



人髌周组织神经末梢分布的组织形态学观察

程锐, 高兴华, 侯之启

510130 广州市第一人民医院关节外科

Histological and morphological observations on the distribution of circum-patella nerve fibers

CHENG Rui, GAO Xing-hua, HOU Zhi-qi

Department of orthopaedics, the First People's Hospital of Guangzhou, Guangzhou 510180, China

- 摘要
- 图/表
- 参考文献
- 相关文章

全文: [PDF \(779 KB\)](#) [HTML \(1 KB\)](#) 输出: [BibTeX](#) | [EndNote \(RIS\)](#) [背景资料](#)

摘要 目的 对髌骨周围软组织的神经末梢分布情况进行组织形态学观察, 为人工全膝关节置换手术中行髌骨周围烧灼提供理论依据。方法 取自4具新鲜截肢的髌骨标本(2例糖尿病足截肢、1例下肢动脉闭塞截肢和1例车祸伤截肢), 采集髌骨周围0.5 cm以内软组织, 长0.5 cm×宽0.5 cm×纵向全层的三维立体标本, 通过HE染色、甘氨酸银染色, 在同一视野下对髌周软组织标本紧贴髌骨内侧截面的神经末梢分布进行组织形态学观察。结果 大体解剖发现来源于皮肤的血管网直接进入髌骨滋养孔区域参与构成髌骨滋养孔区域的血管网并在2、4、7和10点位发现有血管进入髌骨; 组织学观察发现髌骨周围软组织内存在大量的神经纤维, 但4个髌骨标本周围软组织内神经纤维的区域分布没有明显区别。髌骨周围软组织内侧滑膜层有神经入髌的通道, 主要存在于7、11和13点位, 髌骨外侧没有发现神经进入髌骨的通道。神经纤维呈“区域性集中分布”现象, 以5、6、7点位及10、11、12、1、2点位分布数目最多, 其中又以股四头肌肌腱和髌腱两极居多, 在髌骨滋养孔区域的筋膜及骨膜中也发现了大量的神经纤维。神经纤维分层分布, 主要集中在滑膜层、脂肪垫、肌腱结缔组织间层的近髌骨端。结论 髌骨周围软组织内神经纤维分布多, 神经进入髌骨的通道主要存在于髌骨内侧和滋养孔区域, 神经纤维分布呈分层且区域性集中现象, “中央较多, 下多于上, 内多于外, 两极多于其他”。髌周烧灼去神经化操作, 通过减少外周伤害感受器的数目实现“减敏”在临床上具有可行性。

关键词: 髌骨 神经纤维 关节成形术 置换 膝

Abstract: Objective To observe the distribution of circum-patella nerve fibers in the soft tissue to provide experimental evidence, which is significant in denervation for Total Knee Arthroplasty (TKA). Methods Patella specimens were collected from 4 cadavers (2 cases of diabetic foot, 1 case of lower extremity arterial occlusive, and 1 case of car accident), all 4 of which were resected soft tissue with a dimension of 0.5cm × 0.5cm and full depth thickness around patella more than 0.5cm for histology and morphology observation. The nerve fibers histology and morphology were observed in all resected specimens with HE staining and silver-gilt glycine staining in the same field of microscopic vision. Results Anatomy found that the vascular network form skins directly involved in the patella nourish hole area and in the 10, 2, 4, 7 clock point have found that blood vessels into the patella. There have a large number of nerve fibers near to the patella under the microscope, but there were no significant difference in the nerve fibers region distribution of all specimens. There were some into patella nerve fiber paths in side of patella soft tissue, which lied in 7, 11 and 13 clock point, but outside no this phenomenon. The distribution of circum-patellar nerve fibers were described as "distribution of regional concentration", which lied in much more 5, 6, 7 clock points and 10, 11, 12, 1, 2, clock points, in which the quadriceps tendon and patellar tendon have more than the others. In the 13 clock point, the fascia and periosteum of nourish hole area were also found in a large number of nerve fibers, and there were laminar distribution in different soft tissue layers, which were collected much more in synovial layer, fat pad, tendon near to patella. Conclusion There are much more nerve fibers near to the patella and some into patella nerve fiber paths in the medial side and nourish hole area. Nerve fibers distribution of circum-patella can be described as "laminar distribution and regional concentration", which is "more in the centre, bottom more than top, outside more than inside, the bipolar more than the others". The patella denervation

服务

- ▶ 把本文推荐给朋友
- ▶ 加入我的书架
- ▶ 加入引用管理器
- ▶ E-mail Alert
- ▶ RSS

作者相关文章

- ▶ 程锐
- ▶ 高兴华
- ▶ 侯之启

operation by reducing the number of peripheral nociceptors to achieve "desensitization" is feasible in TKA.

Key words: Patella Nerve fibers Arthroplasty, replacement, knee

收稿日期: 2013-03-16;

作者简介: 侯之启, E-mail: smilehouzq@163.com

引用本文:









程锐,高兴华,侯之启. 人髌周组织神经末梢分布的组织形态学观察[J]. 2013, 33(11): 1120-1125.

CHENG Rui,GAO Xing-Hua,HOU Zhi-Qi. Histological and morphological observations on the distribution of circum-patella nerve fibers[J]. Chin J Orthop, 2013, 33(11): 1120-1125.

链接本文:

http://www.chinjorthop.com/Jwk_zhgz/CN/10.3760/cma.j.issn.0253-2352.2013.11.009 或
http://www.chinjorthop.com/Jwk_zhgz/CN/Y2013/V33/I11/1120

没有找到本文相关图表信息

- [1] Dragoo JL, Johnson C, McConnell J. Evaluation and treatment of disorders of the infrapatellar fat pad. Sports Med, 2012, 42(1): 51-67
- [2] Barton RS, Ostrowski ML, Anderson TD, et al. Intraosseous innervation of the human patella: a histologic study. Am J Sports Med, 2007, (2): 307-311.
- [3] Biedert RM, Stauffer E, Friederich NF. Occurrence of free nerve endings in the soft tissue of the knee joint. A histologic investigation. An Sports Med, 1992, 20(4): 430-433. 
- [4] Maralcan G, Kuru I, Issi S, et al. The innervation of patella: anatomical and clinical study. Surg Radiol Anat, 2005, 27(4): 331-335. 
- [5] Dragoo JL, Johnson C, McConnell J. Evaluation and treatment of disorders of the infrapatellar fat pad. Sports Med, 2012, 42(1): 52-67.
- [6] Kennedy JC, Alexander IJ, Hayes KC. Nerve supply of the human knee and its functional importance. Am J Sports Med, 1982, 10(6): 329-335. 
- [7] Horner G, Dellon AL. Innervation of the human knee joint and implications for surgery. Clin Orthop Relat Res, 1994(301): 221-226.
- [8] Dellon AL, Mont MA, Krackow KA, et al. Partial denervation for persistent neuroma pain after total knee arthroplasty. Clin Orthop Relat Res, 1995(316): 145-150.
- [9] Bennell K, Hodges P, Mellor R, et al. The nature of anterior knee pain following injection of hypertonic saline into the infrapatellar fat pad. Orthop Res, 2004, 22(1): 116-121. Campbell DG, Mintz AD, Stevenson TM. Early patellofemoral revision following total knee arthroplasty. Arthroplasty, 1995, 10(3): 287-291. 
- [10] Saoud AMF. Patellar denervation in non-patellar resurfacing total knee arthroplasty. Pan Arab J Orthop Trauma, 2004, 8:25-30.
- [11] Gupta S, Augustine A, Horey L, et al. Electrocautery of the patellar rim in primary total knee replacement: beneficial or unnecessary? J Joint Surg Br, 2010, 92(9): 1259-1261.
- [12] Altay MA, Ertürk C, Altay N, et al. Patellar denervation in total knee arthroplasty without patellar resurfacing: a prospective, randomized controlled study. Orthop Traumatol Surg Res, 2012, 98(4): 421-425. 
- [13] Vega J, Golanó P, Pérez-Carro L. Electrosurgical arthroscopic patellar denervation. Arthroscopy, 2006, 22(9): 1028.e1-3.
- [14] Lehner B, Koeck FX, Capellino S, et al. Preponderance of sensory versus sympathetic nerve fibers and increased cellularity in the infrapatellar fat pad in anterior knee pain patients after primary arthroplasty. J Orthop Res, 2008, 26(3): 342-350. 
- [15] Bastiaansen-Jenniskens YM, Clockaerts S, Feijt C, et al. Infrapatellar fat pad of patients with end-stage osteoarthritis inhibits catabolic mediators in cartilage. Ann Rheum Dis, 2012, 71(2): 288-294. 
- [16] Tanaka N, Sakahashi H, Sato E, et al. Influence of the infrapatellar fat pad resection in a synovectomy during total knee arthroplasty in patients with rheumatoid arthritis. J Arthroplasty, 2003, 18(7): 897-902. 
- [17] 林祥波, 钱齐荣, 吴海山, 等. 初次全膝关节置换术后髌骨骨折临床探讨. 中华外科杂志, 2008, 46(24): 1936-1937.

- [1] 潘江,曲铁兵,温亮,林源,王志为,张博,马德思,刘百峰,孟令鑫,辛星,赵潇雄,陈伟,黄伟,陈虹,王敏,张强,彭理斌. 汉族人群正常股骨远端旋转对线的研究及其临床意义[J]. 中华骨科杂志, 2014, 34(4): 387-393.
- [2] 张博,林源,曲铁兵,潘江,张晓冬,王志为,任世祥,温亮. 国人胫骨平台截骨面与西方进口胫骨假体解剖学参数的偏差[J]. 中华骨科杂志, 2014, 34(4): 394-399.
- [3] 彭慧明,翁宇生,翟吉良,金今,林进,钱文伟,左宇志,赵丽娟. 氨甲环酸结合术后引流管临时夹闭降低单侧全膝置换术后失血量的有效性及安全性[J]. 中华骨科杂志, 2014, 34(4): 400-405.
- [4] 马俊,黄泽宇,胡旭栋,黄强,石小军,胡钦胜,沈彬,裴福兴. 糖尿病患者初次全膝置换围手术期安全性及效果评价[J]. 中华骨科杂志, 2014, 34(4): 406-410.
- [5] 黄钢勇,夏军,王思群,魏亦兵,吴建国,陈飞雁,陈杰,石晶晟. 全膝关节置换术中腓血管损伤的危险三角区域[J]. 中华骨科杂志, 2014, 34(4): 411-416.
- [6] 李丁峰,皇甫小桥,赵金忠. 腓骨长肌腱前半部作为自体移植材料的临床研究[J]. 中华骨科杂志, 2014, 34(3): 285-292.

[7] 李儒军, 钟群杰, 倪磊, 林剑浩. 内侧半月板退变性损伤的关节镜下分型[J]. , 2014, 34(3): 293-297.