Exploring the Combined Application of Two Methods for the Diagnosis of Breast Cancer - Color Doppler Ultrasound and Molybdenum Target X Ray Examination

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ABSTRACT

Objective To investigate the application value of color B-mode ultrasound and mammography in the diagnosis of breast cancer. Methods 81 patients with suspected breast cancer were selected from Sep. 2011 to Jul 2014 in our hospital, color B-mode ultrasound and mammography examination were used to all patients, and the test results were compared with pathological results. Results The diagnose accordance rate, sensitivity, specificity and accuracy of B-mode ultrasound and mammography were lower than those of color B-mode ultrasound combined with mammography, the differences were statistically significant (P < 0.05). The positive predictive value of the three detection methods had no statistically significant difference (P > 0.05). Conclusions The diagnostic accordance rate, sensitivity, specificity and accuracy of color B-mode ultrasound and mammography were lower than those of combination of the two methods, it suggest that combination of the two methods can improve the accuracy of breast cancer diagnosis.

Keywords: Breast cancer; Color B-mode ultrasound; Mammography

INTRODUCTION

Breast cancer is a malignant tumor is a serious threat to women health and life safety, the incidence of breast cancer ranked first in female malignant tumor [1]. In most countries, the incidence of breast cancer continues to grow, the clinical use of surgery and radiotherapy and chemotherapy treatment, but the disease still has a high mortality rate, and early diagnosis is a key factor to reduce the mortality of patients with breast cancer, but also conducive to improving the quality of life of patients. In the diagnosis of breast cancer, the X line of molybdenum target [2] line and B is a very important method in clinical application. The authors collected 81 patients with suspected breast cancer who were treated in our hospital from July 2014 to September 2011, Color B and molybdenum target X were used to diagnose, and the diagnosis results were compared with pathology. The results were reported as follows.
Detection Methods
81 cases were examined by color B and X, and the results were compared with pathological findings. X (Rom12-Rot207 SONOLINE). The X line of molybdenum target was examined by the use of the X line of molybdenum target mammography, B ultra check is performed by using color Doppler ultrasonic diagnostic apparatus (SIEMENS, G60 S SONOLINE).

Statistical Analysis
Computer data entry shall be treated with SPSS 16.0 statistical software, Count data is expressed by rate (%), the $\chi^2$ test was used to compare between the different examination methods. The difference was statistically significant with $p < 0.05$.

RESULTS
The diagnosis coincidence rate of breast cancer pathology, Ultra B, molybdenum target X line inspection diagnostic accuracy by comparing can be seen from table 1. The diagnostic coincidence rate of Ultra B and molybdenum target X line was significantly lower than that of Ultra B + molybdenum target X line, the difference was statistically significant ($p < 0.05$). There was no significant difference in the diagnostic accuracy of Ultra B and molybdenum target X line ($p > 0.05$).

Comparison of sensitivity, specificity, accuracy and positive predictive value of Ultra B and molybdenum target X line can be seen from table 2.

The sensitivity, specificity, accuracy and positive predictive value of Ultra B and molybdenum target X line can be seen from table 2.

**Table 1:** Comparison of the diagnostic accuracy of breast cancer pathology, B ultra and molybdenum target X line (case).

<table>
<thead>
<tr>
<th>Pathological typing</th>
<th>Pathology ltra B</th>
<th>molybdenum target X line</th>
<th>Ultra B + molybdenum target X line</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infiltrating ductal carcinoma</td>
<td>49</td>
<td>43</td>
<td>45</td>
</tr>
<tr>
<td>Infiltrating lobular carcinoma</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Micro ductal carcinoma</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Medullary carcinoma</td>
<td>3</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Mucinous adenocarcinoma</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Intraductal carcinoma</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>65</td>
<td>52</td>
<td>51</td>
</tr>
<tr>
<td>Diagnostic coincidence rate (%)</td>
<td>100.00</td>
<td>80.00</td>
<td>78.46</td>
</tr>
</tbody>
</table>

Note: compared with Ultra B + molybdenum target X line, $p<0.05$

**Table 2:** The sensitivity, specificity, accuracy and positive predictive value of Ultra B and molybdenum target X line

<table>
<thead>
<tr>
<th>Examination method</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>Accuracy</th>
<th>Positive predictive value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ultra B</td>
<td>86.1</td>
<td>86.1</td>
<td>83.7</td>
<td>95.8</td>
</tr>
<tr>
<td>Molybdenum target X line</td>
<td>82.4</td>
<td>79.3</td>
<td>78.5</td>
<td>92.7</td>
</tr>
<tr>
<td>Ultra B + Molybdenum target X line</td>
<td>91.9</td>
<td>91.2</td>
<td>91.9</td>
<td>97.5</td>
</tr>
<tr>
<td>$\chi^2$</td>
<td>8.03</td>
<td>5.11</td>
<td>6.29</td>
<td>0.41</td>
</tr>
<tr>
<td>$p$</td>
<td>$&lt; 0.05$</td>
<td>$&lt; 0.05$</td>
<td>$&lt; 0.05$</td>
<td>$&lt; 0.05$</td>
</tr>
</tbody>
</table>

Note: compared with Ultra B + molybdenum target X line, $p<0.05$
predictive value of Ultra B and molybdenum target X line was significantly lower than that of Ultra B + molybdenum target X line, the difference was statistically significant (p < 0.05). There was no significant difference in the positive predictive value of 3 detection methods (p > 0.05).

**DISCUSSION**

Breast cancer is a common malignant tumor in women. It is very important to improve the survival rate and quality of life of patients. It is very important for early diagnosis and treatment of [3]. There are many methods for the diagnosis of breast cancer, such as X line, Ultra B, infrared and CT, MRI, etc. At present, the application of digital mammography and X line is the most widely used in clinical diagnosis of breast cancer, and its application in the diagnosis of breast cancer has been significantly improved [4]. Ultra B in the diagnosis of breast cancer has significant advantages, Color B ultrasound is more prominent. The diagnostic level of breast cancer is similar to that of X line, which is the first choice for clinical diagnosis of breast cancer [5]. Color B has many advantages, such as has non radioactive, in the process of examination will not cause damage to the patient's body, the operation is easy to master, patients has no pain, the repeatability is strong, the cost is low [6], it is effective for the identification of the nature of the tumor, and has little effect on the causes of the dense glands, even if cystic lesions can accurately distinguish, accurate positioning. As a result, it is an indispensable inspection means of clinical diagnosis, but if the diameter of the tumor is less than the diameter of the probe, the effect of using color B super detection is poor [7].

Retrospective analysis of 58 cases of breast cancer patients with ultrasound examination by Mu Fang [8], all patients were confirmed by postoperative pathological examination for breast cancer. 52 cases among them were diagnosed as definite diagnosis. The diagnostic accuracy rate was 95.52%, the accuracy rate confirmed after the operation is 100%. The accuracy rate of them are similar, no significant difference (p > 0.05). The authors believe that the accuracy rate of color B in diagnosis of breast cancer patients is relatively high, the patient is easy to accept. In the present study, the diagnostic accuracy of Ultra B and molybdenum target X line (80% and 78.46% respectively) was significantly lower than that of Ultra B + molybdenum target X line (93.85%), which showed obvious advantages in the diagnosis of breast cancer. The difference was statistically significant (p < 0.05), and it showed that the diagnostic accuracy of X line in the diagnosis of breast cancer was obviously superior.

Mammography X camera line in the process of clinical use improve continuously. The image mainly use different density groups of X ray absorption and attenuation of different principles to complete [9]. Its image post-processing feature is very powerful. The spatial resolution and contrast are also relatively high, which can clearly show the small calcification and the shallow calcification in the gland. Tumor nodules and micro calcification was the direct signs of it. At present in the diagnosis of breast cancer molybdenum target X-ray has become one of the most important, the most widely used method of examination. It is reported that the accuracy rate of X lines in the diagnosis of breast cancer is 92% [10]; Some scholars believe that there are large differences in the applicability of the X line census of women of different ages. Women older than 50 years can be early detection of breast cancer, women under the age of 40 had lower applicability. The X line is mainly based on the density difference between the lesions and the surrounding tissue, compared with the surrounding glands, the density of the tumor is higher, The malignant degree of the tumor increase with increasing density [6]. However,
there are some deficiencies in the molybdenum target X line: The dense glands are poorly developed, and the masses close to the chest wall are easy to leak. In addition, the method of the examination is radioactive, which limits the wide use of [11, 12] molybdenum target X line as a routine examination and physical examination items in breast cancer screening.

CONCLUSION

The results showed that the sensitivity, specificity, accuracy and positive predictive value of Ultra B and molybdenum target X line was significantly lower than that of Ultra B + molybdenum target X line, the difference was statistically significant (p < 0.05), which note that the effect of ultrasonic combined with molybdenum target X line is better than that of the two inspection methods alone. In short, the diagnostic coincidence rate, sensitivity, specificity and accuracy of color B and molybdenum target X line is in a similar level, which were significantly lower than the two examination methods combined use. It is suggested that the combination of two methods for checking the patient can improve the diagnostic accuracy rate obviously. But there is no obvious advantage in the combination of the two methods in the positive predictive value.

REFERENCES