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MRI 在喉癌术前分期中的临床应用价值

王洪伟 张修石[△] 周 洋 张红霞 张颖俏

(哈尔滨医科大学附属肿瘤医院 黑龙江 哈尔滨 150081)

摘要 目的:探讨 MRI 在喉癌术前诊断、分期中的临床应用价值。**方法:**对 114 例行电子喉镜检查并经病理学证实为喉癌的患者行术前 MRI 扫描,根据图像资料判断肿瘤侵及范围及判断有无淋巴结转移;同时进行术前分期、分型,并与术后病理分期、分型对照研究。**结果:**术前 MRI T1 期 27 例,其中 25 例经病理证实为 T1 期,2 例为 T2 期,准确率为 92.6%;术前 MRI T2 期 39 例,其中经病理证实 35 例为 T2 期,3 例 T1 期,1 例 T3 期,准确率为 89.7%;术前 MRI T3 期 29 例,其中经病理证实 25 例为 T3 期,4 例 T2 期,准确率为 86.2%;术前 MRI T4 期 17 例,其中经病理证实 15 例为 T4 期,2 例 T3 期,准确率为 88.2%;MRI 术前 T 分期总准确率为 87.7%。N1 期准确率为 81.8%,N2 期准确率为 94.1%。**结论:**MRI 图像能很好地显示喉癌肿块的侵及范围及淋巴结转移等,对喉癌的术前分期、分型及制定合理的手术方案具有指导意义。

关键词:喉癌;肿瘤分期;MRI

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The Clinical Application Value of MRI in the Preoperative Staging of Laryngeal Carcinoma

WANG Hong-wei, ZHANG Xiu-shi[△], ZHOU Yang, ZHANG Hong-xia, ZHANG Ying-qiao

(Tumor Hospital Affiliated to Harbin Medical University, Harbin, Heilongjiang, 150081, China)

ABSTRACT Objective: To investigate the clinical value of pretreatment surgical magnetic resonance images (MRI) in the preoperative staging of laryngeal carcinoma. **Methods:** 114 patients with laryngeal carcinoma diagnosed by electrical laryngoscope were studied by pretreatment surgical MRI examination. According to the images the tumor and lymphadenopathy were investigated, and the classification and staging of tumor were compared with pathological results. **Results:** 27 cases of T1 were confirmed by MRI, in which 25 cases were confirmed by pathology; 2 cases were T2, and the accuracy of T1 staging was 92.6%; 39 cases of T2 were confirmed by MRI, in which 35 cases were confirmed by pathology, 3 cases were T1, 1 case was T3, and the accuracy of T2 staging was 89.7%; 29 cases of T3 were confirmed by MRI, in which 25 cases were confirmed by pathology, 4 cases were T2, and the accuracy of T3 staging was 86.2%; 17 cases of T4 were confirmed by MRI, in which 15 cases were confirmed by pathology, 2 cases were T3, and the accuracy of T4 staging was 88.2%, and the accuracy of T staging was 87.7%. In preoperative N staging, N1 was 81.8%, while N2 was 94.1%. **Conclusion:** MRI can display tumor infiltration and lymph node metastasis, which could be considered as a helpful diagnostic method that can contribute to the preoperative staging of laryngeal tumor and further clinical decision made in these patients.

Key words: Laryngeal tumor; Neoplasm staging; MRI

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前言

喉癌是头颈部常见的恶性肿瘤之一, 占我国全身肿瘤的 1%~2%, 占头颈部肿瘤的 11%~22%^[1]。喉癌主张以手术为主的综合治疗, 以最大可能地提高喉癌的局部控制效果为治疗原则;在保证局部控制的基础上,尽可能保留患者的喉功能^[2-3]。判断喉肿物的侵及范围是完整地切除肿物并尽量保留患者喉功能的关键。MRI 具有优越的软组织分辨率和多方位成像能力,

对肿物形态、部位及浸润范围的判断有较高的准确率。本文就 MRI 在喉癌诊断、术前分期中的临床应用价值进行探讨,以期 为临床手术提供多元化信息。

1 资料与方法

1.1 一般资料

收集我院 2011 年 1 月 -2012 年 12 月收治的 114 例喉癌患者,所有患者均行手术治疗,术前进行 MRI 和喉镜检查。其中男 89 例,女 25 例;年龄 41-78 岁,平均 57 岁;声门上型 72 例,声门型 34 例,声门下型 5 例,贯声门型 3 例。全部病例术前均未进行任何治疗,术后病理学诊断均为鳞状细胞癌。其中行部分切除术患者为 57 例,全喉切除术患者为 57 例。

1.2 扫描方法和参数

采用飞利浦 1.5T 扫描仪,颈部线圈,患者取仰卧位,扫描

作者简介:王洪伟(1987-),男,硕士研究生,电话:15846618644,

E-mail: hungermo@163.com

[△]通讯作者:张修石,男,主任医师,教授,硕士研究生导师,

研究方向:影像诊断;电话:0451-86298587,

E-mail: xiushiz@126.com

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方位以横轴位及冠状位为主。扫描方法和参数:T1WI:TSE TR=400、TE=8、层厚 2-3 mm;T2WI:TSE TR=5200、TE=120、层厚 4 mm;反转恢复脂肪抑制序列 (IR 序列):TR=2500、TE=100、层厚 3-4 mm。

1.3 诊断方法及标准

由我院两名 MRI 医师按照国际抗癌协会(UICC)2002 标准进行术前 MRI 分期,最后与病理分期进行比较。观察的部位包括会厌、杓会厌皱襞、室带、喉室、声带、前联合、梨状隐窝、会厌前间隙、喉旁间隙、喉旁软骨。

喉癌侵及部位的诊断标准:(1)当会厌、杓会厌皱襞、室带、声带、喉室及声门下表现为局限性或弥漫性增厚、结节状或菜花样肿物,且与肿物信号一致时示为受侵;(2)前联合厚度超过 2 mm 示为受侵;(3)梨状隐窝被肿物占据变狭窄或消失示为受侵;(4)喉软骨在未钙化前 T1WI、T2WI 呈中等信号,钙化后不均匀低信号,当信号改变成肿瘤信号或连续性中断时考虑为受侵;(5)喉旁间隙在 T1WI 和 T2WI 均呈高信号,当信号改变为肿瘤信号时,考虑为受侵。

淋巴结转移的诊断标准:(1)淋巴结短径大于 10 mm;(2)淋

巴结中心密度或信号改变,Som^[4]等认为淋巴结出现中心坏死表现是影像学诊断淋巴结转移最准确的指标,(3)淋巴结边界模糊或相邻淋巴结互相粘连,也应首先考虑是转移。

1.4 统计学方法

用 SPSS 17.0 统计软件对所得数据进行分析。MRI 的 T、N 分期结果与术后病理 T、N 分期结果进行 Kappa 诊断一致性检验(Kappa 检验中 k 系数越大,吻合度越高,k $\geq$ 0.7 表示吻合度较强,0.4 $\leq$ k< 0.7 表示吻合度一般,k< 0.4 表示吻合度弱)。

2 结果

114 例喉癌患者侵及各部位的 MRI 及术后病理情况见表 1。本组病例中,MRI 诊断 N1 期 11 例,N2 期 16 例,术后病理证实 N1 期 9 例,N2 期 17 例。N1 期符合率为 81.8%,N2 期符合率为 94.1%,114 例喉癌患者 MRI 术前 N 分期与术后病理 N 分期详细对照比较见表 2;术前 MRI 诊断与术后病理诊断 T 分期的符合率分别为 T1 期 92.6%、T2 期 89.7%、T3 期 86.2%、T4 期 88.2%,114 例喉癌患者 MRI 术前 T 分期与术后病理 T 分期详细对照比较见表 3。

表 1 术前 MRI 发现的侵犯范围与病理侵犯程度的对照表(114 例)

Table 1 The contrast between preoperative MRI and postoperative histopathology for invasive degrees

部位 Localization	术后病理 Postoperative histopathology	MRI			MRI 符合率(%) MR coincidence rate
		阳性 Positive	假阳性 False positive	假阴性 False negative	
会厌 Epiglottis	57	59	5	3	93.0
杓会厌皱襞 Aryepiglottic fold	28	31	4	1	95.6
室带 Ventricular bands	56	57	3	2	95.6
喉室 Laryngeal saccule	30	39	10	1	90.3
声带 Vocal cord	72	79	9	3	89.5
前联合 Anterior commissure	32	29	5	0	95.6
声门下 Hypolarynx	14	13	0	1	99.1
梨状窝 Sinus piriformis	14	15	3	2	95.6
会厌前间隙 Preepiglottic space	11	12	2	1	97.4
声门旁间隙 Paraglottic space	30	35	6	1	93.8
喉旁软骨 Cartilage	14	16	2	0	97.4

3 讨论

目前,喉癌以手术及放射治疗为主,而手术治疗模式已逐步转向"彻底切除肿瘤的前提下,尽可能保留喉功能"这一原则。对肿瘤侵犯范围,特别是肿瘤深层浸润的精确评估对治疗

方案的制定、手术方式的选择及判断预后尤为重要,MRI 能更好的显示肿瘤的侵及范围^[5,6]。

术前 MRI 病变侵及范围与病理侵犯范围差异较大的部位是声带、前联合及喉旁软骨。本研究中有 9 例患者前联合出现假阳性,是由于肿瘤组织侵犯导致继发出血、水肿或由于炎性

表 2 MRI 术前 N 分期与术后病理 N 分期对照比较表

Table 2 The contrast between preoperative MRI and postoperative histopathology for N staging

分期 Staging	N0	N1	N2	N3
术后病理 Postoperative histopathology	88	9	17	0
MRI 诊断 MRI diagnosis	87	11	16	0
符合率 Coincidence rate	98.8%	81.8%	94.1%	—

注:二者 N 分期一致性检验, $k=0.896$, $p=0.000$, 说明 MRI N 分期结果与术后病理 N 结果一致性较强。

Note: Kappa test between preoperative MRI and postoperative histopathology for T staging: $k=0.954$, $P=0.000$, so the kappa test has a better coincidence.

表 3 MRI 术前 T 分期与术后病理 T 分期对照比较表

Table 3 The contrast between preoperative MRI and postoperative histopathology for T staging

分期 Staging	病理分期 Histopathology staging	MRI 分期 MRI staging			
		T1	T2	T3	T4
T1	30	25	3	0	0
T2	41	2	35	4	0
T3	28	0	1	25	2
T4	15	0	0	0	15

注:二者 T 分期一致性检验, $k=0.855$, $P=0.000$, 说明 MRI T 分期结果与术后病理 T 结果一致性较强。

Note: Kappa test between preoperative MRI and postoperative histopathology for T staging: $k=0.855$, $P=0.000$, so the kappa test has a better coincidence.

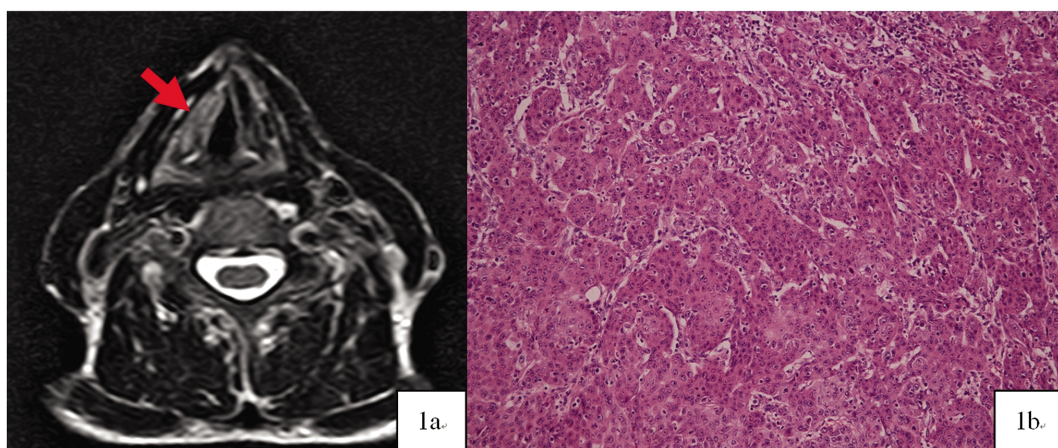


图 1a、1b T1 期声门型喉癌。轴位 T2WI 右声带增厚(红箭头)呈略高信号

Fig. 1a, 1b T1 glottic carcinoma. Axial T2w show the right vocal cord thickening (red arrow) and Slightly high signal



图 2a、2b、2c T2 期声门上型喉癌。左侧会厌及室带(红箭头)增厚, T2WI 略高信号

Fig. 2a, 2b, 2c T2 supraglottic carcinoma. Axial and Coronal T2w show left epiglottis and ventricular bands thickening (red arrow) and Slightly high signal

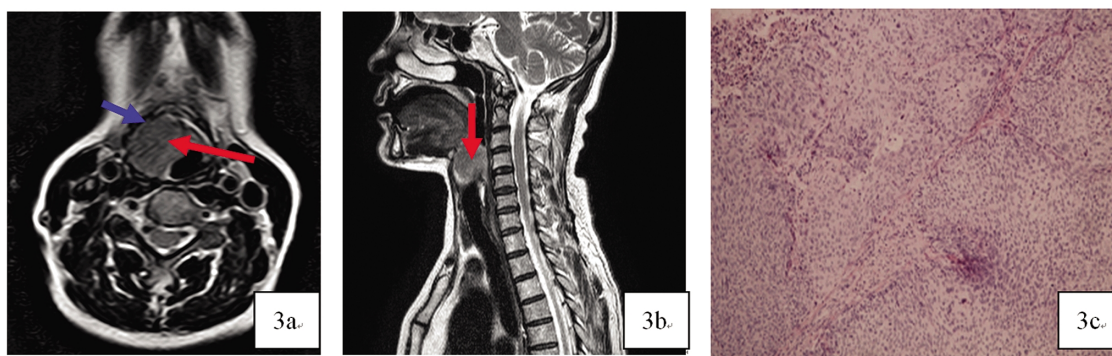


图 3a、3b、3c T3 期声门上型喉癌,轴位及矢状位会厌喉面见肿块(红箭头),会厌前间隙受侵(蓝箭头)。T2WI 略高信号

Fig. 3a, 3b, 3c T3 supraglottic carcinoma. Axial and Sagittal T2w show a tumor(red arrow) in the laryngeal surface, with infiltration of the preepiglottic space(blue arrow).T2w is Slightly high signal

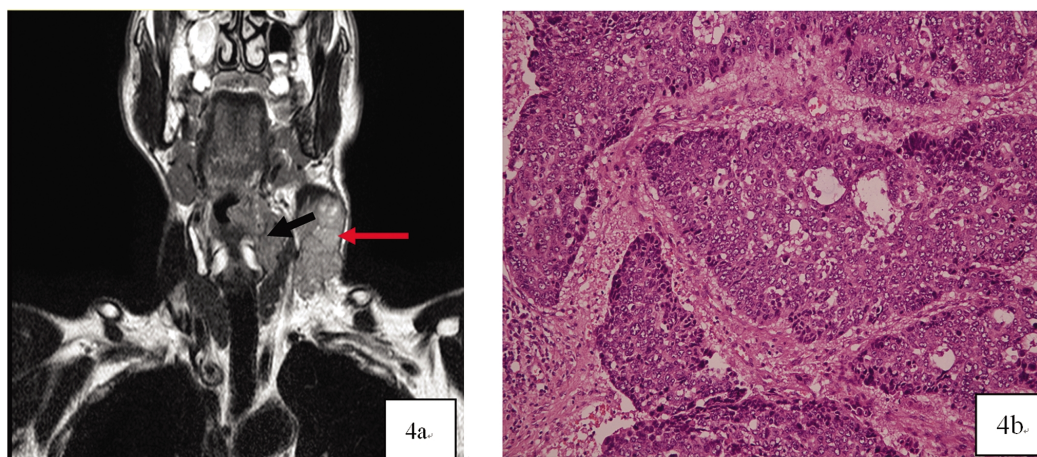


图 4a、4b T4 期喉癌。冠状位可见左侧甲状软骨受侵(黑色箭头)。右颈部可见多发转移淋巴结融合成团(红色箭头),内可见液化坏死区,T2WI 上为高信号

Fig. 4a,4b T4 laryngocarcinoma. Coronal T2w show the tumor invasion of the left cartilage(black arrow). Right neck see lymph nodes (right arrow)with presence of central necrosis due to laryngeal squamocellular carcinoma

反应致前联合增厚;10 例患者声带出现假阳性,是由于肿瘤组织继发的炎性反应在 MRI 上诊断为组织受侵;6 例患者软骨受侵出现假阳性,是由于骨质骨化不均匀被误认为受侵。

本组 114 例患者 T 分期的符合率分别为 T1 期 92.6%、T2 期 89.7%、T3 期 86.2%、T4 期 88.2%,出现差异的主要原因是:①未作增强 MRI 对较小的病变较难分辨;②MRI 对部分喉旁脂肪间隙的消失不能鉴别是受压或是肿瘤侵及;③MRI 对肿瘤侵犯与周围组织反应性刺激较难区分;④MRI 诊断骨是否受侵主要依据骨信号改变或连续性中断,对于骨化均匀的诊断交容易,对于骨化不均匀常误认为受侵就会出现假阳性。

本研究中有 2 例 T1 期声门型喉癌患者在 MRI 上未见到异常影像,1 例位于右侧声带,是由于早期病变较小较难发现;另一例位于前联合及右声带前 1/2,呈外生性生长,大小约 1×1.2 cm,该患者先取病理,后来我院做的 MRI,影响了 MRI 观察。本研究将 3 例 T1 期患者过度分期为 T2 期,是由于肿瘤组织继发的炎性反应在 MRI 上诊断为组织受侵。

目前对颈部淋巴结的评价主要有以下标准:(1)大小和形态的改变:多数学者以淋巴结长径 10~15 mm 为标准,淋巴结聚集和融合也提示为转移;(2)淋巴结中心密度或信号改变:SomPM 等认为淋巴结出现中心坏死表现是影像学诊断淋巴结

转移最准确的指标^[7-10]。本研究以淋巴结直径大于 10 mm,淋巴结中心信号改变,淋巴结边界情况为标准进行诊断。有 1 例淋巴结在 MRI 上未表现为转移征象,术后病理表结果为转移,是由于微小转移在形态学上表现不明显。有 2 例假阳性的结果,MRI 图像上表现为转移征象,病理证实为炎性淋巴结。

本研究结果表明 MRI 在诊断喉癌侵及范围方面具有较大的应用价值,对喉癌的临床治疗方案确定具有指导意义。而本研究的不足之处在于,在淋巴结转移的判断上没有应用弥散成像,许多学者认为弥散在淋巴结转移的判定上有很大的意义^[11-16];没有应用增强观察病变的增强情况及侵及范围,增强能够更好的对比观察病变^[17]。这些都是以后研究的重要方向。

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