A Systematic Review: Comparison between result of USG Examination and FNAB Examination in Breast Tumors

Dalilah Badzlin

Faculty of Medicine, Universitas Hang Tuah Surabaya, Indonesia
dalilahbadzlin@gmail.com

Abstract

Introduction: Cancer is a type of disease non-infectious which the incidence rate has trend of increasing every year WHO data in 2010 mentioned that cancer ranks number two as the cause most deaths, are under the disease cardiovascular. More than 80% of breast cancer cases in Indonesia was diagnosed at an advanced stage so the morbidity and mortality rates become higher. Ultrasonography (USG) of the breast generally used for inspection example cyst breast, and the shape of the cyst for breast abnormalities. FNAB is a fine needle biopsy examination and is a preoperative diagnostic tool for breast lesions. Anatomical histopathology is the gold standard for the diagnosis of breast malignancy. ***Objective:*** *To find out the differences and compare the results of breast tumor examination using ultrasound and FNAB examination* ***Method:*** *This study uses a type of literature review study a Narrative Review design. The method used in the process of using the ultrasound, it can be seen that the gray scale ultrasound examination has a sensitivity of 75-94.4% and a specificity of 18.8-81.8%.* ***Result and Discussion:*** *While PPV 48-95.6%, NPV 42.8-95.7%, and 46.9% accuracy and fine needle examination also has varying accuracy criteria. Its show a sensitivity of 86.7%- 93,4% Specificity 95,7% -100%.* ***Conclusion****: Fine Needle Aspiration examination has better specificity than ultrasound examination.*

Keywords: USG; FNAB, Breast Tumors;

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Introduction

Breast cancer is cancer that originates of cells located in the breast, which consists on the cells of the milk-producing glands, cells of the aqueducts milk, or other tissues (Yuliana, 2018 in (Rahayu, Ropitasari, & Maharina, 2020). Breast cancer is the most common cancer commonly found in women as well as becoming one of the causes of morbidity and mortality in women around the world (Becker, 2015).

More than 80% of breast cancer cases in Indonesia was diagnosed at an advanced stage so the morbidity and mortality rates become higher (Sunaryo, 2018). Early detection is a preventive measure secondary breast cancer (Hutapea, 2017). Early detection aims to reduce morbidity and mortality due to breast cancer (Serviks, 2017)

Ultrasonography (USG) of the breast generally used for inspection eg cyst breast, and the shape of the cyst for breast abnormalities (Rumah Sakit Kanker Dharmais. (2002) (Ramadhania, 2017). Ultrasonography (USG) examination of the breast is an alternative radiology modality for early detection of breast cancer (Brem, Lenihan, Lieberman, & Torrente, 2015).

Breast ultrasound has higher accuracy on the bust have high gland density as well as having the advantage of being free of radiation (Wang et al., 2019). In high-density breasts, Ultrasound is known to have a sensitivity of 88%, more-higher than mammography, standard gold standard for breast cancer screening only 56% (Geisel, Raghu, & Hooley, 2018)

Breast with High gland density is often found in women under the age of 50 and over often found in Asian populations compared to Europeans or Americans, so more represents the characteristics of society's bust Indonesia (Ohuchi et al., 2009); (Brem et al., 2015)

Method

This study uses a type of literature review study a Narrative Review design. The source of the articles used were publications from 2017 to 2021.

Results and Discussion
Result

In research article 1, Syahruddin (Syahruddin, Muis, & Murtala, 2017) investigated the accuracy of three ultrasound methods for detecting breast cancer, namely gray scale ultrasound, color doppler, and strain elastography. The research was conducted at Hasanuddin University, Makassar.

Research with a cross-sectional design involving 51 research subjects found that gray scale ultrasound had a sensitivity of 94.4% and a specificity of 81.8%, color Doppler ultrasound based on vascular distribution had a sensitivity of 77.8% and a specificity of 93.9%, strain elastography ultrasound based on Tsukuba score had sensitivity 94.4%, specificity 81.8%, and ultrasound strain elastography based on strain ratio had a sensitivity of 94.4% and a specificity of 90.9%.

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In research article 2, Pereira (Pereira et al., 2020) investigated the accuracy of three radiological modalities for breast cancer detection, namely mammography, ultrasound, and magnetic resonance imaging (MRI).

The research was conducted in the State of Piaui, Brazil. Research with a cross-sectional design involving 32 research subjects found that ultrasound examination had a sensitivity of 75%, a specificity of 18.8%, a positive predictive value (PPV) of 48%, a negative predictive value of 42.8%, and an accuracy of 46.9%.

in research article 3, Mohanty (Mohanty, 2020) investigated the accuracy of fine needle aspiration examinations for diagnosing breast cancer in lump lesions in the breast. The study was conducted in Bhubaneswar, India. A cross-sectional study involving 420 research subjects found that fine needle biopsy examination of breast lesions showed a sensitivity of 93.4%, specificity of 100%, PPV of 100%, NPV of 91.7%, and 96.2% accuracy

in research article 4 Kamushaga (Kamushaga, Giiti, Kidenya, Ngoya, & Rambau, 2021), during the study, total of 354 patients (male; female = 1: 32) were enrolled in the study. A total of 134 (37.9%) patients had malignant lesions while 220 (62.1%) of patients had benign lesions confirmed on histology. The diagnostic utility (sensitivity, specificity) for conventional FNA was 86.7%, 95.7%

Discussion

Based on articles 1-2, it can be seen that the relative sensitivity of the ultrasound device varies depending on the method used in the process of using the ultrasound. Based on articles 1 and 2, it can be seen that the gray scale ultrasound examination has a sensitivity of 75-94.4% and a specificity of 18.8-81.8%. While PPV 48-95.6%, NPV 42.8-95.7%, and 46.9% accuracy.

Based articles 3-4 It can be seen that fine needle examination also has varying accuracy criteria. The two research articles show a sensitivity of 86.7%- 93,4% Specificity 95,7% -100%.

Conclusion

Based on the 4 research articles analyzed, it can be concluded ultrasound examination has a sensitivity of 75-94.4%, a specificity of 18.8-81.8%. Meanwhile fine Needle Aspiration examination has a sensitivity of 93.4-97.5%, a specificity of 95,7 -100%, Fine Needle Aspiration examination has better specificity than ultrasound examination.

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