INAHTA Briefs

Issue 2008/049

Title **Breast Magnetic Resonance Imaging**

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Reference MSAC Application 1098 Assessment report. ISBN 1-74186-203-5.
Bruce Howarth, PhD, edited the report

Aim

To assess the safety, effectiveness, and cost effectiveness of magnetic resonance imaging (MRI) of the breast as an addition or replacement to mammography, with or without breast ultrasound, in screening asymptomatic, high-risk women under 50 years of age, and in those aged 50 years and older.

Conclusions and results

Safety: Breast MRI is a safe procedure in patients without contraindications to exposure to magnetic fields.

Effectiveness: No randomized controlled trials have assessed MRI in breast screening for evidence of its impact on patient outcomes. Accuracy studies provide strong evidence that MRI is more sensitive and less specific than mammography in detecting breast cancer. Consistent evidence shows that adding MRI to mammography provides a 2.6-fold increase in test sensitivity (MRI + mammography sensitivity 94% (95% CI 86%–98%); mammography sensitivity 36% (95% CI 25%–48%; incremental sensitivity of MRI 58% (95% CI 46%–70%)). Estimates of test specificity using MRI varied, but one study showed a 3-fold increase in the rate of investigations for false positive findings. Evidence showing that mammography has a higher sensitivity in older women suggests the incremental accuracy of MRI is likely to be lower in this age group. There was a lack of clinical evidence to determine the health benefits gained by earlier detection of breast cancer in women at high risk.

Cost effectiveness: Based on modeled estimates of the effects of early detection, MRI may potentially be cost effective for screening very high-risk women such as BRCA1 mutation carriers aged 35 to 54 years, but is unlikely to be cost effective for screening BRCA2 carriers or women with a wider risk or age distribution. The total additional cost of implementing MRI for breast cancer screening will depend on the cost and uptake of the procedure, the sensitivity of standard mammography screening protocols that include the option of performing a screening ultrasound, and patient baseline risk.

Recommendations

When used as part of an organized surveillance program, breast MRI combined with mammography is safe and effective in diagnosing breast cancer in asymptomatic women at high risk. Evidence suggests that breast MRI combined with mammography may be cost effective compared to mammography alone in high-risk women below 50 years of age.

MSAC recommends interim public funding for breast MRI in diagnosing breast cancer in asymptomatic women at high risk of developing breast cancer when used as part of an organized surveillance program. Evidence should be reviewed in not less than 3 years. The Minister for Health and Ageing endorsed this recommendation in 2007.

Methods

MSAC conducted a systematic review of the biomedical literature up to March 2006 to assess the safety and effectiveness of breast MRI. A published evaluation of the cost effectiveness of MRI for screening women at high risk of breast cancer in the United States was used to discuss economic considerations. A secondary economic analysis was based on this model, but excluded indirect costs and applied Australian relative prices.

Further research/reviews required

Evidence should be reviewed in not less than 3 years.

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ISSN 1654-501X