

Akurasi diagnostik diffusion weighted imaging dibandingkan dengan magnetic resonance spectroscopy dalam membedakan Lesi Payudara Jinak dan Ganas: Telaah sistematis dan meta-analisis = Diagnostic accuracy of diffusion weighted imaging compared to magnetic resonance spectroscopy in differentiation of benign and malignant breast lesions: systematic review and meta-analysis

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Abstrak

Latar belakang: Kanker payudara adalah kanker dengan insiden tertinggi dan penyebab kematian utama akibat kanker pada perempuan di dunia. Magnetic resonance imaging (MRI) adalah modalitas pencitraan yang memiliki sensitivitas tinggi, tetapi spesifisitas terbatas, dalam mendeteksi kanker payudara. Diffusion weighted imaging (DWI) dan magnetic resonance spectroscopy (MRS) adalah sequence MRI fungsional yang dilaporkan memiliki spesifisitas yang lebih baik dibandingkan protokol MRI standar dalam membedakan lesi payudara jinak dan ganas. Telaah sistematis dan meta-analisis ini dibuat dengan tujuan membandingkan akurasi diagnostik sequence DWI dan MRS dalam membedakan lesi payudara jinak dan ganas. Metode: Pencarian sistematis dilakukan untuk mengidentifikasi studi yang membandingkan akurasi diagnostik antara sequence DWI dan MRS dalam membedakan lesi payudara jinak dan ganas yang terdeteksi lewat pemeriksaan fisik atau radiologis, dengan referensi baku pemeriksaan patologi anatomi. Pencarian dilakukan pada Maret 2021 lewat data dasar Scopus dan PubMed menggunakan kata kunci yang telah ditentukan, daftar pustaka dari artikel terpilih, dan grey literature. Temuan utama yang diekstraksi dari tiap studi adalah jumlah positif benar, positif palsu, negatif benar, dan negatif palsu untuk mendapatkan nilai sensitivitas, spesifisitas, likelihood ratio (LR), dan diagnostic odds ratio (DOR) masing-masing uji indeks. Penilaian kualitas metodologi studi dilakukan menggunakan QUADAS-2. Penilaian kualitas bukti dilakukan menggunakan GRADE. Hasil: Delapan studi (632 perempuan, 687 lesi payudara) diidentifikasi. Proporsi lesi ganas payudara 38,2–72,4%. Tiga studi menunjukkan risiko bias yang tinggi pada salah satu domain. Empat studi menunjukkan setidaknya dua risiko bias yang tidak jelas. Sensitivitas spesifisitas, LR+, LR-, dan DOR sequence DWI secara berturut-turut adalah 90% (95% CI 86–93%), 83% (95% CI 67–93%), 5,4 (95% CI 2,6–11,4), 0,12 (95% CI 0,09–0,17), dan 45 (95% CI 18–109). Sensitivitas, spesifisitas, LR+, LR-, dan DOR sequence MRS secara berturut-turut adalah 85% (95% CI 66–94%), 85% (95% CI 76–91%), 5,7 (95% CI 3,3–10,0), 0,17 (95% CI 0,07–0,45), dan 33 (95% CI 8–131). Kualitas bukti rendah–sedang. Kesimpulan: Sequence DWI dan MRS memiliki akurasi diagnostik yang hampir sebanding dalam membedakan lesi payudara jinak dan ganas. Sequence DWI memiliki sensitivitas lebih baik, sedangkan sequence MRS memiliki spesifisitas lebih baik. Akan tetapi, penerapan temuan telaah sistematis dan meta-analisis ini terbatas karena kualitas metodologi studi dan kualitas bukti yang terbatas.

.....Background: Breast cancer is cancer with the highest incidence and leading cause of cancer death among women worldwide. Magnetic resonance imaging (MRI) is an imaging modality of high sensitivity, but limited specificity in detecting breast cancer. Diffusion weighted imaging (DWI) and magnetic resonance spectroscopy (MRS) are functional MRI sequences reported to have higher specificity compared to standard MRI protocol in differentiating benign and malignant breast lesions. This systematic review and meta-

analysis are written to compare diagnostic accuracy of DWI and MRS sequence in differentiating benign and malignant breast lesion. Methods: Studies that compared diagnostic accuracy of DWI and MRS sequence in differentiating benign and malignant breast lesions, previously detected through physical or radiological examination, with pathological examination as reference standard were identified. Scopus and PubMed were systematically searched through March 2021. Reference lists of eligible studies and various grey literatures searches were searched additionally. Findings extracted from each eligible study included true positive, true negative, false positive, dan false negative value to estimate sensitivity, specificity, likelihood ratio (LR), and diagnostic odds ratio (DOR) of each index tests. Methodological quality was assessed using QUADAS-2. Evidence quality was summarized using GRADE. Results: Eight studies (632 women, 687 breast lesions) were identified. Proportion of malignant breast lesions were 38.2–72.4%. Three studies displayed high risks of bias in one domain. Four studies displayed at least two unclear risk of bias. Sensitivity, specificity, LR+, LR-, and DOR of DWI sequence were 90% (95% CI 86–93%), 83% (95% CI 67–93%), 5.4 (95% CI 2.6–11.4), 0.12 (95% CI 0.09–0.17), and 45 (95% CI 18–109), respectively. Sensitivity, specificity, LR+, LR-, and DOR of MRS sequence were 85% (95% CI 66–94%), 85% (95% CI 76–91%), 5.7 (95% CI 3.3–10.0), 0.17 (95% CI 0.07–0.45), and 33 (95% CI 8–131), respectively. The quality of evidence was low to moderate. Conclusion: DWI and MRS sequence has comparable diagnostic accuracy in differentiating benign and malignant breast lesions. DWI sequence has higher sensitivity, while MRS sequence has higher specificity. However, limited methodological and evidence quality limits the application of research findings.