显的牵拉和扭转,管径变窄,并以转向对侧时变化为大。而 C 型或 L 型状的该段椎动脉由于有一定的活动余地,虽被牵拉但不出现血管扭转,管径变窄等改变。环椎横突以上至枕骨大孔段椎动脉紧靠在环枕关节的后方和内侧,由于头部旋转时,环椎和枕骨几乎一起转动,故该段的椎动脉

未见明显变形。

### 讨 论

1. 在上颈段的运动中,环枕关节以屈伸运动为主,其活动范围可占颈椎屈伸的 50%。环枢关节以旋转运动为主,其旋转范围也占全颈椎的 50%。环枢关节的静力稳定结构,以防止其过度前后运动为主。在齿状突的后方有坚强的十字韧带。十字韧带的后面是覆膜,也即后纵韧带的起始部,其浅层位于正中,紧贴十字韧带,深层比浅层更粗、厚,位于两侧与关节囊相连。在头屈伸时,齿突尖韧带和翼状韧带分别呈不同程度的紧张。由此可见环枢间的韧带均有防止环枢关节前后脱位的作用,而限制环枢旋转运动的只有翼状韧带,阻止枢椎侧方移位的也仅为翼状韧带和双侧关节囊。

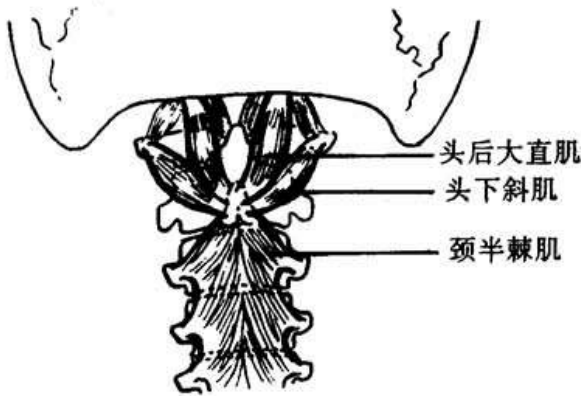


图 2 附着于枢椎棘突的肌肉

在上颈部深层短肌中,以头后大直肌,头下斜肌,颈半棘肌最为强壮,这些使上颈段旋转的主动肌均附着在枢椎的棘突上。左右各三块,使枢椎成为旋转的应力中心。头后大直肌、头下斜肌的单侧收缩使头部向同侧旋转,颈半棘肌的单侧收缩使颈椎向对侧旋转。而这些肌肉的双侧收缩则使头颈部后伸。所以两侧肌肉的互相协调是保证颈部正常旋转的必要条件。在长期的生活和工作中,由于姿势、外力、退变或其他原因引起的单侧肌紧张、痉挛或劳损、松弛会导致环枢椎间活动的不平衡,引起椎间关节的错缝,失稳。

所以从解剖学上分析,一些轻微外伤,退变或其他原因引起的环枢关节紊乱是以环枢椎间的旋转和侧方错缝为主。当外力达到一定强度,以致足以损伤十字韧带和覆膜,或使齿状突骨折时,才会出现环枢关节的前后脱位或半脱位。小儿上呼吸道感染后,十字韧带的松弛也可引起程度各异的错缝,半脱位或脱位。

2. 一般而言,脊神经后支比前支细小,但第 1,2 颈神经后支比前支明显粗大。解剖中观察到第 1 至第 3 颈神经后支在其走行中有几处易受卡压和激惹。一是枕

下神经紧贴环椎后弓上缘,自枕下三角穿出,其间隙窄小;二是枕大神经自环椎后弓下缘和枢椎椎板上缘穿出,围绕头下斜肌转半圈后再向上向内行走;三是第 3 颈神经后支出椎间孔,在环枢外侧关节的外侧由前向后绕行时,与关节囊相贴很紧,并有筋膜相连。当环枢关节错缝时,环椎的移位,可使其后弓上缘直接卡压枕下神经。枢椎的移位使枕大神经的出口变窄,头下斜肌受牵拉可卡压和激惹枕大神经。环枢关节错缝也使两侧的关节囊受到更大的牵拉,直接影响与其紧密相贴的第三颈神经。由于枕大神经围绕头下斜肌,头下斜肌的痉挛,水肿均可直接刺激枕大神经,临床上往往在枢椎棘突旁找到很敏感的压痛点。第 1 至第 3 颈神经后支的感觉支配(有时颈 1 除外)从上颈段直达枕部及颅顶部,患者多主诉枕部及头顶后部疼痛,有时可牵涉到前额部。

3. 颈上神经节是交感神经干中最大的神经节约有 28 毫米长 8 毫米宽,位于第二颈椎水平<sup>[1]</sup>。它发出的节后纤维(灰交通支)外侧支进入第 1 至第 4 颈神经。与第 1 第 2 颈神经相交通的还有脑神经中的迷走神经和舌下神经。环枢关节错缝,刺激第 1 至第 3 颈神经时可伴发恶心、困倦、耳鸣等植物神经的症状。

4. 一般认为,椎动脉供血不全是引起颈性眩晕的主要原因之一。影响血流的椎动脉主要在枢椎横突至枕骨大孔段。对该段弯曲有人认为有 4—5 个<sup>[2]</sup>,有人认为是 6—7 个<sup>[3]</sup>。我们观察到的弯曲变异主要发生在环枢横突间段。头颈旋转时,由于枕骨与环椎几乎是一起转动,故位移主要发生在环枢椎间。平面关节的斜度,使环枢侧方关节在旋转时伴有向前或向后的滑动。因此,环枢横突间的距离在旋转时明显加大,该段椎动脉无论是对侧还是同侧在旋转时都受到明显的牵拉和扭曲,但以对侧为甚。环枢间的旋转错缝可以对该段椎动脉造成持续的外力,并在转头时加重对它的牵拉或扭曲,尤其在那段椎动脉呈直柱状时,使管径变窄,引起椎动脉供血不足,导致眩晕,恶心等症状。

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## Abstract of Original Articles

### **Influence of Bu Yang Huan Wu Tang (BYHWT) on clamp injured rat sciatic nerve axoplasm transportation**

*Shi Guan-tong, Li Yi-kai, Shi Yin-yu. Affiliated Shuguang Hospital, Shanghai University of TCM (200021)*

Horseradish peroxidase retrograde labeling method was selected to demonstrate changes of quantity of HRP labelled neurone cytoplasm of L4-5 spinal cord and ganglion. The results indicated that BYHWT can accelerate transportation of rat sciatic nerve axoplasm. Forty eight hours after introduction of HRP, number of labelled cytoplasm of the neuron in BYHWT group is prominently more ( $P < 0.05$ ) than that of the control group, those of the rest few groups were similar ( $P > 0.05$ ) in number. It suggests that the prescription can accelerate transportation of axoplasm of clamped nerve. It is related with improvement of local micro-circulation. It may be one of the mechanism in promoting regeneration of peripheral nerve injury in clinic and experiment.

**Key words** Sciatic nerve Transportation of axoplasm Bu Yang Huan Wu Tang

*(Original article on page 3)*

**Anatomical study of upper cervical spine and atlantoepistrophic derangement** *Zhou Wei, Jiang Weizhuang, Zhang Yongdong, Li Xing, Institute of Orthopaedics and Traumatology, China Academy of TCM (100700)*

Via observation and analysis of upper cervical vertebrae of three cadavers, we consider: 1) Axis is the stress centre of upper cervical spine, commonly atlantoepistrophic derangement is lateral or rotatory deviation; 2) compression and irritation of posterior branches of upper three cervical nerves are the main causes of cervicogenic headache; and 3) strain of vertebral artery between transverse process of atlas and axis is one of the cause of cervicogenic dizziness.

**Key words** Atlantoepistrophic derangement Cervical nerve Vertebral artery

*(Original article on page 5)*

**Experimental study on local osteoporosis secondary to rigid plate internal fixation with bone histomorphometry** *Wu Yu-shi, Lou Si-quan, Dang Geng-ding, Staff and worker Hospital, Baotou Steel and Iron Company, Internal Mongolian (014010)*

Through bone histomorphometrical method, local bone changes of rabbit intact tibia after rigid plate internal fixation was studied. Experimental rabbits were divided into 1, 2, 3, 4 and blank control groups in random, with fixation time in 6, 8, 10 and 12 weeks respectively. Histomorphometrical and tetracycline fluorescence measurement were undertaken in non-decalcified bone tissue sections longitudinally and transversely. The results revealed that there was osteoporosis appeared at 6 weeks in rigid fixating segment. Bone lossing happened at Haver's system, bone absorption revealed after 10 weeks on endosteal surface and enlargement of bone marrow. Osteoporosis and thinning of the cortex on fixating segment, especially under steel plate happened due to negative balance of remodeling process of the two surface of the bone.

**Key words** Internal fixation Osteoporosis Bone remodeling

*(Original article on page 7)*

**Clinical study on lumbar facet joint syndrome** *Li Zhen-yu, et al. Affiliated Hospital of Gansu College of TCM (730000)*

Clinical study of pathogenesis, diagnosis and mechanism of manipulative therapy in 124 patients suffered with lumbar facet joint syndrome. The results indicated that the onset of lumbar facet joint syndrome was happened mostly at 25-45 years of age, and they were found mostly at lower segment. Oblique X-ray film and CT scanning is in significance rather than A-P and lateral view film. The manipulative result is evident, rate of excellent and good was 95%. The pathological change was mainly embedding of synovial membrane, but subluxation of joint or interference of joint capsule due to proliferation and stimulating the nerve