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Study of the therapeutic effects of basic fibroblast growth factor on laser-induced apoptosis of retinal neurons in rabbits

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Abstract **Objective**: To study the laser-induced apoptotic changes of retinal neurons and the therapeutic effects of basic fibroblast growth factor (bFGF) on the changes. **Methods**: A YAG laser was used to produce retina lesion in pigmented rabbits. Terminal deoxynucleotidyl-transferase mediated dUTP and nick labelling (TUNEL) staining was used to identify the apoptotic neurons. **Results**: TUNEL positive apoptotic neurons were located in all the layers of retina in the 6th hour and on the 1st, 3rd, and 7th day after injury. Apoptotic cells reduced in number on the 14 th day after injury. The TUNEL positive cells were more densely located in the out nuclear layer. After the administration of bFGF, the apoptosis of retinal neurons was attenuated and their number reduced. **Conclusion**: Laser induces apoptosis of retinal neurons and reduces the number of photosensitive cells in the retina. bFGF can inhibit the laser-induced apoptosis of retinal neurons and sustain their viability.

Key words retina; laser injury; apoptosis; basic fibroblast growth factor

前路减压治疗胸腰椎骨折截瘫15例

Treatment of 15 cases of paralysis caused by thoraco-lumbar vertebral fracture with anterior depression

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在脊柱损伤中,胸腰椎骨折合并截瘫较为常见,在治疗过程中,恢复脊柱的解剖结构,正常的生理曲线及椎管的容积,牢固地稳定脊柱是主要问题[1~2]。1997~1998年,我院对胸腰椎爆裂性骨折或骨折脱位合并有截瘫的15例患者采用前路减压,椎体间植骨,Kaneda钉内固定治疗,取得较好的临床效果,报告如下。

1 临床资料

1.1 一般资料

15例中,男11例,女4例。年龄最大44岁,最小24岁。受伤方式:高处坠下3例,弯腰作业高处落物致伤8例,交通事故4例。损伤节段:胸$_{11}$ 2例,胸$_{12}$ 3例,腰$_1$ 7例,腰$_2$ 3例。骨折类型:爆裂性骨折8例,屈曲压缩骨折并有碎片突向椎管内3例,骨折脱位4例。15例均合并有脊髓损伤,其中完全性瘫痪6例,不完全性瘫痪9例。受伤至手术时间:1周内12例,2周内3例。

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1.2 手术方式

胸$_{12}$以上采取剖胸入路,腰$_1$以下采取经胸廓内、胸膜外、腹膜后入路。病人全麻后90度侧卧位,手术侧选椎体破坏较重的一侧,或下肢瘫痪较重的一侧,伤椎置腰桥部位并稍垫高。手术进入后切开肋膈角部膈肌,显露伤椎,分离并结扎伤椎及上下各一椎体的节段血管。以伤椎为中心切除上下之椎间盘组织,由此尽可能迅速切除伤椎,向后达横突,显露椎间孔前缘,并细心切除突向椎管内的骨碎片,椎间盘等组织,显露并见硬脊膜前方为止。对未破裂的此时可见明显搏动,探查上下椎管,并冲洗清除周围血肿。椎体对侧及前侧保留部分骨组织,于伤椎上下之椎体中心部位开槽约1 cm以上,整复椎体高度,取一髂骨打磨成长条状嵌入椎间隙,并用Kaneda钉固定伤椎间隙及上下椎,创面止血后,关闭切口。经胸入路保留闭式引流,经胸廓内胸膜外,腹膜后途径留橡皮管负压引流。

2 结果

2.1 重建稳定性

15例患者均行脊柱前路伤椎椎体,上下椎间盘切除,完整

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Effects of N-acetylcysteine on anti-lipid peroxidation injury during intestinal ischemio-reperfusion shock in rats

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Abstract　**Objective**：To study the protective effects of N-acetylcyeteine (NAC) on intestinal ischemio-reperfusion shock and remote organ damages in rats. **Methods**：Adult wistar rats were randomized into NAC-treated group ($n=21$) and normal saline-control group (NS，$n=21$). The superior mesenteric artery was occluded for 45 min and then released. NAC 50 mg/kg and NS were administered respectively 5 min after reperfusion. Tissue samples from the intestine，heart，liver，kindeys and lungs were collected in the 2nd，4th and 6th h after reperfusion to determine the content of free thiol (NPSH)，malondialdehyde (MDA)，and the activity of myeloperoxidase (MPO). **Results**：NAC could increase tissue NPSH content and decrease MDA and MPO activity. **Conclusion**：NAC possesses protective effects on ischemio-reperfusion injury induced damages of the intestines and remote organs such as the heart，liver，kidneys and lungs.

Key words　N-acetylcyeteine；ischemio-reperfusion；lipid peroxidation injury

（上接 430 页）

髂骨块植骨，Kaneda 钉固定融合椎体，脊椎体高度恢复，成角畸形获得纠正，稳定性得到重建，承担负荷能力恢复。

2.2　彻底的脊髓减压

前路减压，有效解除了脊髓来自前方的压迫，恢复并扩大了椎管的管径。

2.3　神经功能恢复情况

15 例患者中，不全瘫痪 9 例，肌力均恢复 2 级以上，全瘫的 6 例患者，4 例的肌力恢复 2～3 级，2 例因脊髓损伤较重无恢复；大小便控制失常，手术前有 8 例，术后 4 例获较好恢复。

2.4　并发症

术中无一例损伤大血管、神经，也无一例神经症状加重，无早期并发症如肺不张、肺炎、伤口出血、切口感染等发生。4 例因尿路感染，行对症、膀胱冲洗，抗炎治疗好转。术后随访 3 月～1 年未发现断钉、植骨块松动、术后半年左右可见植骨融合。

3　讨论

脊髓损伤原因大多来自硬脊膜前方突向椎管的骨碎片，椎间盘及血肿等，行前路减压可直视彻底切除压迫组织，解除致压因素，为受伤的脊髓修复创造了良好的环境。后路减压术，只是在一定范围内恢复椎管的容积，而不能完全解除致压因素，故在脊髓修复过程中，不如前路减压彻底，在一定范围内必残存椎管狭窄。我们所作 15 例前路减压患者，由于是直视下切除致压物质，尽可能减少硬脊膜的牵动，所以无一例脊髓损伤加重，因而脊髓损伤修复方面获得较为满意的效果。

由于前路减压，切除了伤椎后 2/3 椎体及上下椎间盘组织其间隙用整块髂骨植入，并用 Kaneda 钉内固定，使受伤椎体生理曲线上获得满意恢复，伤椎与正常椎体由于固定融合而成为一个整体，在脊柱稳定性方面更加牢固，承受负荷能力相对更强，后路手术虽也能纠正生理曲线，受伤椎体的高度的恢复不完全是骨性高度的恢复，术后存在着高度的再次部分丧失而成角，稳定性也较直接前路椎体融合为差，承受负荷能力及早期功能训练不如前路固定融合。故我们认为，对于胸腰段不稳定性的椎体爆裂骨折或骨折脱位，特别是合并有脊髓不全性损伤患者，行前路减压，Kaneda 钉内固定更为优良。

关键词　胸腰椎爆裂骨折；前路减压；Kaneda 钉固定

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