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医学影像物理

MRI诊断宫颈鳞癌58例与临床病理比较分析

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【摘 要】**目的:**用MRI诊断宫颈鳞癌并与临床病理进行比较分析,为宫颈癌诊断和防治提供临床依据。**方法:**回顾性选择分析铜川市人民医院经确诊58例宫颈鳞癌患者的MRI特征和分期,并与FIGO临床分期与病理诊断结果进行比较。**结果:**在58例宫颈鳞癌患者中,MRI诊断分期符合病理组织学分期达到93.1%(54/58)。与周围宫颈组织相比,宫颈癌的T_1WI呈等信号,T_2WI信号强度高于正常宫颈组织。宫颈癌浸润宫旁组织时,癌肿周围出现有中断或消失正常低信号带,Gd2DTPA增强后癌组织有不同程度强化。手术切除34例,单纯放疗24例。在单纯放疗病例中,早期出现信号完全消失4例;信号范围明显缩小16例;局部T_2WI序列呈现低信号4例。放疗结束1~3月复查,肿瘤信号完全消失7例;14例肿瘤不同程度缩小且局部T_2WI序列呈低信号,出现程度不同的无强化区;3例无变化。**结论:**MRI诊断宫颈癌是可行和准确的,并能对癌肿浸润的范围进行多方位观察,可为临床诊断和预后评估提供依据。

【关键词】宫颈癌;FIGO分期;磁共振成像;病理诊断
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Comparative analysis of MRI diagnosis for cervical squamous cell carcinoma and clinical pathology: a report of 58 cases

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Abstract: Objective To provide clinical evidence for the diagnosis and treatment of cervical cancer by comparing the MRI diagnosis for cervical squamous cell carcinoma and the clinical pathology. **Methods** The MRI features and staging of 58 patients confirmed with cervical squamous cell carcinoma in Tongchuan People's Hospital were retrospectively analyzed, and compared with the clinical staging of federation international of gynecology and obstetrics (FIGO) and pathological diagnostic results. **Results** For the 58 patients with cervical squamous cell carcinoma, the rate of MRI diagnostic staging conformed to the pathological staging was 93.1% (54/58). Compared with the surrounding cervical tissue, the T_1WI of the cervical cancer showed equal signal, and the T_2WI signal intensity of cervical cancer was higher than that of normal cervical tissue. When the cervical carcinoma invading the parametrial tissue, the interrupted or disappeared normal low signals were appeared around the cancer, and Gd2DTPA enhanced cancer tissue had different degrees of enhancement. Thirty-four cases were surgically removed, while the other twenty-four cases were treated with radiotherapy alone. Among the cases treated with radiotherapy alone, 4 cases of tumor signals appeared early were completely disappeared; 16 cases of tumors had significant narrowing in the signal range; 4 cases of local T_2WI sequence showed low signals. The patients were followed up in 1-3 months after radiotherapy. And the follow-up results showed that 7 cases of tumor signal appeared completely disappeared; 14 cases of tumors had different degrees of narrowing, with low signals in the local T_2WI sequence and no enhancement area of different degrees; 3 cases did not had any changes. **Conclusion** MRI diagnosis for cervical cancer is feasible and accurate, with multi-directional observation on the extent of tumor infiltration, which can provide the basis for clinical diagnosis and prognosis evaluation.

Key words: cervical cancer; federation international of gynecology and obstetrics staging; Magnetic resonance imaging; pathological diagnosis

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前 言

女性常见生殖系统癌症中，宫颈癌排在妇科恶性肿瘤的第2位，且大多数为鳞癌，平均发病年龄在48岁[1-3]。由于广泛使用巴氏涂片筛查对原位癌进行有效的诊断和治疗，宫颈癌在发达国家已大幅下降。研究表明，影响宫颈癌预后的主要因素包括确诊时FIGO（国际妇产科联盟）分期、肿瘤大小、病理分型分级、癌肿浸润深度或范围，以及淋巴结转移等，对宫颈癌侵袭的准确定位是确定选择个体化治疗方案的关键所在[4-6]。磁共振成像（MRI）的快速发展，特别是弥散加权成像（Diffusion Weighted Imaging, DWI）在盆腔中的广泛应用，能够观察活体组织水分子的扩散运动，并能够在测量表观弥散系数（Apparent Diffiision Coefficient, ADC）值时，对病变组织水分子弥散变化进行定量分析，从而对宫颈癌分期和病理学特征作为相应的区分供临床参考。在MRI的DWI序列中应用b值不同会影响ADC值所反映的水分子扩散的权重，即b值大小与ADC值所包含的微循环灌注成分成反比[5-6]。MRI电离辐射，在多方位直接成像，且有很好的软组织分辨力，在女性生殖系统检查中得到广泛应用。我们通过MRI对宫颈鳞癌的诊断分期，并参照FIGO分期标准进行比较分析，为宫颈癌诊断和治疗预后提供依据。

1 对象和方法

1.1 对象

收集2010年1月至2015年12月铜川市人民医院MRI诊断的58例宫颈鳞癌患者，年龄30~69岁，平均52.7岁，这些患者均为组织病理学确诊。主要表现：特征的不规则阴道出血或接触性出血，检查为宫颈糜烂加息肉，分泌物异常增多。所有患者均经手术病理或宫颈活检确诊为宫颈鳞癌。纳入标准：（1）原发性宫颈癌；（2）无MRI检查禁忌症：如体内有心脏起搏器、金属支架、钢板、宫内节育器等金属物以及幽闭恐惧症；（3）避开月经期；（4）MRI检查前未经任何治疗；（5）手术在MRI检查后2周内实施。排除标准：（1）腺癌、腺鳞癌、神经内分泌癌等肿瘤；（2）肿瘤最大径<1.0 cm；（3）宫颈活检后不足7 d。宫颈癌病理诊断由病理科医师在不知道临床资料的情况下对病理切片进行观察，标本采用HE染色。

1.2 MRI检查

检查前患者将体内金属避孕环支除，喝水让膀胱适度充盈。选用GESigna1.5T超导磁共振仪进行盆腔MRI扫描。常规设置扫描参数：（1）轴位SET1WI（TR/TE=500 ms/14 ms，AC 3次）；（2）轴位、冠位、矢状位TSET$_2$WI（TR/TE=3400 ms/121 ms，AC 4次）；（3）矢状位TSET$_2$WI脂肪抑制扫描；（4）对比剂钆喷替酸葡甲胺（Gd-DTPA）0.01 mmol/kg，静脉注射后进行SE T$_1$WI增强轴位、矢状位、冠状位扫描。所有序列的扫描视野FOV 350~400 mm，层厚6~8 mm，矩阵256×256，重建矩阵512×512。

2 结 果

58宫颈癌肿瘤直径<4.0 cm 33例，>4.0 cm（手术患者）25例；无脉管间隙浸润51例，有脉管间隙浸润（手术患者）7例；宫颈基质浸润深度<1/2 31例，>1/2（手术患者）27例；无淋巴结转移53例，有转移（手术患者）5例。宫颈癌的病理、MRI和临床分期见表1。其中MRI分期不符合病理组织学分期分别为：IB 2例（10.0%），IIA 1例（4.3%），IIB 1例（8.3%），IIIA和IIIB均无不符合病例，总符合率达93.1%（54/58）。58例患者均为鳞癌，包括高分化13例，中分化34例和低分化11例（图1）。

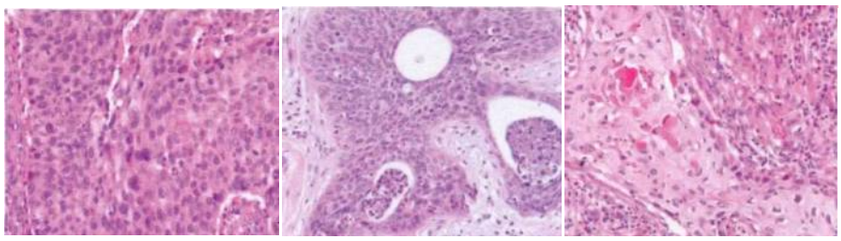
表1 宫颈癌患者病理、MRI和临床FIGO分期（*n*）

Tab.1 Pathology, MRI and clinical FIGO staging of cervical cancer (*n*)

Staging	IB	IIA	IIB	IIIA	IIIB
Pathology	20	23	12	1	2
MRI	18	24	13	1	2
Clinical FIGO	17	24	13	1	3

FIGO: Federation international of gynecology and obstetrics

全部患者在MRI上均有表现，其中4例宫颈癌MRI典型表现见图2。39例T$_1$WI呈等信号，T$_2$WI呈稍高信号，其中信号不均匀的16例，其间夹杂有高信号；12例T$_1$WI呈等信号，T$_2$WI呈高信号；7例T$_1$WI呈低信号，T$_2$WI为高信号。前后唇均受浸润22例，子宫旁组织被浸润16例，阴道上1/3受浸润9例；前唇局限性结节7例，其中5例合并阴道上1/3浸润，2例子宫旁组织浸润；后唇局限性结节9例，其中子宫旁浸润5例，2例合并阴道上1/3浸润。盆腔淋巴结肿大35例，宫旁12例，闭孔11例，髂内5例，髂外4例，髂总和腹股沟各3例。9例盆腔淋巴结转移，26例多处淋巴结转移。Gd2DTPA增强后，55例肿瘤组织均见不同程度强化，3例未见变化。手术切除治疗34例。单纯放疗24例中，4例早期患者肿瘤信号完全消失，肿瘤信号范围明显缩小16例，局部T$_2$WI序列呈低信号4例。放疗结束后1~3月复查，24例中7例肿瘤信号完全消失；14例肿瘤不同程度缩小，且局部T$_2$WI序列呈低信号，出现不同程度无强化区；3例无变化。

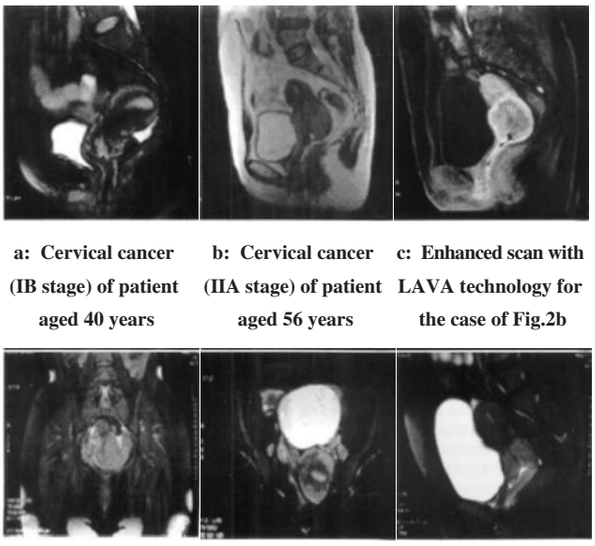


a: Poorly differentiated squamous cell carcinoma　b: Moderately differentiated squamous cell carcinoma　c: Highly differentiated squamous cell carcinoma

图1 宫颈鳞癌典型病理特征（HE，×40）

Fig.1 Pathological characteristics of cervical squamous cell carcinoma (HE，×40)

The tumor cells in Fig.1a arranged densely, with large nucleus and deep staining, higher ratio of nucleus to cytoplasm, and obvious atypia. The local tumor cells in Fig.1b arranged densely, with different sizes of nucleus and more obvious atypia. The tumor density in Fig.1c was lower, with keratin pearl and mild atypia.



a: Cervical cancer (IB stage) of patient aged 40 years　b: Cervical cancer (IIA stage) of patient aged 56 years　c: Enhanced scan with LAVA technology for the case of Fig.2b

d: Parametrial invasion　e: Metastasis of pelvic lymph node　f: Cervical cancer (IIIA stage) of patient aged 29 years

图2 4例宫颈癌MRI典型表现

Fig.2 Typical manifestations of MRI in 4 cases of cervical cancer

Fig.2a showed after fat suppression, T_2W_I displayed slightly higher signal intensity in the sagittal plane of the tumor, partly involving the matrix ring. Tumors in Fig.2b were round hyperintensity, downward invading the vaginal vault. Fig.2c showed the enhancement degree of tumor was slightly lower than that of normal cervical tissue. Fig.2d and e were the cervical cancer (IIB stage) of patient aged 38 years. Fig.2f showed the tumor invasion to lower part of vagina.

3 讨 论

MRI诊断宫颈癌是可行和准确的。由于MRI对癌肿浸润的范围进行多方位观察和跟踪对比，故可以给临床诊断和预后评估提供重要的参考依据。临床对于宫颈癌的诊断，通过活检获得宫颈癌的病理信息很可靠且准确，但往往由于取样数量的限制和肿瘤的异质性，活检结果与手术后的病理结果存在一定偏差，从而影响肿瘤的诊断和治疗[5-8]。此外，对于不同病理学特征的肿瘤，其治疗方法和效果也需要进行评价，寻求一种新的可以全面反映活体组织肿瘤病理学特征的检查方法也是临床关注焦点[9-12]。

妇科检查、宫颈涂片和活检是宫颈癌初诊的主要方法，但对于肿瘤位置、大小和浸润范围不能做出准确结论。宫颈癌的超声诊断准确率大多在20%~25%，除放射影响因素外，CT诊断仅在子宫外形增大和累及宫旁后才有参考价值，而此时大多为晚期病例，且对肿瘤浸润深度，侵犯周围状况也无法做出准确定位[13-15]。MRI对软组织具有较高的分辨率，其成像呈现多方位、多序列和多参数，肿瘤体积、浸润深度、延伸范围和淋巴结转移等都能做出准确判断，目前在临床已得到广泛应用[16]。

MRI显示宫颈癌信号为病变局部T_1WI呈等信号，与子宫旁组织呈现显著信号差异，而T_2WI则是较高至高信号，与正常子宫间对比清晰[9,12]。Gd-DTPA增强扫描，子宫旁组织T_1WI出现低信号，T_2WI则出现高信号。MRI具有多体位和多参数成像特点，轴位和矢状位的T_2WTSE是对诊断宫颈癌及其分期不可或缺的扫描序列，对肿瘤定位和对周边病变的定性定位均有很高的诊断价值[7-9]。MRI的T_2WSPIR显像可压制脂肪信号，对内膜和粘膜高信号与脂肪信号鉴别有一定意义[10-13]。

本组患者，MRI与病理分期符合率在90.7%，表明用MRI分期准确性比较高，这与既往报道接近[12-14]。宫颈癌放疗后用MRI进行效果评价，T_2WI序列显示高信号是肿瘤组织和急性期的炎性水肿，低信号则表明是慢性期的纤维化[6-8]。放疗过程中，MRI显示的肿瘤信号消失或局部T_2WI序列出现低信号表明病变趋向好转或消失[15,17]。多数情况是放疗早期肿瘤的T_2WI呈高信号，低信号较少，这主要是放

疗过程出现炎症反应和残余肿瘤所致而呈高信号，当炎症反应消退则为低信号[17-20]。肿瘤的宫旁浸润或转移淋巴结的变化，MRI表现和肿瘤组织相似。放疗结束后由于受侵犯病变范围缩小且边界清晰，这时T_2WI序列表现为低信号[21-23]。因此，我们认为MRI对宫颈癌放疗效果的评价和调整治疗方案都具有一定的临床意义。

应用MRI的多参数和多方位成像特性来确定肿瘤分期和制定治疗方案都有重要作用，包括选择手术方式，确定放疗剂量和范围，以及淋巴结清扫等，MRI已成为宫颈癌定性、分期和预后评估的重要手段[24-26]。

我们回顾分析了58例经病理证实的宫颈癌患者的MRI资料和相关临床资料，结果表明MRI检查可以准确显示宫颈癌病灶，对癌肿浸润的范围也能进行多方位观察，且分期准确，可用于临床诊治和评估。

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