POEM*

MRI is more accurate than mammogram in high risk patients

Question Is magnetic resonance imaging more accurate than mammography in women at high risk of breast cancer?

Synopsis Magnetic resonance imaging (MRI) is an expensive test, but it may be more sensitive than mammography. The authors identified 1909 Dutch women aged 25-70 years with at least a 15% lifetime risk of breast cancer. This group included 358 carriers of mutations (largely BRCA1 and BRCA2) cancer, 1052 women with a 30% to 49% risk, and 499 with a 15% to 29% risk. Of these, 4.6% were lost to follow up, largely because they underwent prophylactic mastectomy. Another 4.7% refused MRI, usually because of claustrophobia. The mean age was 40 years; only 15% had never had breast cancer screening, and about 75% were premenopausal. Women underwent a clinical breast examination every six months, as well as annual MRI and mammography, which were interpreted independently by radiologists blinded to results from the other method. The women were followed up for a median of 2.9 years. A breast imaging reporting and data system (BI-RADS) classification of 0 ("need additional imaging"), 3, 4 or 5 was considered a positive screening test result (a classification of 1 or 2 indicates normal or nearly normal). The reference standard was histological examination, and sensitivity and specificity were calculated by comparing the number of cancers detected by each method, plus any interval cancers. In addition to sensitivity and specificity, the ability to detect earlier cancers was evaluated by comparison with an unscreened control group who had a similar risk of breast cancer. MRI was more than twice as sensitive as mammography regardless of the cut off used to define an abnormal test result (79% *v* 33%), although it was somewhat less specific (89.8% for BI-RADS of 0, 3, 4, or 5 as abnormal compared with 95% for mammography). The area under the receiver operating characteristic curve, a measure of overall diagnostic accuracy, was significantly greater for MRI (0.83 *v* 0.69). However, the lower specificity means that women underwent more unnecessary additional follow-up exams (420 *v* 207) and had more unnecessary biopsies (24 *v* 7) because of the addition of MRI screening. The comparison with unscreened control groups, although imperfect, found that fewer women screened with both MRI and mammography were node positive.

Bottom line Magnetic resonance imaging is better at ruling out breast cancer (that is, more sensitive) than mammography, but is also more likely to produce false positive results (less specific). It is also more expensive and leads to more unnecessary biopsies and follow up studies. This makes it inappropriate for women at average or low risk, but it may be a good option for high risk women who understand these limitations.

Level of evidence 2b (see www.infoPOEMs.com/levels.html). Any of: independent blind or objective comparison; study performed in a set of non-consecutive patients, or confined to a narrow spectrum of study individuals (or both), all of whom have undergone both the diagnostic test and the reference standard; a diagnostic clinical rule not validated in a test set.

Kriege M, Brekelmans CT, Boetes C, et al. Efficacy of MRI and mammography for breast-cancer screening in women with a familial or genetic predisposition. *N Engl J Med* 2004;351:427-37.

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* Patient-Oriented Evidence that Matters. See editorial (*BMJ* 2002;325:983)

Editor's choice

More research and better behaviour

Last week we had a theme issue on what the rich world could learn from the poor. This week, the cynics will say, it's back to normal: citizens of the rich world only really care about a poor world problem when it might affect them.

An Education and Debate article (p 1231) points out that there's now a sudden interest in organophosphate poisoning in the West because of the fear of chemical attacks by terrorists. Yet organophosphate poisoning has long been a major health problem in many developing countries of the Asia-Pacific region, from poorly controlled pesticides. Actually Nick Buckley and his colleagues aren't that cynical. They argue for better research into organophosphate poisoning because it's in everyone's interest. The standard antidote, atropine, isn't known to be effective, and no new treatments have been developed or tested for the past 30 years. Buckley and his colleagues show that several compounds may be promising—and they suggest that money should be diverted from stockpiling unproved antidotes to researching some new ones.

There's another rich world-poor world conundrum in Rajendra Kale's and Emilio Perucca's editorial about rehabilitating phenobarbital for epilepsy (p 1196). It's much prescribed in developing countries, but has fallen into disrepute in developed ones. The authors argue that phenobarbital is not as bad as it's often painted and might be more often used in the developed world while still being an affordable drug in the developing world. And their conclusion is, of course, that more and better research is needed.

Most weeks, most articles in the *BMJ* boil down to one of two core messages: we need more research or better behaviour. The better behaviour strand this week is represented in Ros Levenson's personal view about the care of her mother at the end of her life (p 1244). "The story includes extreme kindness and sensitivity from some doctors, nurses, and other health professionals, alongside crass ill judged defensiveness from others." What it also shows is the difficulties of achieving "seamless" care across different disciplines, individuals, and time. To Levenson the care didn't seem to be coordinated: despite an apparent agreement that her mother wouldn't be artificially fed, the doctors, the nurses, and the speech therapists had conflicting ideas on whether or not she should be and acted independently.

Behaviour can't get much worse than rape. This week's Career Focus (<http://careerfocus.bmjournals.com>) devotes three articles to the subject: a victim's personal view of the stigma she still feels; a description of the specialty of forensic gynaecology; and an account of the Havens sexual referral centres in London. Open 24 hours a day, they provide both health care for people who have been sexually assaulted and the forensic examinations that the police need—a difficult balance to get right.

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