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经皮微创纤维环穿刺法制作兔椎间盘退变模型(PDF)分

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Title: Rabbit model of degenerative intervertebral disc made by percutaneous minimally invasive annulus needle puncture

作者: [王珏](#); [张雷](#); [刘杨青](#); [卓瑞立](#); [孟飞](#)
郑州大学第一附属医院骨科; 濮阳市油田总医院骨科

Author(s): [Wang Jue](#); [Zhang Lei](#); [Liu Yangqing](#); [Zhuo Ruili](#); [Meng Fei](#)
Department of Orthopedics, First Affiliated Hospital, Zhengzhou University, Zhengzhou, Henan Province, 450052; Department of Orthopedics, The Oilfield General Hospital of Puyang City, Puyang, Henan Province, 457001, China

关键词: [微创](#); [椎间盘退变](#); [动物模型](#); [兔](#)

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摘要: 目的 应用经皮微创穿刺方法制造兔腰椎间盘退变模型。 方法 在C型臂X光机监控下,定位18只兔子的L3/4、L4/5、L5/6椎间盘,应用经皮穿刺方法穿刺纤维环,每组行MRI检查后予以处死,取L3/4、L4/5、L5/6椎间盘髓核组织行HE染色观察髓核细胞,用免疫组化染色法观察II型胶原蛋白染色情况,取L2/3及L6/7正常间盘组织作为对照。 结果 造模前后椎间盘髓核的MRI信号强度有随造模手术后的时间延长而逐渐降低的趋势(L3/4、L4/5及L5/6, $P<0.05$)。病理HE染色观察发现,对照组正常的髓核组织中有大量的髓核细胞,随着通过微创法制作兔腰椎间盘退变动物模型后时间的延长纤维环细胞、髓核细胞数量逐渐减少,到第12周时,髓核组织中只有很少量的髓核细胞,却有很多纤维软骨组织。对照组及术后4、8、12周组II型胶原免疫组化染色的灰度值单因素方差分析结果 $F=41.82$, $P<0.05$,组间比较LSD-t检验结果显示除术后4周与8周组比较差异无统计学意义外,其余组间比较均有显著差异($P<0.05$)。 结论 成功建立了新的微创兔腰椎间盘退变动物模型。

Abstract: Objective To establish a rabbit model of degenerative lumbar intervertebral disc by minimally invasive percutaneous annulus needle puncture. Methods Under the guidance of C-arm X-ray machine, 18 rabbits were operated on the L3/4, L4/5 and L5/6 intervertebral discs, and were randomly divided into group A (4 weeks), group B (8 weeks) and group C (12 weeks). Rabbits were sacrificed after MRI detection, and the L3/4, L4/5 and L5/6 intervertebral

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disc nucleus pulposus were isolated. HE staining was used to observe nucleus pulposus cells, and immunohistochemical staining was carried out to observe type II collagen. The L2/3 and L6/7 normal intervertebral discs were used as controls. Results The lumbar MRI results after operation indicated a decreasing tendency of the signal intensity before and after puncture of nucleus pulposus (L3/4, L4/5 and L5/6) ($P<0.05$). HE staining showed the nucleus pulposus of the control group had a large number of nucleus pulposus cells, which declined at 4 and 8 weeks after modeling. There were mainly fibrocartilage tissues in the nucleus pulposus after 12 weeks, accompanied by very few amount of marrow nucleated cells. The gray values of type II collagen were analyzed in the control group and the operation groups after 4, 8 and 12 weeks by one-way ANOVA, and the result was $F=41.82$ ($P<0.05$). The results of comparison among groups by LSD t -test showed significant differences among all the groups except for that between group A and group B ($P<0.05$). Conclusion The rabbit model of minimally invasive lumbar intervertebral disc degeneration is successfully established.

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