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钼靶和超声检查在乳腺癌临床诊断的准确性的比较分析 *

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摘要 目的:比较与分析钼靶和超声检查在乳腺癌临床诊断的准确性。**方法:**2018年8月到2021年1月选择在本院进行诊治的乳腺肿瘤患者110例作为研究对象,所有患者都给予钼靶和超声检查,记录影像学特征并判断诊断价值。**结果:**在110例患者中,病理诊断为乳腺良性肿瘤76例、乳腺癌34例。恶性组钼靶的分叶征、钙化、大角征、毛刺征等比例高于良性组,病灶大小也高于良性组($P<0.05$)。恶性组超声的形态不规则、边缘不光整、高回声晕、回声衰减、微钙化等比例高于良性组($P<0.05$)。钼靶乳腺影像报告及数据系统(Breast imaging report and data system, BI-RADS)判断为乳腺良性肿瘤72例,乳腺癌38例;超声BI-RADS判断为乳腺良性肿瘤75例,乳腺癌35例,钼靶鉴别诊断乳腺癌的敏感性为93.4%,特异性为97.1%,准确性为94.5%;超声鉴别诊断乳腺癌的敏感性为98.7%,特异性为100.0%,准确性为99.1%。多因素logistic回归分析显示病灶大小、分叶征、回声衰减、毛刺征为导致误诊的重要因素($P<0.05$)。**结论:**乳腺癌在钼靶和超声检查中都有明显的征象特征,超声诊断的准确性更高,病灶大小、分叶征、回声衰减、毛刺征为影响诊断效果的很重要因素。

关键词:乳腺影像报告及数据系统;乳腺癌;钼靶;超声;准确性

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Comparative Analysis of the Accuracy of Mammography and Ultrasound in the Clinical Diagnosis of Breast Cancer*

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ABSTRACT Objective: To compare and analysis the accuracy of mammography and ultrasound in the clinical diagnosis of breast cancer. **Methods:** From August 2018 to January 2021, 110 cases of patients with breast tumors who were diagnosed and treated in our hospital were selected as the research objects. All patients were given mammography and ultrasound examination, and the imaging characteristics were recorded and the diagnostic value were judged. **Results:** There were 76 patients were pathologically diagnosed as benign breast tumors and 34 patients were breast cancer in the 110 cases. The proportions of lobular sign, calcification, big angle sign, and burr sign of the malignant group were higher than those of the benign group, and the size of the lesion were also higher than that of the benign group ($P<0.05$). The proportion of ultrasound irregularities, uneven edges, hyperechoic halo, echo attenuation, and microcalcification in the malignant group were higher than that in the benign group ($P<0.05$). Mammogram breast imaging report and data system (BI-RADS) judged 72 cases of breast benign tumors and 38 cases of breast cancer; ultrasound BI-RADS judged 75 cases of breast benign tumors and 35 cases of breast cancer. The sensitivity of mammography in differential diagnosis of breast cancer were 93.4%, the specificity were 97.1%, and the accuracy were 94.5%; the sensitivity of ultrasound in differential diagnosis of breast cancer were 98.7%, the specificity were 100.0%, and the accuracy were 99.1%. Multivariate logistic regression analysis showed that lesion size, lobular sign, echo attenuation, and glitch sign were important factors led to misdiagnosis ($P<0.05$). **Conclusion:** Breast cancer have obvious signs and characteristics in mammography and ultrasound. The accuracy of ultrasound diagnosis are higher. The size of the lesion, the lobular sign, the echo attenuation, and the burr sign are very important factors that affect the diagnosis.

Key words: Breast imaging report and data system; Breast cancer; Mammography; Ultrasound; Accuracy

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前言

乳腺癌是女性最常见的恶性肿瘤之一,当前很多大城市与

特大城市的乳腺癌发病率已位居女性恶性肿瘤的第一位,且发病年龄越来越年轻化,严重危害妇女的身心健康^[1,2]。但随着乳腺癌的检查及诊断水平的不断提高,以及治疗方法的不断改

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进,乳腺癌的病死率呈下降趋势。不过仍有一部分患者可出现复发、转移,主要在于肿瘤发现时已处于晚期,所以早期诊断现已成为改善预后的关键^[3,4]。同时乳腺癌是预后相对较好的恶性肿瘤,生存率相对其他恶性肿瘤来说比较高,但是在如何提高生存率的前期下,积极提高乳腺术后生活质量也越来越重要^[5]。根据乳腺影像报告及数据系统(Breast imaging report and data system, BI-RADS)能够较准确地对良恶性征象进行分类,当前在临床上应用比较多见^[6]。钼靶和超声是目前临床上对于乳腺癌最基本的影像学检查手段,其中钼靶能准确显示乳腺钙化灶情况,但是钼靶有辐射损害,对致密型腺体的诊断能力明显降低,存在一定的检查局限性^[7,8]。有研究显示约有 15.0%的乳腺癌因钼靶现为阴性,降低了临床诊断工作的有效性而延误诊治^[9]。超声检查简单方便、无辐射损伤、价格低廉等优点,对于软组织的分辨率比较高,能够实时动态的观察病灶特点,且不受腺体致密度的影响^[10,11]。但是超声诊断受操作者经验水平的影响,对微小钙化的诊断效果比较低^[12-14]。本文具体比较与分析了钼靶和超声检查在乳腺癌临床诊断的准确性,从而进一步对乳腺癌早期诊断的选择做出预测及指导。现总结报道如下。

表 1 两组一般资料对比

Table 1 Comparison of two groups of general data

Groups	n	Age (years)	Location of focus(left/right)	BMI(kg/m ²)	Systolic pressure (mmHg)	Diastolic pressure (mmHg)	Heart rate (sub/min)
Benign group	76	56.22± 2.58	38/38	21.87± 2.57	124.87± 10.47	74.55± 3.57	86.33± 8.14
Malignant group	34	56.18± 3.33	18/16	21.77± 3.33	124.98± 11.37	74.65± 4.15	86.28± 7.77

1.2 钼靶检查

钼靶使用 Senographe 2000 型的全数字化乳腺钼靶检查设备(美国 GE 公司),投照条件:27-35 kVp,40-100 mAs,全自动曝光,投照体位均包括内外侧斜位、头尾位,局部结构显示不清时增加局部加压放大摄影。记录患者的乳腺钼靶特征,包括分叶征、钙化、牛角征、毛刺征等。

全部乳腺钼靶影像学图片由 2 位专门从事乳腺影像诊断的医师盲法阅片,同时进行钼靶 BI-RADS 分类,分类标准 0 类:腺体致密,钼靶评估不全,需要结合其他影像学检查;1 类:乳腺结构正常,无病变显示;2 类:确定的良性病变;3 类:几乎肯定为良性病变,但需要短期随访观察有无变化,如形态规则、边界清晰的不含钙化的肿块、局灶性不对称致密影、簇状分布的圆点状钙化等;4 类:无典型的乳腺癌形态学改变,如局灶性结构扭曲或呈芒状不对称致密影、簇状或叶段分布细小不定形微钙化等;5 类:高度怀疑恶性,如形态不规则肿块,段样、簇状分布的细小多形性或线状钙化;6 类:已经病理证实的乳腺癌。

1.3 超声检查

使用迈瑞公司的 DC-8 彩色多普勒超声检查仪,配有高频线阵探头,探头频率 10-12 Hz。患者去仰卧位,暴露乳房,连续多切面探查,记录病灶的形态不规则、边缘不光整、高回声晕、回声衰减、微钙化等情况。全部乳腺超声影像学图片由 2 位专门从事乳腺影像诊断的医师盲法阅片,超声 BI-RADS 分类标准,0 类:腺体结构紊乱,超声评估不完全,需结合其他影像学检查;1 类:阴性,无病变显示;2 类:≥ 3 个良性特征;3 类:< 3

1 资料和方法

1.1 临床资料

2018 年 8 月到 2021 年 1 月选择在本院进行诊治的乳腺肿瘤患者 110 例作为研究对象,纳入标准:所有患者在检查前均未接受放疗、化疗、内分泌治疗等抗肿瘤治疗;患者具有手术病理结果;本院伦理委员会批准了此次研究;所有患者知情同意本研究;单侧肿瘤;患者年龄 20-75 岁;临床资料完整。排除标准:合并其他恶性肿瘤者;精神疾病患者;妊娠与哺乳期妇女;合并严重心肝肾异常者;检查期间死亡者;入院前接受过乳腺相关手术的患者。在 110 例患者中,病理诊断为乳腺良性肿瘤 76 例(良性组,其中纤维腺瘤 34 例、腺病 26 例、导管内乳头状瘤 8 例、浆细胞性乳腺炎 5 例、纤维囊性增生炎 3 例),乳腺癌 34 例(恶性组,浸润性导管癌 24 例、导管内癌 6 例、浸润性小叶癌 4 例)。

良性组的年龄、病灶部位、体重指数、收缩压、舒张压、心率等与恶性组对比差异无统计学意义($P>0.05$)。见表 1。

个良性特征,且无明显恶性特征;4 类:1-2 个恶性特征;5 类:2-3 个恶性特征。敏感性 = 真阳性病例 / (真阳性病例 + 假阴性病例) × 100.0%。特异性 = 真阴性病例 / (真阴性病例 + 假阳性病例) × 100.0%。准确性 = 总符合率 = 准(真阳性 + 真阴性) / 总病例数 × 100.0%。

1.4 统计方法

选择 SPSS21.00 软件进行分析,计量数据采用均数 ± 标准差表示,对比为 t 检验,计数数据采用百分比表示,对比采用卡方 χ^2 检验分析,多因素分析采用多元回归 Logistic 分析,检验水准为 $\alpha=0.05$,以 $P<0.05$ 为差异有统计学意义。

2 结果

2.1 钼靶征象特征对比

恶性组钼靶的分叶征、钙化、大角征、毛刺征等比例高于良性组,病灶大小也高于良性组($P<0.05$)。见表 2。

2.2 超声征象特征对比

恶性组超声的形态不规则、边缘不光整、高回声晕、回声衰减、微钙化等比例高于良性组($P<0.05$)。见表 3。

2.3 诊断效果

在 110 例患者中,钼靶 BI-RADS 判断为乳腺良性肿瘤 72 例,乳腺癌 38 例;超声 BI-RADS 判断为乳腺良性肿瘤 75 例,乳腺癌 35 例,钼靶鉴别诊断乳腺癌的敏感性为 93.4%(71/76),特异性为 97.1%(33/34),准确性为 94.5%(104/110);超声鉴别诊断乳腺癌的敏感性为 98.7%(75/76),特异性为 100.0%(34/34),准确性为 99.1%(109/110)。见表 4。

表 2 两组钼靶征象特征对比

Table 2 Comparison of Molybdenum Target Two Groups

Groups	n	Sign of lobulation (n,%)	Calcification(n,%)	Horn(n,%)	Spicule sign (n,%)	Size of focus(cm)
Benign group	76	19(25.0%)	12(15.8%)	13(17.1%)	21(27.6%)	2.44± 0.25
Malignant group	34	25(73.5%)*	32(94.1%)*	31(91.2%)*	29(85.3%)*	4.62± 0.33*

Note: Compared with the benign group, * $P<0.05$.

表 3 两组超声征象特征对比(n)

Table 3 Comparison of characteristics of ultrasound signs between two groups (n)

Groups	n	Irregularity	Ragged edges	High echo halo	Echo attenuation	Microcalcification
Benign group	76	13(17.1%)	18(23.7%)	19(25.0%)	22(28.9%)	21(27.6%)
Malignant group	34	33(97.1%)*	31(91.2%)*	30(88.2%)*	32(94.1%)*	33(97.1%)*

Note: Compared with the benign group, * $P<0.05$.

表 4 钼靶和超声检查在乳腺癌的临床诊断效果(n)

Table 4 Clinical diagnostic efficacy of molybdenum target and ultrasound in breast cancer (n)

Type of case	BI-RADS of molybdenum target		Ultrasonic BI-RADS		Total
	Breast benign tumor	Mammary cancer	Breast benign tumor	Mammary cancer	
Breast benign tumor	71	5	75	1	76
Mammary cancer	1	33	0	34	34
Total	72	38	75	35	110

2.4 影响因素分析

在 110 例患者中,钼靶误诊 6 例,超声误诊 1 例,多因素

logistic 回归分析显示病灶大小、分叶征、回声衰减、毛刺征为导致误诊的重要因素($P<0.05$)。见表 5。

表 5 影响乳腺癌患者钼靶与超声漏诊的多因素分析(n=110)

Table 5 Multivariate analysis of molybdenum target and ultrasound missed diagnosis in breast cancer patients (n=110)

Index	β	SE	Wald	P	OR	95%CI
Size of focus	3.631	1.214	1.933	0.030	0.265	0.029-0.876
Sign of lobulation	2.843	1.194	5.493	0.020	1.492	1.392-25.141
Echo attenuation	2.989	1.109	7.339	0.007	2.758	1.482-13.291
Spicule sign	1.492	0.680	4.311	0.023	0.310	0.068-0.892

3 讨论

乳腺癌是女性疾病的常见病症,起病隐匿,不容易被发现。调查显示乳腺癌患者占全部妇科恶性肿瘤患者的 1/4 左右,其中因恶性肿瘤死亡的女性患者中,有 15%是死于乳腺癌,也被认为是导致发展中国家女性死亡的主要杀手之一^[15,16]。乳腺癌的病理特征比较复杂,但是发病过程相对比较差,发现越早,其预后更好,为此进行早期诊断具有重要的价值。

钼靶具有检查费用低廉、敏感性高、操作简单方便等优点,是早期乳腺癌的有效检出方法,也是目前诊断乳腺疾病的常用检测手段^[17,18]。本研究显示恶性组钼靶的分叶征、钙化、大角征、毛刺征等比例高于良性组,病灶大小也高于良性组($P<0.05$),与 Wang L 等研究结果类似,该研究还提出:特别是钼靶对于以钙化灶为恶性征象的早期乳腺癌诊断具有很高的敏感度,且可对

很多导管内癌患者的特征性钙化可直接进行定性^[19]。但是钼靶显示乳房大部或几乎为致密的腺体组织影,对于致密型乳腺由于腺体掩盖病灶导致诊断能力有所降低^[20]。并且钼靶在临床上的应用有一定的放射性损害,位于乳腺深部或紧贴胸壁的病灶因摄影限制难以显示,对无钙化表现而肿块近胸壁的早期乳腺癌易漏诊^[21]。

超声能够根据乳腺病灶的形态、边缘、纵横比、回声、钙化等情况等对病灶进行良恶性鉴别,且不受腺体致密度的影响,尤其适用于年轻女性的检查^[22]。超声并且具有软组织分辨率高、简便、经济等优势,且无辐射损伤,可弥补钼靶的不足,成为乳腺肿瘤最为常用的检查手段^[23,24]。本研究显示恶性组超声的形态不规则、边缘不光整、高回声晕、回声衰减、微钙化等比例高于良性组($P<0.05$)。特别是当前彩色多普勒超声、三维超声、超声弹性成像、超声造影拓宽了超声乳腺癌诊断领域中的应用

空间。超声不能进行双侧乳腺同时显影,对检查设备和诊断医师的经验依赖性比较强,且对微小钙化的检出率比较低。另外超声对无明显肿块或仅有局部结构扭曲表现的早期乳腺癌难以显示,也容易出现漏诊与误诊^[25,26]。

流行病学调查显示早期乳腺癌的5年生存率在90%以上,10年生存率在80%以上。晚期乳腺癌的5年生存率为60%左右,10年生存率约为50%,为此早期进行鉴别诊断意义重大^[27]。本研究显示钼靶BI-RADS判断为乳腺良性肿瘤72例,乳腺癌38例;超声BI-RADS判断为乳腺良性肿瘤75例,乳腺癌35例,钼靶鉴别诊断乳腺癌的敏感性为93.4%,特异性为97.1%,准确性为94.5%;超声鉴别诊断乳腺癌的敏感性为98.7%,特异性为100.0%,准确性为99.1%,表明:超声较钼靶诊断优势更为显著,与相关研究^[28]一致,结合该研究分析原因在于钼靶诊断虽然能够清晰地显示乳腺肿瘤的簇状小钙化、毛刺征,但是在无明显边界的肿块、腺体致密重无明显边界病灶的诊断中效果欠佳。超声能发现乳腺内较小病灶、病灶界限、形态等情况,也能发现内部钙化灶等^[29]。本研究显示在110例患者中,钼靶误诊6例,超声误诊1例,多因素logistic回归分析显示病灶大小、分叶征、回声衰减、毛刺征为导致误诊的重要因素($P<0.05$)。从机制上分析,直径在1.0cm以下的微小乳腺癌,病理学基础在于微小乳腺癌多数局限在终末小叶或输乳管内,尚未突破基底膜面形成局部微小浸润,因此很少出现典型的影像学特征,容易出现漏诊^[30]。分叶征、回声衰减、毛刺征患者由于含有大量粘液,因此肿瘤境界清楚,钼靶显示边缘光滑的肿块阴影,密度均匀,易误诊为囊肿或纤维肿瘤。有研究显示^[31,32],将钼靶和超声两种诊断方法联合应用,可克服各自单纯应用时的不足之处,能够实现优势互补,减少漏诊及误诊,提高乳腺癌的诊断准确率。另外,本研究也存在一定的不足,没有纳入健康对照女性,病例数量也比较少,将在后续研究中进行探讨。

综上所述,乳腺癌在钼靶和超声检查中都有明显的征象特征,超声诊断的准确性更高,病灶大小、分叶征、回声衰减、毛刺征为影响诊断效果的很重要因素。

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