

血管植入神经移植段修复神经缺损的实验研究

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摘要 54 只大白鼠随机分三组, 用不同方法修复坐骨神经缺损, 术后 60 天和 90 天取材, 作电生理、组织学和电镜观察的比较, 结果表明: 游离神经移植+血管植入方法和带血管蒂神经移植效果同样好, 二者均显著优于单纯游离神经移植。

关键词 周围神经 神经移植 血管植入

带血管蒂神经移植修复周围神经缺损在临床上已取得较好效果, 为寻求一种更为简便的移植神经段提供血液供应的方法, 我们设计了游离神经移植+血管植入的实验, 以观察其桥接效果。

材料与方 法

1. 实验动物与分组: Wistar 大白鼠 54 只, 体重 250~300g, 随机分三组, 每组 18 只。甲组用带血管蒂神经移植, 乙组用单纯游离神经移植, 丙组用游离神经移植段+血管植入。

2. 手术方法: 1% 戊巴比妥钠作腹腔麻醉 (30mg/kg), 暴露右侧坐骨神经, 造成 10mm 长神经缺损。甲组模拟 Brook R, 所述方法^[1], 保护神经表面血管, 切开外膜, 切断神经束。乙组游离坐骨神经, 切断后原位移植缝合 (11/0 线)。丙组在乙组基础上, 股二头肌表面游离出臀后血管束, 切断远端。切开移植神经中点外膜 1mm, 将血管束残端植入神经束间固定。

3. 观察指标: 术后 60 天和 90 天动物麻醉后, 各组取 6 只行下列检查: (1) 电生理学: 检测右侧坐骨神经传导速度。(2) 组织学检查: 取神经远端 5mm 处切片 5~7 μ 厚, 分别作 HE, 髓鞘和甲苯胺蓝染色, 用日产图象分析仪测出再生神经纤维密度及截面积, 并与近端比较求出恢复率。(3) 电镜: 观察再生神经纤维超微结构变化。(4) 血管墨汁灌注: 观察植入血管束通畅及大体分布情况。

结 果

1. 神经传导速度: 不同时间带血管蒂组与游离移植+血管植入组均比单纯游离移植组快, 统计学上 60 天时前两组与单纯游离移植组均有显著差别 ($P < 0.05$), 前两组间无差别。(图 1)。

2. 再生神经纤维面积恢复率: 不同时间带血管蒂组与游离移植+血管植入组均比单纯游离移植组好, 统计学上前两组与单纯游离移植组不同时间均有显著差别 (60 天 $P < 0.01$, 90 天 $P < 0.05$), 前两组间无差

别。(见图 2)。

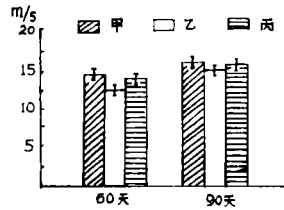


图 1 三组神经传导速度

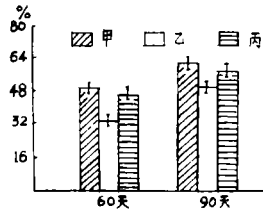


图 2 三组再生神经纤维面积恢复率

3. 再生神经纤维密度恢复率: 各组各时间无显著差别。(见图 3)

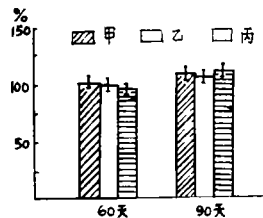


图 3 三组再生神经纤维密度恢复率

4. 电镜: 各组有大量髓鞘神经纤维, 其成熟情况带血管蒂组与游离移植+血管植入组较单纯移植组好。

5. 血管墨汁灌注: 植入血管束通畅, 有大量树枝状新生血管, 成为营养移植神经段的主要血管干, 纵切片各层均为血管分布。另两组与之相似, 但无主要血管束供血。

讨 论

1. 游离神经移植+血管植入修复神经缺损效果评价: 本实验通过电生理学、组织学、电镜等方法, 对三

种不同神经移植的神经传导速度、再生神经纤维面积和密度及其恢复率、再生神经纤维成熟程度进行了分析比较,结果表明:甲、丙组的神经传导速度快,神经纤维直径、面积恢复好,成熟程度高,再生神经纤维密度及其恢复率各组相似。说明虽然再生神经纤维数量上各组无差别,但质量上存在明显差别,而甲、丙组无差别,即游离移植+血管植入的移植效果与带血管蒂组相似,同时显著优于单纯游离神经移植。

2. 血管植入促进神经恢复的机理:自体神经移植后,其血液供应对神经的再生极为重要^[2]。张爱华等用血管植入变性骨骼肌,证实了植入血管能迅速重建肌桥的血循环^[3]。我们对血管束植入自体神经移植段的早期观察,也发现植入血管束 5 天时即有大量芽生,使移植段神经血供得以重建,从而保证了移植神经的活力。这样游离神经移植便成为类似于带血管蒂的神经移植体,与单纯游离神经移植的血供重建方式发生根

本变化,避免了神经的严重缺血,加速了神经纤维的再生与成熟。血管植入神经移植段的优点在于手术操作简单,血管束为小的肌皮血管,供材多,切取方便,不牺牲供体的主要血管,可以解决中短距离游离神经移植后的血供问题,对于长段神经移植,有必要对其植入方式方法及数目作进一步研究。

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经皮针刀剥离内外 8 字缝合治疗手指中央腱条断裂

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我院两年多来,运用针刀剥离侧腱条丝线 8 字缝合法治疗手指中央腱条断裂 11 例,疗效满意,报告如下。

临床资料 11 例中,男 10 例,女 1 例;年龄 12~53 岁。原因多数为机器砸伤,另有打拳所伤。食指 7 例,中指 4 例,均为一周内的闭合损伤。检查所见:手指掌指关节和近侧指间关节处肿胀增粗,掌指关节及远侧指间关节背伸和近侧指间关节掌屈畸形,用手指捏住掌指关节和近侧指间关节处畸形可改变。

治疗方法 伤指为主全手常规消毒,严格无菌操作。采用指根麻醉。让病人活动伤指。在近指间关节处触摸感到有活动的侧副腱条,用小针刀在相应处进针,对侧副腱条进行广泛游离。两个侧副腱条游离后,手指伸直,两个针刀暂不退出,用缝合针穿 7 号丝线自甲沟向上延长线上和指关节面上 0.5cm 外侧进针,沿皮下达内侧针刀处出针,调转方向,在原针孔进针,针刀将侧腱条挑起经侧副腱条下沿骨膜穿针刀挑起剥离的外侧副腱条,针线从外侧进针孔出针,然后在沿原针孔进针,穿向内侧,在甲沟延长线上出针,这样就在皮内形

成一个未封口的“8”字。按上述同样方法再缝合两针,一针在近指间关节的远侧面 0.5cm,另一针在指间关节处。三针缝合后,在指背正中放一长约 3cm 无菌橡皮管,适当活动手指,掌握松紧,分别把三个结打在橡皮管上,无菌包扎,用硬纸块将手指固定在伸直位。3 周后去固定开始活动,6 周拆除缝合线。

治疗结果 本组 11 例中,畸形完全矫正 10 例,畸形未完全矫正 1 例;手指功能正常 9 例,关节强硬 1 例,总有效率达 90%。

讨论 手指中央腱条断裂是掌指关节和近节指骨背侧受伤所致,伤后两侧的侧副腱条沿近侧指间关节向掌侧滑脱而出现掌指关节及远侧指间关节过度背伸和近侧指间关节屈曲的畸形。以前的治疗方法,都是将皮肤切开,将两侧副腱条剥离缝合在一起,手术创伤大。而本种方法,不需皮肤切口,找准侧腱条后,用小针刀将侧腱条充分剥离,用针刀将两侧腱条挑起,经皮穿针缝合打结将两侧腱条缝合到一起,即可矫正畸形,防止侧腱条再向掌侧滑脱。

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weeks, the epidermis has been highly proliferating and the wounds have been healed completely. Neither toxic effect nor adverse reaction was found by the acute tests of toxicity and skin hypersensitivity.

Key words Zhixue Shengji Ointment Injury of digit
(Original article on page 11)

Effect of the Application of Autogenous Nerve Graft with Vascular Implantation to Repair Nerve Defect

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The defect of sciatic nerve was made in 54 Wistar rats, which were divided randomly into three groups treated with different methods. For investigating the repair of the defected nerves, the tissues were taken out at 60 and 90 days after operation and examined with electrophysiological, histological and electromicroscopical methods. The results showed that the effect of free autogenous nerve graft with vascular implantation is as good as that of pedicle nerve graft and that the effect of both kinds of method are superior obviously to that of simple free nerve graft.

Key words Peripheral nerve Nerve grafting Vascular implantation

(Original article on page 13)

Treatment of Multiple Comminuted Fractures of Tibia and Fibula

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18 patients with multiple comminuted fractures of tibia and fibula had been treated from 1993 to 1995. In this paper, the clinical features and therapeutic methods of this kind of fracture were discussed. It was believed that the combination of internal fixation of fibula fracture with Kirschner's pins, internal fixation of tibial fracture with multiple common steel plates and screws, and external fixation with plaster is an effective method. Its advantages are: ① The operative procedures

are simple and easy; ② The common plates are small, can be placed in suitable positions according to the condition of injury, and are advantageous to the healing of the wound at the shank; ③ The reduction of fractures is good. Its disadvantage is the external fixation with plaster is needed yet. In this group, the good bony union was found in 17 cases and the refracture was happened only in one case due to injury from falling after removing external fixation. So the therapeutic effect is satisfactory.

Key words Tibia Fibula Multiple comminuted fracture Kirschner's pin Common steel plate Screw

(Original article on page 15)

Treatment of Lumbar Spondylolisthesis with RF Plate and Chinese Drugs

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16 cases attacked with lumbar spondylolisthesis, including 7 cases of grade I, 6 cases of II and 3 cases of III, have been treated with RF plate and Chinese drugs since 1992 and followed up for 3 to 32 months. The results showed that, except that no evident improvement in one case and the backward slipping due to over-correction in another case, their symptoms and signs were basically disappeared and the improvement in olisthy over one grade and more was obtained in remaining 14 cases. The implanted bone had fused with the vertebrae in cases over 6 month after operation. No injuries of cauda equina and nerve roots were found in all cases. The writers considered that RF plate has the advantages of the less fixative segments, the satisfactory reduction and the firm internal fixation; and that the combination of RF plate with Chinese drugs is advantageous to the fusion of implanted bone and the diminution of postoperative complications.

Key words FR Plate Lumbar spondylolisthesis Chinese drugs

(Original article on page 21)