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超声联合钼靶 X 线对直径小于 1 cm 的乳腺癌诊断价值分析*

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摘要 目的:探讨超声联合钼靶 X 线对直径小于 1 cm 的乳腺癌诊断价值。**方法:**选择我院 2012 年 1 月至 2017 年 12 月收治的 66 例乳腺疾病患者,所有患者术前均经钼靶 X 线及彩色多普勒超声检查,分析其病理结果,分析钼靶 X 线、彩色多普勒超声及二者联合对乳腺肿块检查结果(边缘毛刺征、血管、淋巴结、微小钙化),比较其对乳腺癌的灵敏度、特异度、准确度、阳性预测值及阴性预测值。**结果:**66 例患者中,经病理检查发现恶性肿瘤 34 例,良性肿瘤 32 例。与病理检测相比,彩色多普勒超声联合钼靶 X 线对乳腺肿块的良恶性检出率无差异性($P>0.05$),而彩色多普勒超声,钼靶 X 线的良恶性检出率均显著降低($P<0.05$)。彩色多普勒超声与钼靶 X 线良恶性检出率对比无差异($P>0.05$),但均低于彩色多普勒超声联合钼靶 X 线的检出率($P<0.05$)。彩色多普勒超声与钼靶 X 线对乳腺癌的边缘毛刺征的检出率对比无统计学意义($P>0.05$);彩色多普勒超声对血管和淋巴结的检出率明显高于钼靶 X 线,而微小钙化的检出率明显低于钼靶 X 线,对比差异有统计学意义($P<0.05$)。彩色多普勒超声联合钼靶 X 线的灵敏度、特异度、准确度、阳性预测值及阴性预测值均明显高于彩色多普勒超声及钼靶 X 线($P<0.05$),钼靶 X 线及彩色多普勒超声间对比无统计学意义($P>0.05$)。**结论:**彩色多普勒超声与钼靶 X 线对直径小于 1 cm 乳腺癌的诊断各有优势,二者联合应用的诊断价值优于单一诊断方法。

关键词:彩色多普勒超声;钼靶 X 线;肿瘤直径;乳腺癌;诊断

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The Diagnostic Value of Ultrasound Combined with Mammography X-ray for Breast Cancer Less than 1 cm in Diameter*

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ABSTRACT Objective: To investigate the diagnostic value of ultrasound combined with mammography x-ray for breast cancer less than 1cm in diameter. **Methods:** 66 cases with breast disease patient from Jan. 2012 to Dec. 2017 in our hospital were chosen, who were performed by molybdenum target X-ray and color doppler ultrasonography before operation, the pathologic result were analyzed, the breast masses results(marginal burr, blood vessels, lymph node, microcalcification) of molybdenum target X-ray, color doppler ultrasound and combination of the two methods were analyzed. The sensitivity, specificity, accuracy, positive predictive value and negative predictive value of molybdenum target X-ray, color doppler ultrasound and combination of the two methods were compared. **Results:** Among the 66 cases, 34 were malignant and 32 were benign. Compared with pathological examination, the detection rate of benign and malignant by color doppler ultrasound combined with molybdenum target X-ray had no difference ($P>0.05$), but the detection rate of benign and malignant breast by color doppler ultrasound and molybdenum target X-ray were significantly lower ($P<0.05$). There was no significant difference between color doppler ultrasound and molybdenum target X-ray ($P>0.05$), but the detection rate was lower than that of color doppler ultrasound combined with molybdenum target X-ray ($P<0.05$). There was no significant difference between color doppler ultrasound and molybdenum target X-ray in detecting marginal burr of breast cancer ($P>0.05$). The detection rate of blood vessels and lymph nodes by color doppler ultrasound was significantly higher than that by molybdenum target X-ray, while the detection rate of microcalcification was significantly lower than that by molybdenum target X-ray ($P<0.05$). The sensitivity, specificity, accuracy, positive predictive value and negative predictive value of color doppler ultrasound combined with molybdenum target X-ray were significantly higher than those of color doppler ultrasound and molybdenum target X-ray($P<0.05$). There was no significant difference between molybdenum target X-ray and color doppler ultrasound ($P>0.05$). **Conclusion:** Both color doppler ultrasound and molybdenum target X-ray had advantages in the diagnosis of breast cancer with diameter less than 1 cm, while the combined diagnosis was superior to the single diagnosis.

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前言

乳腺癌是一种常见的女性恶性肿瘤,在女性恶性肿瘤发病率中居第一位^[1]。近年来,我国乳腺癌发病率逐年上升,特别是在一些沿海地区及大城市,乳腺癌每年的发病率增速达3%左右,且呈年轻化的趋势。目前,乳腺癌治愈缺乏有效的方法,发病时间、肿块大小是影响乳腺癌预后的重要因素,大多数乳腺癌需要经历从局限于原位生长到浸润性生长的过程,从发生至可临床到1 cm 肿块需2至3年时间^[2,3]。I期乳腺癌中肿块在1~2 cm 间的肿块20年无瘤生存率为68%,发生腋窝淋巴结转移的概率达75%~80%,而<1 cm 的患者则为88%,发生腋窝淋巴结转移的概率为10%^[4]。I期乳腺癌的5年生存率为85%~100%,表明乳腺癌的肿块大小与患者的腋窝淋巴结转移情况、患者生存期、远处转移情况有直接的关系^[5]。因此,及早发现直径小于1 cm 的乳腺癌并对其进行早期诊断和及时治疗非常重要^[6]。

临床上,乳腺癌患者常由于偶然扪及肿块进行就诊,但直径小于1 cm 的乳腺癌肿块由于直径较小导致难以触及^[7]。影像学筛查可提高高危人群乳腺癌的检出率,以改善患者疗效及预后^[8]。临床上,乳腺癌采用彩色多普勒超声与钼靶X线进行诊断,但二者对于直径小于1 cm 的乳腺癌诊断价值尚不完全明确^[9]。因此,本研究主要分析和比较了钼靶X线、彩色多普勒超声及二者联合对直径小于1 cm 的乳腺癌诊断价值,以期临床直径小于1 cm 的乳腺癌的诊断提供更多的参考依据。

1 资料与方法

1.1 一般资料

选择我院2012年1月至2017年12月收治的66例乳腺疾病患者,患者均经钼靶X线及彩色多普勒超声检查,患者的年龄范围为33~73岁,平均年龄为47.9±6.5岁。纳入标准:所有患者均经病理或穿刺检查确诊为乳腺癌,且肿瘤最大直径小于1 cm;66例患者术前均经彩色多普勒超声及钼靶X线检查,发现了疑似病灶。排除经病理证实肿块大于1 cm者。

1.2 方法

彩色多普勒超声检查:使用西门子公司生产的S2000型号的彩色多普勒超声诊断仪,探头为14L5、9L4,频率4~14 MHz。良恶性肿瘤判断标准^[10]:肿块边界清晰、形态规则、有包膜、内部回声均匀、后方回声多不衰减、偶有较粗糙、较大的强回声钙化、纵横径比小于1.0,血流信号I、II级即刻判断为良性肿瘤;肿块呈毛刺状或锯齿状、边界不清晰、无包膜、内部多呈低回声、后方回声多存在衰减、内部存在簇样或散在分布的微小钙化点,纵横径比大于1.0,血流信号II、III级即刻判断为恶性肿瘤。

钼靶X线检查:使用全视野数字化乳腺机(GE公司生产),66例患者均行侧斜位及乳腺轴位摄片,根据实际情况,对可疑病变区行局部或侧位加压放大摄片。良恶性肿瘤的判断标准^[11]:乳腺肿块边缘清晰,形态较为规则,腺体结构清楚且密度均匀,可见粗大钙化灶者为乳腺良性肿瘤;主要征象呈乳腺肿块呈分

叶状、毛刺状、细微簇状钙化灶、不规则形态;存在乳头内陷、乳房局部皮肤发生改变、肿块周围伴增多增粗血管影、局部乳腺组织结构紊乱等次要征象,具有一项主要征象且超过两个次要征象或有两个主要征象即诊断为乳腺癌。

二者联合检查良恶性判断标准:彩色多普勒超声或钼靶X线任何一项检查为恶性者即判断为恶性。

1.3 观察指标

(1)66例患者的病理结果分析;(2)彩色多普勒超声、钼靶X线及二者联合对乳腺肿块的良恶性结果对比;(3)彩色多普勒超声、钼靶X线对乳腺癌的检查结果(边缘毛刺征、血管、淋巴结、微小钙化)对比;(4)彩色多普勒超声、钼靶X线及二者联合对乳腺肿块的灵敏度、特异度、准确度、阳性预测值及阴性预测值对比。灵敏度=(真阳性)/(真阳性+真阴性);特异度=假阴性/(假阳性+假阴性);准确度=(真阳性+假阴性)/总数;阳性预测值=真阳性/(真阳性+假阴性);阴性预测值=假阴性/(真阴性+假阴性)。

1.4 统计学方法

采用SPSS21.0软件,计数资料用卡方检验对比分析,计量资料用t检验对比分析,以P<0.05为差异有统计学意义。

2 结果

2.1 66例患者的病理结果分析

66例患者中,经病理检查发现恶性肿瘤34例,良性肿瘤32例。

2.2 彩色多普勒超声、钼靶X线及二者联合对乳腺肿块的良恶性结果对比

与病理检测相比,彩色多普勒超声联合钼靶X线对乳腺肿块的良恶性检出率无差异性(P>0.05),而彩色多普勒超声、钼靶X线的良恶性检出率均显著降低(P<0.05)。彩色多普勒超声与钼靶X线良恶性检出率对比无差异(P>0.05),但均低于彩色多普勒超声联合钼靶X线的检出率(P<0.05),见表1。

2.3 彩色多普勒超声、钼靶X线对乳腺癌的检查结果对比

彩色多普勒超声与钼靶X线对乳腺癌的边缘毛刺征的检出率对比无统计学意义(P>0.05);彩色多普勒超声对血管和淋巴结的检出率明显高于钼靶X线,而微小钙化的检出率明显低于钼靶X线,对比差异有统计学意义(P<0.05)。见表2。

2.4 彩色多普勒超声、钼靶X线及二者联合对乳腺肿块的灵敏度、特异度、准确度、阳性预测值及阴性预测值对比

彩色多普勒超声联合钼靶X线的灵敏度、特异度、准确度、阳性预测值及阴性预测值均明显高于彩色多普勒超声及钼靶X线(P<0.05),钼靶X线及彩色多普勒超声间以上指标对比差异无统计学意义(P>0.05)。见表3。

3 讨论

乳腺癌多起源于自身腺管的上皮细胞,从细胞异常到明确癌变需要漫长的过程^[12]。有研究显示浸润性肿瘤发展到可被扪及到肿块需要数年时间^[13]。因此,对于难以被触及的微小肿块

表 1 彩色多普勒超声、钼靶 X 线及二者联合对乳腺肿块良恶性结果对比[n(%)]

Table 1 The comparison of color doppler ultrasonography, molybdenum target X-ray and the two combined in benign and malignant breast masses [n(%)]

Pathologic result	n	Color doppler ultrasound		Molybdenum target x-ray		Combination detection	
		Malignant	Benign	Malignant	Benign	Malignant	Benign
Malignant	34	25(73.53)*	9(26.47)	26(76.47)*	8(23.53)	32(94.12)	2(5.88)
Benign	32	12(37.50)	20(62.50)*	9(28.13)	23(71.88)*	2(6.25)	30(93.75)
Total	66	37	29	35	31	34	32

Note: Compared with color doppler ultrasound combined with molybdenum target X-ray, *P<0.05.

表 2 彩色多普勒超声、钼靶 X 线对乳腺癌的检出率对比[n(%)]

Table 2 The comparison of detection rate of breast cancer with color doppler ultrasound and molybdenum target X-ray [n(%)]

Check methods	n	Marginal burr	Blood vessels	Lymph node	Microcalcification
Color doppler ultrasound	25	21(84.00)	23(92.00)	18(72.00)	12(48.00)
Molybdenum target X-ray	26	21(80.77)	10(38.46)	11(42.31)	20(76.92)
χ^2	-	-	15.990	4.587	4.567
P	-	1.0	<0.001	0.032	0.033

表 3 彩色多普勒超声、钼靶 X 线及二者联合对乳腺肿块的灵敏度、特异度、准确度、阳性预测值及阴性预测值对比[例(%)]

Table 3 The comparison of sensitivity, specificity, accuracy, positive predictive value and negative predictive value by color doppler ultrasound, molybdenum target X-ray and the two combined

Check methods	Sensitivity	Specificity,	Accuracy,	Positive predictive value	Negative predictive value
Color doppler ultrasound	67.5(25/37)*	69.0(20/29)*	68.2(45/66)*	73.5(25/34)*	62.5(20/32)*
Molybdenum target X-ray	74.3(26/35)*	74.2(23/31)*	74.2(49/66)*	76.5(26/34)*	74.2(23/31)*
Two combined	94.1(32/34)	93.8(30/32)	93.9(62/66)	94.1(32/34)	93.8(30/32)

Note: Compared with color doppler ultrasound combined with molybdenum target X-ray, *P<0.05.

需要选择有效的影像学方法进行诊断,一般直径<1 cm 的乳腺癌肿块临床中难以被触及^[14]。直径<1 cm 的乳腺癌具有以下特征^[15]:病灶较小,具有毛刺征和分叶征,且结节密度高于周围腺体;在乳腺导管和小叶的实质内存在微小钙化;肿瘤代谢旺盛,血液供应增多,血管异常;双侧乳腺密度不对称,局部密度增高并伴周围结构紊乱。在直径<1 cm 的乳腺癌影像学诊断中,彩色多普勒超声具有经济便捷、无创、无辐射、可重复操作等优点^[16],能够对肿块形态、边缘、内部回声、血流情况及周围淋巴结进行鉴别,并且可对致密型乳腺内肿块位置、结构等进行清晰的显示^[17],但由于彩色多普勒超声图像的整体性差,对微小钙化灶的检查优势不明显,其检测准确性也易受操作者影响,因而容易出现漏诊^[18]。钼靶 X 线对于直径<1 cm 的乳腺癌的诊断中,操作简便,具有较高的密度分辨率,能够对腺体内的微小钙化及浅钙化进行清晰的显示,并可保留清晰的图像^[19],但由于其不能提供肿块的血流特征,鉴别肿块的囊实性,在致密型乳腺中肿块显示率较低,因此也会出现漏诊情况^[20]。因此在直径<1 cm 的乳腺癌的影像学诊断中,单用彩色多普勒超声或钼靶 X 线均存在一定的局限性,效果不甚理想,而临床实践中也多倾向于多种影像学检查方法的综合评价。

本研究结果显示彩色多普勒超声与钼靶 X 线对直径<1 cm 乳腺癌的边缘毛刺征的检出率对比无统计学意义,而彩色多普勒超声对血管和淋巴结的检出率明显高于钼靶 X 线,而微小钙化的检出率明显低于钼靶 X 线,差异对比均具有统计学意义(P<0.05),表明彩色多普勒超声在观察血流信号上具有优势,

主要是由于其可将乳腺癌肿块血液流速峰值直接检测出来^[21]。乳腺癌患者血流的显示率与肿瘤肿块大小有关,肿块越大、浸润程度越高时,患者的血流越丰富^[22]。本研究中,患者肿块周围出现较为异常丰富的血流信号,与文献^[23]报道在肿块附近或肿块内可触及及高速高阻的动脉血流时肿瘤恶性的可能程度更大相符,而钼靶 X 线只能显示粗大的血管,将血管增多、增粗、扭曲显示出来。因此,彩色多普勒超声对肿块血流的异常显示优于钼靶 X 线^[24]。此外,本研究结果表明彩色多普勒超声对淋巴结的显示优于钼靶 X 线,主要是由于彩色多普勒超声可反复探查,从而清楚了解腋窝下淋巴结数量^[25,26]。而钼靶 X 线对微小钙化的检出率优于彩色多普勒超声,主要是由于钼靶 X 线的空间分辨率及密度分辨率较高,可从整体上对乳腺进行观察^[27]。有研究表明其能发现直径<0.5 mm 的细微小钙化^[28]。因此,其对微小钙化的检出率优于彩色多普勒超声。

彩色多普勒超声联合钼靶 X 线检测直径<1 cm 乳腺癌的灵敏度、特异度、准确度、阳性预测值及阴性预测值均明显高于彩色多普勒超声及钼靶 X 线,表明二者联合的诊断效果优于单一诊断,主要是由于彩色多普勒超声与钼靶 X 线可从不同方面对微小病灶进行观察,彩色多普勒超声对浅表器官具有良好的组织分辨率及穿透力,可清楚显示乳腺腺体内的异常回声^[29];而钼靶 X 线利用不同密度组织对 X 线的不同吸收衰减成像,密度分辨率较高,可清楚显示病灶轮廓,以便观察乳腺腺体内的浅钙化及微小钙化^[30]。二者的诊断具有互补性,如中老年女性的乳房腺体少而脂肪丰富,彩色多普勒超声的声波位置会衰减较多,不能清晰显示肿块边缘,而钼靶 X 线可弥补彩色多

普勒超声的局限性^[31];而对于乳腺较小又腺体丰富患者,由于肿块与腺体组织密度差异小,导致钼靶 X 线难以鉴别,而彩色多普勒超声不受影响^[32]。

综上所述,彩色多普勒超声与钼靶 X 线对直径<1cm 乳腺癌的诊断各有优势,但二者联合诊断优于单一诊断。

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