

# MRI 在急性髌骨一过性脱位诊断中的应用

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**【摘要】** 目的: 探讨 MRI 对急性髌骨一过性脱位的诊断价值。方法: 回顾性分析 2015 年 1 月至 2017 年 12 月间收治的 35 例急性髌骨一过性脱位患者的 DR 与 MRI 资料, 其中男 12 例, 女 23 例, 年龄 10~23 岁, 平均 17 岁。将 DR 与 MRI 诊断与手术或出院诊断对比, 比较两者诊断膝部解剖位置异常、骨损伤、体征、软组织损伤的区别, 采用 Wilcoxon 符号秩检验 (Wilcoxon signed rank test) 进行统计学分析。结果: 35 例 MRI 结果与术后或出院诊断结果完全相符。MRI 诊断髌骨高位 7 例, 髌骨半脱位 7 例; DR 诊断髌骨高位 7 例, 髌骨半脱位 0 例; MRI 诊断 14 处, DR 诊断 7 处, 两者在髌骨解剖位置异常诊断中差异有统计学意义 ( $v=10, P<0.05$ )。MRI 诊断出骨损伤 112 处, DR 诊断 0 处, 两者在骨损伤诊断中差异有统计学意义 ( $v=16, P<0.05$ )。MRI 诊断软组织损伤 43 处, DR 诊断 0 处, 两者在软组织损伤诊断中差异有统计学意义 ( $v=21, P<0.05$ )。MRI 诊断膝关节积液 35 例, DR 诊断 30 例, 两者在关节积液诊断中差异无统计学意义 ( $v=32, P>0.05$ )。结论: MRI 对急性髌骨一过性脱位的诊断优于 DR, MRI 应作为急性髌骨一过性脱位诊断的首选影像学检查, 可避免漏诊及误诊。

**【关键词】** 髌骨脱位; 磁共振成像; 放射摄影术

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**Application of MRI in diagnosis of transient dislocation of patella** LYU Dong-liang\*, WANG Da-bin, SHAO Hua, ZHU Ying, and ZHANG Dan. \*Department of Radiology, the Third People's Hospital of Cixi, Cixi 315324, Zhejiang, China

**ABSTRACT Objective:** To explore the diagnostic value of MRI in the transient dislocation of the patella. **Methods:** The DR and MRI data of 35 patients with acute patellar transient dislocation from January 2015 to December 2017 were retrospectively analyzed, including 12 males and 23 females, ranging in age from 10 to 23 years old, with an average of 17 years old. The differences between DR and MRI diagnosis and surgical or discharge diagnosis were compared, and the difference between them in diagnosis of knee anatomical position, bone injury, signs and soft tissue injury were compared. The R statistical software Wilcoxon signed rank test (Wilcoxon signed rank test) was used for statistical analysis. **Results:** All 35 MRI findings were completely consistent with postoperative or discharge diagnosis. According to MRI, 7 cases of high patella and 7 cases of patella subluxation were diagnosed. According to DR, 7 cases of high patella and 0 cases of patella subluxation were diagnosed. Fourteen dislocations were diagnosed by MRI and 7 dislocations were diagnosed by DR. There was statistically significant difference between the two methods in the diagnosis of abnormal position of patella ( $v=10, P<0.05$ ). Total 112 cases of bone injuries were diagnosed by MRI, and 0 was diagnosed by DR. There was statistically significant difference between the two methods in the diagnosis of bone injuries ( $v=16, P<0.05$ ). Total 43 cases of soft tissue injuries were diagnosed by MRI, and 0 was diagnosed by DR. There was statistically significant difference between the two methods in the diagnosis of soft tissue injuries ( $v=21, P<0.05$ ). Total 35 cases of hydrops of the knee joint were diagnosed by MRI, and 30 were diagnosed by DR. There was statistically significant difference between the two methods in the diagnosis of hydrops of the knee joint ( $v=32, P>0.05$ ). **Conclusion:** MRI is superior to DR in the diagnosis of acute temporal bone dislocation. MRI should be used as the first choice for imaging diagnosis of acute temporal bone dislocation. It can avoid missed diagnosis and misdiagnosis.

**KEYWORDS** Patellar dislocation; Magnetic resonance imaging; Radiography

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急性髌骨一过性脱位好发于青少年, 占青少年膝关节运动创伤的 25%~31.3%<sup>[1-2]</sup>。急性髌骨一过性脱位绝大多数发生于关节扭伤的瞬间、髌骨即刻自行复位, 到患者就诊时髌骨位置往往相对正常, 临床

常规 X 线检查存在局限性, 难以发现脱位, 非常容易漏诊。随着 MRI 的广泛应用, 其对于骨关节外伤诊断的优势越来越明显。笔者收集自 2015 年 1 月至 2017 年 12 月收治的 35 例急性髌骨一过性脱位患者 DR 与 MRI 检查的资料, 对两者的诊断价值进行比较, 旨在探讨出一条合理、适当的影像学检查途径, 现报告如下。

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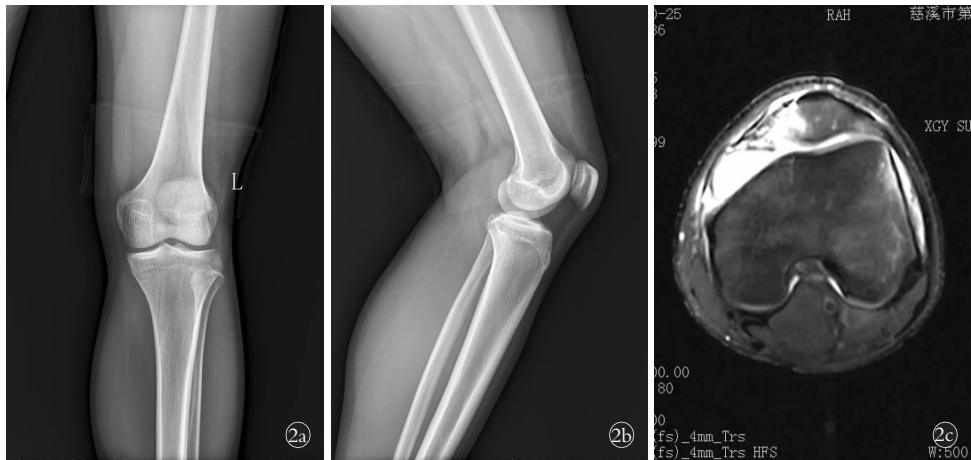
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**图 1** 患者,女,14 岁,左髌骨一过性脱位 **1a,1b.** 左膝关节正侧位 X 线片未见明显骨折、脱位,髌上囊肿胀、积液。左髌骨高位,Insall-Salvati 比率(髌腱/髌骨)1:3 **1c.** MRI 矢状面 T1-GRE (FS) 示左髌骨高位,Insall-Salvati 比率(髌腱/髌骨)1:3,髌上囊积液 **1d.** MRI 横断面 T2-FSE (FS) 示左髌骨外侧半脱位

**Fig.1** Female, 14 years old, left patellar subluxation **1a,1b.** AP and lateral X-ray films of the left knee joint showed no obvious fracture and dislocation, the swelling and effusion of the patellar bursa. Left patella high, Insall-Salvati ratio (patella tendon / patella) 1:3 **1c.** MRI sagittal T1-GRE (FS) showed high left patella, Insall-Salvati ratio (patella tendon / patella) 1:3, and superior patellar bursa **1d.** MRI transect T2-FSE (FS) showed left lateral subluxation of left patellar



**图 2** 患者,男,18 岁,左髌骨一过性脱位 **2a,2b.** 左膝关节正侧位 X 线片未见骨折及脱位 **2c.** MRI 横断面 T2-FSE (FS) 示左髌骨内侧缘骨软骨骨折,左髌骨内侧缘骨挫伤,髌骨内侧支持带损伤,左股骨滑车变浅

**Fig.2** Male, 18 years old, left patellar subluxation **2a,2b** AP and lateral X-ray films of left knee joint showed no obvious fracture and dislocation **2c.** MRI transverse section T2-FSE (FS) showed bony cartilage fracture in the medial margin of the left patella, bone contusion in the medial margin of the left patella, medial patellar retinaculum injury, and left femur trochlear shallow

一过性脱位轻者仅出现骨挫伤(骨髓水肿),X 线片无法显示。(4)X 线片的密度分辨率较低,对髌骨内侧缘骨折难以发现导致漏诊。(5)由于疼痛等原因,即使在拍摄髌骨轴位片时,影像人员常不能准确控制屈膝角度,往往因屈膝角度过大而掩盖了髌骨在轴位片上的异常表现。本组数据 DR 诊断髌骨高位 7 例,髌骨半脱位 0 例,诊断阳性率最高的征象为关节积液,关节积液只能揭示关节急性损伤,不具有特征性,只能说明膝部受过损伤,至于何种损伤,有待于进一步检查;而股骨外髌及髌骨内侧缘骨挫伤对

于急性髌骨一过性脱位具有明显特征性<sup>[4]</sup>,DR 均未能明确诊断,诊断率为 0。

### 4.3 MRI 的诊断价值

MRI 具有多参数、多序列、多方位成像和组织分辨率极高的特点,可以清楚地分辨肌肉、肌腱、韧带、半月板、滑膜、脂肪、关节软骨等结构,对骨挫伤、骨软骨骨折、隐匿性骨折具有极高的敏感性<sup>[5]</sup>,可以弥补 DR 摄影的不足。由于髌骨一过性脱位是骨、软骨、韧带、滑膜等组织结构不同程度的损伤及髌骨脱位或者半脱位的复合型损伤<sup>[6]</sup>,应用 MRI 扫描,不但



**图 3** 患者,女,14 岁,左髌骨一过性脱位 **3a,3b.** 左膝关节正侧位 X 线片未见明显骨折、脱位,髌上囊肿胀、积液。左髌骨高位,Insall-Salvati 比率(髌腱/髌骨)1:3 **3c.** MRI 矢状面 T1-GRE(FS)示左髌骨高位,髌上囊积液 **3d.** MRI 横断面 T2-FSE(FS)左髌骨外侧半脱位,左股骨外侧髌骨挫伤

**Fig.3** Female, 14 years old, left patellar subluxation **3a,3b.** AP and lateral X-ray films of the left knee joint showed no obvious fracture and dislocation, the swelling and effusion of the patellar bursa. Left patella high, Insall-Salvati ratio (patella tendon/patella) 1:3 **3c.** MRI sagittal T1-GRE (FS) showed high left patella, and superior patellar bursa **3d.** MRI transverse section T2-FSE (FS), left patellar lateral subluxation, left lateral femoral condyle bone contusion



**图 4** 患者,男,22 岁,左髌骨一过性脱位 **4a,4b.** 左膝关节正侧位 X 线片未见明显骨折、脱位,髌上囊肿胀、积液 **4c.** MRI 矢状面 T1-GRE (FS)示左髌韧带损伤,髌上囊积液 **4d.** MRI 横断面 T2-FSE(FS)示左髌骨外侧半脱位,左股骨滑车变浅

**Fig.4** Male, 22 years old, left patellar subluxation **4a,4b.** AP and lateral X-ray films of the left knee joint showed no obvious fracture and dislocation, the swelling and effusion of the patellar bursa **4c.** MRI sagittal T1-GRE (FS) showed left patellar ligament injury and superior patellar effusion **4d.** MRI transverse section T2-FSE (FS) showed lateral subluxation of the left patella, and the trochlear of the left femur became shallow

可获得骨、软骨、肌腱、韧带、滑膜等组织结构损伤的影像信息,还可以揭示急性髌骨一过性脱位是髌骨内缘及股骨外髌骨挫伤、髌骨内侧支持带损伤的本质,从而获得较肯定的诊断。即使是在髌骨恢复接近解剖位置时,特定部位的骨挫伤(髌骨内后缘和股骨外髌前外侧面骨挫伤同时出现)非常具有特异性,有助于急性髌骨一过性脱位的确诊。此外,髌骨内后缘骨软骨骨折也较常见,可作为诊断的重要依据。

**4.4 治疗体会**

(1)部分临床医生对此损伤认识不足,膝关节正

侧位 X 线片难以发现半脱位的髌骨,导致可能的漏诊,有条件者应加拍髌骨轴位片以显示半脱位或脱位的髌骨、股骨滑车有无发育不良等。(2)对于青少年膝关节外伤后髌骨内缘侧和股骨外侧髌压痛明显者、髌骨外推“恐惧试验”阳性者应考虑到髌骨脱位的可能,X 线片、CT 检查可做初步筛选,有条件者应行 MRI 检查。(3)X 线片、CT 检查发现有引发髌骨脱位的高危因素,如高位髌骨、髌骨倾斜移位、股骨滑车沟浅、股骨髌发育不良等,应意识到有急性髌骨一过性脱位的可能,有条件者应行 MRI 检查。(4)青少

年膝关节外伤后 X 线平片、CT 检查发现髌骨内侧缘骨折、股骨外髁骨折时,应意识到急性髌骨一过性脱位的可能,有条件者应行 MRI 检查。(5)影像科医生对急性髌骨一过性脱位要有清楚、全面的认识,不要将特征部位的骨髓水肿(髌骨内后缘和股骨外髁前外侧面)、特征部位骨软骨骨折(髌骨内后缘骨软骨骨折最常见)简单地、片面地、轻易诊断了事,避免在认识上不足而造成漏诊误诊。(6)明显的髌骨全脱位、半脱位不难诊断,还要注意是否合并其他损伤,如肌腱、韧带、半月板、关节囊、脂肪垫等损伤。(7)青少年膝关节外伤后 X 线、CT 检查未见明确骨折脱位,但临床症状明显或长时间未缓解,有条件者应行 MRI 检查,排除骨、软骨、半月板、肌腱、韧带损伤可能。

综上所述,DR 检查能够直观显示髌骨高位和较为明显的体征,MRI 不仅可以观察关节解剖结构异常,而且还可明确诊断一过性髌骨脱位、揭示损伤的机制和判定损伤的程度,是 DR 检查的有力补充,能够最大限度地避免漏诊与误诊,为治疗提供重要的参考信息。

参考文献

[1] 吴李闯,周海波,张超,等. 关节镜下内侧髌股韧带重建结合外侧支持带松解及胫骨结节内移垫高治疗习惯性髌骨脱位[J]. 中国骨伤,2017,30(11):986-990.  
WU LC,ZHOU HB,ZHANG C,et al. Treatment of habitual patellar dislocation with reconstruction of medial patellofemoral ligament combined with release of lateral retinaculum and medial transfer and advancement of tibial tuberosity under arthroscopy[J]. Zhongguo Gu Shang/China J Orthop Trauma,2017,30(11):986-990. Chinese with abstract in English.

[2] 左永祥,马子平. 股骨侧 Tightrope 固定重建内侧髌股韧带治疗

创伤性髌骨脱位[J]. 中国骨伤,2017,30(11):1039-1042.  
ZUO YX,MA ZP. Reconstruction of medial patellofemoral ligament with Tightrope button fixation on the femoral side for treatment of traumatic patellar dislocation[J]. Zhongguo Gu Shang/China J Orthop Trauma,2017,30(11):1039-1042. Chinese with abstract in English.

[3] 张旭辉,夏磊,王刚涛,等. 可吸收软骨钉多点固定治疗髌骨不稳致骨软骨骨折[J]. 中国骨伤,2017,30(11):991-993.  
ZHANG XH,XIA L,WANG GT,et al. Multi-point fixation with absorbable cartilage screws for the treatment of osteochondral fracture caused by patellar instability[J]. Zhongguo Gu Shang/China J Orthop Trauma,2017,30(11):991-993. Chinese with abstract in English.

[4] 王蓼,江凯,成科,等. 膝关节外侧半月板假撕裂 MRI 征象分析及临床意义[J]. 中国骨伤,2015,28(7):669-671.  
WANG L,JIANG K,CHENG K,et al. MRI ainalysis of the pseudo tears of the lateral meniscus of the knee and its clinical significance [J]. Zhongguo Gu Shang/China J Orthop Trauma,2015,28(7):669-671. Chinese with abstract in English.

[5] 曹万全,杨自权,王刚,等. 复发性髌骨脱位的治疗进展[J]. 中国骨伤,2017,30(3):282-286.  
CAO WQ,YANG ZQ,WANG G,et al. Current therapy progress on the recurrent patellar dislocation[J]. Zhongguo Gu Shang/China J Orthop Trauma,2017,30(3):282-286. Chinese with abstract in English.

[6] 魏民,刘玉杰,李众利,等. 髌股关节发育不良对髌骨脱位磁共振成像表现的影响[J]. 中国骨与关节外科,2014,7(2):105-107.  
WEI M,LIU YJ,LI ZL,et al. Magnetic resonanceresonance imaging features of dysplasiadysplasiaof patellofemoral joint after patellar dislocation[J]. Zhongguo Gu Yu Guan Jie Wai Ke,2014,7(2):105-107. Chinese.

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