

ผลตรวจแมมโมแกรมและอัลตราซาวด์ในผู้ป่วยที่มีอาการเจ็บเต้านม

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บทคัดย่อ

ความเป็นมา : แมมโมแกรมและอัลตราซาวด์เต้านมเป็นการตรวจทางรังสีที่ใช้เป็นมาตรฐานสำหรับการวินิจฉัยมะเร็งเต้านม แต่อาการเจ็บเต้านมอย่างเดียวมักจะพบน้อยในผู้ป่วยมะเร็งเต้านม การส่งตรวจทั้งแมมโมแกรมและอัลตราซาวด์ในผู้ป่วยที่มีอาการเจ็บเต้านมอย่างเดียว โดยที่ผลตรวจร่างกายโดยแพทย์ไม่พบก้อนและความผิดปกติอื่น ๆ อาจเป็นการได้รับรังสีโดยไม่จำเป็น สิ้นเปลืองค่าใช้จ่ายและไม่เกิดประโยชน์ทางคลินิก ดังนั้นควรมีการหาแนวทางการส่งตรวจทางรังสีที่เหมาะสม

วัตถุประสงค์ : เพื่อศึกษาผลตรวจ และเปรียบเทียบความไวในการหารอยโรคระหว่างการตรวจแมมโมแกรมกับการตรวจอัลตราซาวด์เต้านม ในผู้ป่วยที่มาด้วยอาการเจ็บเต้านมอย่างเดียว

วิธีการศึกษา : Diagnostic descriptive research กลุ่มตัวอย่างที่ศึกษาเป็นผู้หญิงอายุ 32 ปีขึ้นไปที่มีอาการเจ็บเต้านมและตรวจร่างกายโดยแพทย์ไม่พบก้อน ได้รับการตรวจด้วยแมมโมแกรมและอัลตราซาวด์เต้านมที่โรงพยาบาลเชียงรายประชานุเคราะห์ ในช่วงเวลา 2 ปี (ตุลาคม 2558 ถึง สิงหาคม 2560) หาดำเนินการและร้อยละของการพบรอยโรคโดยการตรวจทั้งสองอย่าง การพบรอยโรคโดยแมมโมแกรมอย่างเดียว การพบรอยโรคโดยอัลตราซาวด์อย่างเดียว พบรอยโรคจากการตรวจอย่างใดอย่างหนึ่ง และไม่พบรอยโรคทั้งสองอย่าง ใช้ Fisher exact probability test ในการเปรียบเทียบความสามารถในการหารอยโรคจากการตรวจทั้งสองอย่าง

ผลการศึกษา : ผู้ป่วยที่มีอาการเจ็บเต้านม 140 คน อายุระหว่าง 32-79 ปี ได้รับการตรวจทั้งแมมโมแกรมและอัลตราซาวด์ พบว่าไม่พบรอยโรคร้อยละ 62.8 (88 ราย) พบรอยโรคร้อยละ 37.2 (52 ราย) ส่วนใหญ่รอยโรคที่พบคือ ถุงน้ำร้อยละ 30 (42 ราย) ก้อน solid mass/hypoechoic lesion ร้อยละ 3.7 (5 ราย) เมื่อพิจารณาตามชนิดการตรวจพบว่า ร้อยละ 62.8 ไม่พบรอยโรคทั้งแมมโมแกรมและอัลตราซาวด์ ร้อยละ 28.5 พบรอยโรคด้วยการตรวจอัลตราซาวด์อย่างเดียว ร้อยละ 29.2 พบรอยโรคด้วยการตรวจอัลตราซาวด์หรือแมมโมแกรมอย่างใดอย่างหนึ่ง ร้อยละ 7.8 พบรอยโรคด้วยการตรวจทั้งสองอย่าง และมีผู้ป่วยเพียง 1 ราย (ร้อยละ 0.007) ที่พบรอยโรคด้วยแมมโมแกรมอย่างเดียว ซึ่งในรายนี้สรุปการวินิจฉัยว่าไม่ใช่เป็นรอยโรค แต่เป็นเพียงการกระจายเนื้อเต้านมที่ไม่เท่ากัน จากการเปรียบเทียบพบว่าอัตราการพบรอยโรคด้วยอัลตราซาวด์เต้านมอย่างเดียว ไม่มีความแตกต่างจากอัตราการพบรอยโรคด้วยการตรวจอย่างใดอย่างหนึ่งร่วมกันอย่างมีนัยสำคัญ

สรุปและข้อเสนอแนะ : ในผู้ป่วยที่มีอาการเจ็บเต้านมอย่างเดียวและตรวจร่างกายไม่พบก้อนและความผิดปกติอื่น เมื่อตรวจด้วยแมมโมแกรมและอัลตราซาวด์ ส่วนใหญ่จะตรวจไม่พบรอยโรค ส่วนที่พบรอยโรคจะตรวจเจอด้วย อัลตราซาวด์เกือบทั้งหมด เมื่อคำนึงถึงความคุ้มค่าและประโยชน์ทางคลินิก รวมทั้งการลด ความกังวลของผู้ป่วย ในการที่จะรอคิวนัดตรวจแมมโมแกรม การตรวจเต้านมด้วยอัลตราซาวด์เหมาะที่จะใช้เป็นการตรวจขั้นต้นสำหรับ อาการเจ็บเต้านมอย่างเดียว

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MAMMOGRAPHIC AND ULTRASONOGRAPHIC FINDINGS IN CLINICAL BREAST PAIN

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ABSTRACT

BACKGROUND : It has been widely accepted that the gold standard for diagnosis of breast cancer is mammography with or without additional breast ultrasound. This study focused on the proper investigation that has cost effective, less radiation risk and high detection rate in case of clinical breast pain without abnormal clinical breast examination, because clinical breast pain is not a common symptom of breast cancer.

OBJECTIVE : To assess the findings of mammography and ultrasound in case of breast pain alone, and to assess the detection rate of breast lesion by mammography and by ultrasound.

METHODS : Diagnostic descriptive research. The subjects were female patients age up from 32 years old presented with breast pain alone without other findings of clinical breast examination undergone mammography and ultrasound examination in Chiangrai Prachanukroh hospital between October 2015 and August 2017. Assessment of percentage of detection in both ultrasound and mammography, ultrasound alone, mammography alone, and either ultrasound or mammography. Comparison of percentage of lesion detection using Fisher exact probability test among these variables was done.

RESULTS : Lesions detected in 52 cases (37.2%), no lesion detected in 88 cases (62.8 %). Most of the findings were cysts (30% of patients) and solid (3.7% of patients). Forty cases (28.6% of patients) were detected by ultrasound alone. One case (0.007% of patients) detected by mammography alone (asymmetric breast density demonstrated by mammography but no detected lesion on ultrasound). Eleven cases (7.9% of patients) were detected by both mammography and ultrasound. There was no significant difference between positive detection rate by ultrasound alone and by either ultrasound or mammography, but significant difference between mammography and either one of these investigations.

CONCLUSIONS AND DISCUSSIONS : Considering about detection rate, cost benefit and radiation risk from mammography, the initial investigation in case with breast pain alone should be started with breast ultrasound in order to prompt treatment or to re-assure the patients to relief anxiety from pain, especially in a place that has long waiting lists for mammography. However, ultrasound could not replace mammography for breast cancer screening.

KEYWORDS : breast pain, mammography, ultrasound

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BACKGROUND

It has been widely accepted that the gold standard for diagnosis of breast cancer is mammography and breast ultrasound may be added to increase detection rate and increase specification. Ultrasound alone is used in breast cancer screening only as a second look or follow up modality, but not be used as a substitute for mammography¹. This study focused on clinical breast pain that means discomfort, tenderness, or pain in the breast or underarm region. Breast pain is typically approached according to its classification as cyclic mastalgia, noncyclic mastalgia and extramammary or non-breast pain. Cyclic mastalgia is breast pain that has a clear relationship to the menstrual cycle. Noncyclic mastalgia may be constant or intermittent but is not associated with the menstrual cycle and often occurs after menopause. Extramammary pain arises from the chest wall or other sources which may be misinterpreted as having a cause within the breast.

IMPORTANCE

Generally, breast pain is not a common symptom of breast cancer¹. The risk of cancer in a woman presenting with breast pain as her only symptom is extremely low. Many causes, usually benign breast diseases are possible and the clinical enquiry and physical examination are essential to establish predisposing factors. After

appropriate clinical evaluation, most patients with breast pain respond favorably to a combination of reassurance and nonpharmacological measures². In daily practice in Chiangrai Prachanukroh hospital, there were many requests for mammography in cases of breast pain without abnormal clinical breast examination. Mammography and additional breast ultrasound were usually performed together to increase accuracy. When some lesions were detected, they were mostly detected by ultrasound and rarely detected by mammography alone. To concern about diagnostic accuracy, cost benefit and disadvantage from radiation dose, the study proposes to identify imaging findings and to determine the appropriate breast imaging for clinical breast pain alone.

OBJECTIVES

To assess the findings and to compare detection rate between mammography and ultrasound in clinical breast pain.

METHODS

Design: Diagnostic descriptive study

Patients: Database of breast imaging and reports of female patients age more than 32 years old in Chiangrai Prachanukroh hospital between October 2015 and August 2017, presented with symptom of breast pain alone, and clinical breast examination by clinicians revealed no abnormality are recorded.

Exclusion of the patients with positive physical examination of palpable breast lumps, nipple discharge, nipple retraction, axillary mass, localized warmth or discoloration or scaly of skin at the pain site was noted. The patients were also excluded if they had a personal history of other cancer and past history of breast surgery or breast lesions. Specific cases that were not undergone ultrasound in the same day of mammography were also excluded from the study. All of mammographic images were performed using the same digital mammographic machine and the same ultrasound machine. A total of 140 patients met the inclusion criteria. Mammography and ultrasound examinations were performed and reported by five radiologists randomly.

Data collection: Mammographic request forms were reviewed to collect clinical data, including past history, present history and physical examinations in proposing to search for the patients that met the inclusion criteria. After these cases were enrolled into the study, mammographic findings and ultrasonographic findings reports were reviewed. Imaging data, including characteristics of the detected lesions and BIRADS assessment categories were extracted. Some imaging data that were not suggestive of pathology such as calcified vessel were ignored. In the patient symptoms database, we also extracted pain characteristic data

from the electronic request forms and divided into 2 groups; localized pain and generalized pain. The Geographic relationship between detected lesions and painful area were also extracted.

Main outcome and measures and statistics

analysis: To evaluate different of lesion detection by imaging modalities. Assessment of percentage of detection by ultrasound alone, mammography alone, both ultrasound and mammography, and either ultrasound or mammography were noted. Comparison between positive detection rates of one specific imaging alone to positive detection rate of either one of them was done using Fisher exact test among these variables.

RESULTS

Patient characteristics: Female patient, 140 cases with a range of age between 32 years old to 79 years old. Mean age was 51.05 ± 8.47 years old.

Age (years)	numbers
< 40	12
40-49	51
50-59	57
60-69	18
≥ 70	2

Pain characteristics: Seventy-seven cases had localized pain and 63 cases had generalized pain. Positive detected lesions in 29 cases of localized pain and 23 cases of generalized pain were noted.

There was no significant difference of positive lesion detection between localized pain and generalized pain. When the majority of the detected lesions were geographic correspondent to the painful area; 75.9% (22 in 29) in localized pain and 65.2%

(15 in 23) in generalized pain, many detected lesions were also incidental findings and not correspondent to painful area. Some cases with unilateral breast pain had ultrasonographic findings of multiple cysts in bilateral breasts.

Table 2 Detection rate in different pain characteristics

Pain characteristics	Positive lesion detection	Negative lesion detection	p-value
Localized pain	29	48	1.000
Generalized pain	23	40	

Imaging finding characteristics: Positive mammographic findings were 4 cases of asymmetric breast density, 5 cases of dominant masses, 1 case of benign calcification and 1 case of lipoma. Positive ultrasonographic findings were 42 cases of cysts (30%), 3 cases of solid masses (2%), 1 case of lipoma, 1 case of localized dilated duct and 2 cases of hypoechoic lesions.

BIRADS assessment categories: In 52 cases of detected lesions, 36 cases were categorized

into BIRADS 2 (35 cases of cysts and 1 case of lipoma), 11 cases into BIRADS 3 (7 cases of complicated cysts, 3 cases of solid mass and 1 case of localized dilated duct), 1 case into BIRADS 4a (hypoechoic mass) and 1 case into BIRADS 4b (solid mass). Two cases of BIRADS 4 were detected by ultrasound alone, and undergone excisional biopsy. Both cases had histologic suggestions of fibrocystic disease.

Table 3 Imaging findings

Type of Imaging	Findings / Detected lesions	Cases
Mammography	mass	5
	Calcification	1
	(Benign looking calcification)	
	Fat-containing mass	1
Ultrasound	Asmmetrical density	4
	Cyst	42
	Solid mass/Hypoechoic lesion	3
		2
	Calcification	0
	Fat-containing mass	1

Detection rate: Eighty eight cases were without detected lesion (62.8%). In total detected lesion 52 cases (37.2%), 40 cases (28.6%) were detected by ultrasound alone. One case (0.7%) detected by mammography alone (asymmetric breast density

demonstrated by mammography but no detected lesion on ultrasound). Eleven cases (7.9%) were detected by both mammography and ultrasound. Forty-one cases were detected by either mammography or ultrasound (positive detection rate, 29.3%).

Table 4 Numbers of cases with detected lesions on ultrasound and/or mammogram

	1.both ultrasound and mammogram (n)	2.Mammogram alone (n)	3.Ultrasound alone (n)	4. either mammogram or ultrasound (n) (2+3)	Total cases of detected lesions (n) (1+2+3)
Lesion detection	11	1	40	41	52

There was no significant difference between positive detection rate by ultrasound alone and by either ultrasound or mammography,

but significant difference between mammography and either one of these investigations.

Table 5 Comparison of detection rate

	By Ultrasound alone (n)	By either mammography and ultrasound (n)	By mammography alone (n)
Lesion detection	40	41	1
Total patients	140	140	140
Positive detection rate	28.6%	29.3%	0.7%
<-----p value =1.000----->			
<-----p value < 0.05----->			

CONCLUSION AND DISCUSSION

Conclusion: In this study, most of the detected lesions (51/52, 98.1%) were demonstrated by ultrasound. There was only one case with focal asymmetry detected by mammography but without ultrasonographic detected lesion in the geographic correspondent area, it was finally concluded to be an asymmetrical distribution of breast tissue from normal variation. The majority of the detected lesions that were geographic correspondent to the painful area, were fibrocystic disease. Two BIRADS 4 cases were detected by ultrasound alone, undergone excisional biopsy and histologic suggestions of fibrocystic disease. In this study of 140 patients, no malignant lesion was found. Statistical analysis suggests that ultrasound alone has a detection rate indifferent of mammography with additional ultrasound.

In other studies those have similar conclusion, the study of Balleygier, et al.

suggested that the first line investigation should be ultrasound before mammography, MRI or biopsy, which may be indicated for suspicious abnormalities³. In consideration of cost effectiveness and clinical service utilization, the study of Howard MB, et al. suggested that women with normal clinical breast exams who received initial imaging exhibited increased odds for subsequent clinical services utilization⁴. Although imaging is not always needed for isolated breast pain, it is still useful for the diagnosis of specific causes such as tension cysts, giant adenofibromas or Mondor's thrombophlebitis.

The other studies that have a different conclusion from this study, Noroozian, et al. showed majority benign outcomes in the painful breast, but 1.8% were diagnosed as breast cancer (5-52 months) subsequent to initial imaging evaluation, whereas the majority of benign outcomes (82.5 %) were diagnosed at initial presentation.

Diagnostic mammography at initial presentation had a negative predictive value of 99.8 % (95 % CI 99.1 %, 100 %), specificity of 98.5 % (95 % CI 97.2 %, 99.3 %), and sensitivity of 66.7 % (95 % CI 11.6 %, 94.5 %). Some cancers were subsequently diagnosed in the contralateral (non-painful) breast, but some cancers were in the symptomatic breast⁵. Tumyan, et al. suggested the advantage of both mammography and ultrasound in breast pain because of 100% negative predictive value can completely exclude malignancy⁶.

The advantage of this study was most of the patients undergone a mammogram in the radiology department of Chiangrai Prachanukroh hospital were undergone breast ultrasound in the same day that make achievement of reliable data for comparison.

Limitation of study:

1. Limitation by inter-observer variation. The data for this study were collected from the radiographic reports by five individual radiologists at Chiangrai Prachanukroh hospital with disproportionate numbers of cases. To reduce this limitation, all images of mammography and ultrasound should be reviewed by two or more radiologists with interobserver agreement.

2. This study focuses only investigation in sporadic clinical breast pain. In cases with early malignant lesion can be asymptomatic

and may be only demonstrated by mammography, for example, a cluster of microcalcification in ductal carcinoma in situ. Further research to assess tumor free-time of the breast pain patient with negative ultrasound imaging is valuable.

Clinical significance: To concern about radiation risk, cost effectiveness and waiting time of mammography, this study prefers to use ultrasound as an initial investigation in women who have breast pain without abnormal physical examination. Ultrasound is a cost effective, readily available method to search for the cause of pain (if there is any) in order to prompt treatment or to re-assure the patients to relief anxiety from pain, especially in a place that has long waiting lists for mammography. However, ultrasound could not replace mammography for breast cancer screening, it just be used as an initial tool for specific cases as in our study. In clinical suggestion, routine annual check-up with mammography after negative or benign outcomes of the initial investigation with ultrasound is nevertheless necessary.

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