

Should MRI Replace Mammogram?

(some significant news from Holland)

an opinion piece by John Corso, M.D.

As you know, we've used mammogram for many years to try to find breast cancers as early as possible. *Early matters*, especially with breast cancer, because there is a direct correlation between early detection and the likelihood of curing it. Small tumors, found early are usually curable. Big tumors, found late in the game are much more likely to kill.

Recently, several studies have looked at the usefulness of using MRI (magnetic resonance imaging) to screen for breast cancer, comparing it to mammography and to physical examination of the breast. The study I'm referring to dealt with women who were considered to be at high risk for breast cancer. This means they either had a strong family history of breast cancer or had a known genetic trait that increased their personal risk. It was conducted in The Netherlands.

In these women, invasive breast cancer was correctly diagnosed more often with MRI. These statistics can be a bit confusing but I want to list them here for those who like to know the numbers:

	Sensitivity	Specificity
Breast Exam:	17.9%	98.1%
Mammogram:	33.3%	95.0%
MRI	79.5%	89.8%

- There were a total of 1909 women followed; all had both MRI and Mammogram annually.
- MRI picked up 32 cancers but missed 13 of them.
- Mammogram picked up 18 cancers but missed 27 of them.
- Of the 32 cancers picked up by MRI, Mammogram missed 22 of them.
- Of the 22 cancers picked up by Mammogram, MRI missed 13 of them.
- Of the 13 cancers missed by MRI, 8 were picked up by Mammogram.
- Of the 27 cancers missed by Mammogram, 22 were picked up by MRI.

MRI Certainly Appeared Better

Clearly the MRI found more of the cancers that were actually there (79.5% compared to 33.3% for mammogram and a dismal 17.9% for breast exam). This means the test has a higher level of *sensitivity* for finding cancers that are already there. One problem, however is that a variable known as *specificity* was lower for the MRI than for mammogram. What this means is that an MRI test is more likely to say there is a problem when in fact there is no cancer present. This indeed led to more repeat imaging studies and biopsies that turned out to be negative for cancer. The highest specificity was actually with breast examination. This

only means that by the time a physician can feel something that he or she thinks is a cancer, it almost certainly is.

But the difference in specificity between mammography and MRI is small while the difference in sensitivity is huge. So when they combined these two qualities (which leads to a third quality known as *discrimination*) the MRI was clearly better. Also, the tumors found in this group of very highly screened ladies were smaller, with fewer lymph nodes involved when compared to tumors found in a matched group of women who were not screened more actively than the usual standard of care in Holland.

Is Mammogram Now Passé?

It's easy to react to the numbers presented by deciding that MRI is the *only way to go* since the use of mammogram in this study seemed almost worthless! It only found one third of the cancers in these ladies. Thanks goodness they also got the MRI! So does this mean that *all* women should start getting MRI examinations of the breast each year? No, not necessarily. There are a few important considerations about this study we must remain aware of.

First it must be noted that this was a study of women with *very strong family histories* of breast cancer or with a *known genetic mutation* that put them at very high risk (some with estimated likelihoods of over 80% for eventually developing breast cancer whereas a likelihood of 12.5% is the national average.) Because this study was trying to intercept high-risk women before they got cancer, it turned out that many of these patients were young women. And it is well known to any radiologist that younger women have denser breast tissue which is much harder to accurately assess with Mammogram. MRI doesn't have the same problem with dense breast tissue and this factor accounted for many of the failures of Mammography in the study.

In an average population, Mammogram pickup is much better than 33.3%. Also, Mammogram was superior to MRI for a certain kind of Cancer (ductal carcinoma in situ) so the real question is not about replacing mammogram but about whether adding MRI to Mammogram makes sense.

OK, so Mammogram isn't as worthless as the study suggests at first glance, but what's the down side of just getting an MRI as well as mammogram for everyone each year?

Well, there is the issue of false positives. MRI appears more likely than Mammography to say there's a *possible* cancer present when in fact there isn't one. This can lead to unnecessary:

- Additional imaging studies
- Invasive biopsies
- Anxiety over the outcome.

Let's look at these possible "unnecessary" consequences of MRI use.

Well, repeat imaging is mostly harmless. There is a bit of radiation risk with extra Mammograms but none with MRI. The MRI does involve an IV injection of Gadolinium so there is the risk of having an IV, but again, that's usually very small.

As for biopsies, that's another matter. It would be very important for anyone contemplating MRI of the breast to know that a false positive result is a bit more likely than with a Mammogram alone and that rushing in to biopsy a finding that is "uncertain" carries the usual surgical risks. A well thought out plan for follow-up of any uncertain finding that might result and the willingness to live with a bit of uncertainty for a few months should precede any decision to use MRI for breast screening.

This principal applies to most other aggressive cancer screening as well and brings us to the issue of "unnecessary" anxiety. I strongly support an aggressive personal approach to cancer and other risk screening. But, having said that, if you plan to peek under a lot of rocks when screening your body for early cancers, you will also need to live with what you find. And what we find are often more questions. These often require several months of uncertainty before we get our final answers.

Yet it has been my experience that when armed with support, accurate knowledge about the condition being studied and a clear plan for following up of any "uncertain" findings, that most patients experience a greater sense of power and control about their health than they do harmful anxiety. But such a decision is personal for each patient.

Show Me The Money!

And then there's the cost. MRI is an expensive test, about 10 times the cost of a Mammogram.

Now most of you know that I support the purchasing of any screening study that makes sense for a patient, regardless of the expense (within reason of course.) Many people who oppose certain screening policies do so in part because they assume that the decision to screen must be linked to a policy of widespread insurance coverage for the test. To increase breast cancer screening costs by 10 fold in this country would be a serious policy change for any insurance company! I assume, on the other hand, that if a test makes good medical sense for a particular patient, then the case is closed. It still makes good sense regardless of who pays for it and for newer tests that is usually the patient.

So who should get MRI breast screening in addition to Mammography?

My cavalier answer would be: Any well-informed woman who decides she wants it and is willing to 1) pay for it and 2) accept the consequences of possibly finding something too small or atypical to be certain of the result.

This latter issue would likely lead to further testing and a time period of uncertainty.

But having said that, I would personally encourage women with high risk of breast cancer to consider this test. There is clearly better early detection in this group and their cancer risk is generally high enough to say that the potential benefits *far* outweigh any possible risks from the occasional falsely positive result. This is especially true if such a woman is young (likely to have dense breasts) or has had breast implants as well as a high-risk history.

Also, anyone who knows they have one of the breast cancer genes such as BRCA1 or BRCA2 should consider himself or herself at high risk

Are You At High Risk?

So how does one determine whether they are at very high risk or not? For the most part, the **GAIL** questionnaire is used to determine a person's 5-year risk of breast cancer. It's based on the following information:

- Age
- Age at menarche
- Age at first live birth
- Number of first-degree relatives (mother, sister(s), and/or daughters) with breast cancer
- Number of previous breast biopsies (whether positive or negative)
- At least one biopsy with atypical hyperplasia

And can be calculated by a computer program available on the Internet at this site: <http://bcra.nci.nih.gov/brc/start.htm>.

The limitation with this, as in many such risk tools, is that it relies on actually having a fair number of relatives and actually knowing about their personal health. What do you do if you're from a small or dispersed family that keeps its secrets? What do you do if you're adopted?

So What's The Take-Home Message Here?

For now, be sure to get those mammograms *without fail* every single year of your life from age 40 on. If you have a strong family history of breast cancer or feel you want to get genetic testing for the most common genetic traits that put women at risk, or if you have breast implants that concern you as far a screening goes, please plan to come discuss it with me at the office, or with your women's-health provider. It's a complicated subject and the devil's in the details when it comes to making the best choices - far more details than can be covered here.

The good news is that our ability to save lives in breast cancer just got a bit better and will continue to do so. It's up to each of us, however, to stay abreast (did I say that?) of the issues so we don't let important opportunities pass us by. Learn more at: <http://www.drjohncorso.com>