Y-ME ShareRing Network

January 18, 2006

The featured speaker is Dr. Judith Wolfman, a diagnostic radiologist. She is associate director of the Lynn Sage Breast Center at Northwestern Memorial Hospital in Chicago, Illinois. The topic is: Update on Breast Imaging.

The first 15 minutes of this call were not recorded due to technical problems.

Dr. Judith Wolfman: We use ultrasound to guide needle biopsies because if we can identify an abnormality on ultrasound and we cannot clearly say that it is benign, the ultrasound allows us to watch in real time to see the needle enter the abnormality and to assure that we have adequately sampled the abnormality. But where the role of ultrasound is being evaluated continuously now is in the role of screening. We see it as a secondary screen again for women with dense breast tissue. When we compare cancers that are not seen on the mammogram in women with dense breasts as opposed to women with fatty breasts, the false negative rate of a mammogram may be as high as 30%. So ultrasound is frequently helpful when a woman has overall dense tissue on a mammogram.

A recent review of the literature done by individuals looking at the usefulness of ultrasound and looking at combined single institution studies with a total of 43,000 women, there were a 0.3% cancers found only by ultrasound and these were primarily in women with dense breasts on mammograms. However, when you look at the overall statistics of women who had an abnormal breast ultrasound and that led to a needle biopsy, of all of the biopsies performed, only 11% of women who required a biopsy actually had breast cancer. So when we compare that to the specificity from mammography where 30% of biopsies yield a

diagnosis of breast cancer, ultrasound approximately only one in ten women having a biopsy will actually have a diagnosis of cancer. So as we continue to evaluate this, there is now another large multi-institutional study that is in progress also being supported through ACRON in which there is a trial going on for screening women with dense breasts and that of increased risk for breast cancer either because of family history, prior biopsies with atypical hyperplasia or prior history of breast cancer and these women are being followed for three years where they have a screening ultrasound done independent of a mammogram. The mammogram is also done the same day, but read by a separate radiologist and the ultrasound done by a second radiologist who has no knowledge of the mammogram and the person reading the mammogram has no knowledge of the ultrasound. So we will look forward to having results of this study, unfortunately it will be another year or two, probably two years by the time all of the analysis is done.

The third imaging modality that we are now frequently utilizing is MRI of the breast. MRI is an exam that does not require radiation exposure, but is based on different sequences of magnetic resonance or using magnetic waves to try and identify cancers of the breast. In order to find a cancer on MRI, it requires that the patient has an injection of a contrast agent called Gadolinium. The rate of reaction to Gadolinium is relatively rare unlike the traditional iodine dye used for CT scans and kidney x-rays. The reason MRI can be helpful in identifying cancers is because when a breast cancer starts to develop, at some point there has to be increased blood flow to supply the growth rate of the tumor. So simply, it is not specific for cancer, but it indicates an area of increased blood flow and that combined with the morphology or the size and shape and appearance of an

abnormality on an MRI will be the basis for deciding whether something on MRI may be a cancer, that it may statistically be benign or not a cancer and what we are learning is just like with mammography and ultrasound, there are a lot of abnormalities seen on MRI that land in the category in between or what we call indeterminate.

Up until about 1½ to 2 years ago, the greatest limitation of the MRI because it is based on magnetic force you were unable to biopsy under MRI guidance because the needle systems were made of metal that could be drawn by the magnet, so this could not be done safely. However, we do now have the capability of doing biopsies of abnormalities seen only on MRI exams. So once we identify an area that is abnormal on an MRI exam, meaning there is increased enhancement at a rate of enhancement that would suggest cancer, in order to do the biopsy under MR guidance, it does require the patient to go through another MR scan and another injection. So prior to trying to do a biopsy under MRI, the way we would approach this is to do an ultrasound first looking at the area closely because even once you have scanned a survey ultrasound, if you look very closely at the texture of an area that is abnormal on MRI, the radiologist may be able to identify a small mass or a change in the breast texture on ultrasound and direct the biopsy by ultrasound. This is more comfortable for the patient because she does not have to go into the large MRI machine and in order to scan the breast by MRI, the woman has to lay on her stomach and with the ultrasound we can have her laying comfortably on her back and actively watch the needle go in if we can find the abnormality. So if we cannot find it on the ultrasound then we would proceed with the MRI.

How does the MRI sensitivity and specificity compare to ultrasound and mammography? Unlike mammography we do not have large series. Most of the data is looking at again, single institution studies of which of these institutions they tested this in approximately a range of 200 to 600 patients at each institution. As we look at the data from different experiences, if a finding is seen on MRI and the woman goes to ultrasound and we can identify the abnormality on ultrasound and biopsy it under ultrasound, approximately 20 to 25% of those biopsies will yield a cancer diagnosis. Of the women biopsied by MRI with no ultrasound finding, the percent of cancers found on biopsy is even smaller being reported between 11 and 15%. Again, I am going to emphasize, these studies are quite small, so we need to continue to work with a number of institutions to look at the experience and to follow these women and see where this is going to be useful. I think at this point I would like to open it up for questions. I hope this has given you some good background and we can entertain questions related to these imaging modalities.

Operator: *Thank you. We will now begin the question and answer session. Our first question comes from Connie from North Dakota. Please go ahead.*

Connie: **Good evening Dr. Wolfman. I have a question, I am one of those people that falls in the category where the tumor was not detected by mammogram which I had put all of my faith in on a yearly basis. Can you explain to me why a situation arises and when we do put so much emphasis on the mammogram and it is a situation where it is not detected and an ultrasound did pick it up, do you just fall into that category that you are one of those people that it does not show up on the mammogram and it is kind of a fluke**

thing or how does that actually – you know what kind of confidence do you put back into mammograms?

Dr. Judith Wolfman: This is a question I face almost every day. When you said it was detected on ultrasound, was the ultrasound done because you felt the mass?

Connie: **Correct. I had been in six months prior, had my annual mammogram, nothing was detected, I did a self breast exam about six months later and found a hard lump. I went into my doctor and they did another mammogram, nothing showed up and so they did an ultrasound and I had a tumor the size of a large egg, small lemon.**

Dr. Judith Wolfman: Part of the reason some cancers do not show on the mammogram is that their pattern of growth is one that the cells kind of infiltrate the tissue, but do not grow in the manner of, let me try and describe it this way, we think of cancers as growing almost like you were winding a ball of yarn, you start out with a few strands of yarn and as you continue to wind that in a ball tightly you will see this round mass. If you took that same quantity of yarn and just kind of loosely piled it intermixed with the air and the yarn, some tumors, the tumor cells will kind of spread mixed between the normal breast tissue and the fat and so we do not see it discreetly on a mammogram. Does that make sense to you?

Connie: **Yes, yes. They have tried to explain that to me as I go, it is just that your face gets shaken on a test that we are all running to get.**

Dr. Judith Wolfman: It certainly does. The other element and not knowing what your mammograms look like, when we talk about breast density on a mammogram, cancer is of glandular density and if you have mostly glandular density and no fatty density or a relatively small amount of fatty density on the mammogram, then many times it is hard to distinguish what might be a tumor from what is the normal glandular tissue. The way we would equate that again is if you take that yarn and that pile of yarn and you compress it and there is no looseness or intermix of air, all you would see is the uniformity of the color of the yarn. If there was yarn and air intermixed then you would see the strands of yarn separated from the fat or the air in this case. So that is to kind of put it in a simplified way. Not all tumors follow the same growth pattern and so you may truly have had a negative mammogram six months before. Had they done an ultrasound looking, you might have even had a negative ultrasound because if there was not a volume of tumor and depending on the tumor growth rate, it may not have even been seen on an ultrasound at that time. Is the radiologist doing this for more than 20 years? As I said, this question comes up frequently and it is the most humbling thing for any of us who do breast imaging because our goal is to try and find the abnormality. Now do you give up having mammograms? We would say no because you are still at risk for developing another cancer. Having said that, you are at a greater percent chance of never having another cancer. But your cancer, if you were to develop another cancer in the future, it may not manifest the same way that it did with your first one. So I think you need to talk with your physicians about which modalities you should be followed with. I think a mammogram is something that should be done on an annual basis, whether your physicians think that you should be followed also with an ultrasound may be a reasonable approach, and then balancing is MRI something to be considered.

Whenever I bring up MRI though, you need to be aware that it needs to be done with an appropriate technique by an experienced imager and with a scanner that has high sensitivity for breast and not just the corner MRI facility and so sometimes that makes it difficult for someone. Lastly, it still remains an insurance issue for many women. Insurance companies do not pay for MRI in many cases. As I said earlier, I do not like to attach financial costs to decision making in what I think might be helpful, on the other hand, we do have to be fiscally responsible and certainly not push for things that may or may not have benefit for the individual, but could be of some financial burden.

Connie: Thank you very much.

Operator: *Our next question comes from Marilyn from New York. Please go ahead.*

Marilyn: **I just feel that my cancer had started from massive exposures to radiation during my teen years when my breasts were developing and I would like to know if there are any means for someone, I have steel rods in my spine, cannot have MRI, and I would like to stay away from radiation. I was wondering if you could speak to thermal imaging or any other forms that might be appropriate for someone.**

Dr. Judith Wolfman: Hi Marilyn. Thermal imaging is something that has been looked at, re-looked at, it seems to cycle over the last 30 years. Thermal imaging alone is not an approved screening imaging study at this time. It carries with it both false positives and false negatives. Again, it is based on heat admission which basically reflects vascularity and certainly to the best we know is not as sensitive

for detecting duct carcinoma in situ which for many women is the earliest stage that you can identify breast cancer.

Marilyn: **I do have an extensive in situ factor bilaterally, but it is just being left untreated.**

Dr. Judith Wolfman: So I would not, at this point, I would not recommend thermal imaging as the only screening study. In addressing the exposure factor, mammograms today, doing a two view mammogram is really a very small radiation exposure. I think you need to make sure that you are getting your images done consistently by a quality facility and that they are not necessarily taking multiple images unless there is an indication to do that. We all know that as imagers when we have a woman who has had a previous breast cancer, any little change certainly raises our antennae and we are going to image closely. Whether the combination of a two view mammogram to look for the changes related to micro calcifications and doing a limited mammogram and then combined with ultrasound, might be a consideration. But I do not think you should have a lot of fears about the small exposure. A mammogram exposure is far less than what is used for spine x-rays because you have to use a higher exposure to penetrate bone.

Connie: All right, thank you.

Operator: *Our next question comes from Karen from Washington. Please go ahead.*

Karen: **This may not be appropriate since you have not addressed this issue, but would you feel appropriate to speak on breast specific gamma imaging?**

Dr. Judith Wolfman: Karen, are you asking about the use of PET or Sestamibi scanning?

Karen: **Well not PET as far as I know. This was a unit that was purchased by a hospital in a small town and I have not seen it or been in it, but I just wanted to know what you have to say on this as a detection tool?**

Dr. Judith Wolfman: Right. There have been studies looking at a radionuclide agent called Techny Sestamibi It goes to cancers of the breast and it is imaged by using a radio nuclear camera so that the patient is given an injection of the radioisotope and then the breast tissue is imaged. This is evolving. We do not in the early or initial studies it was helpful for identifying cancers that were greater than five to ten millimeters in size, meaning the sensitivity started detecting somewhere around a quarter to a half inch in size. So the threshold for some tumors is not as good as mammography. The cost of doing these exams is quite extensive and identifying or localizing anatomically to the breast, so if you found something the problem was how do you identify or localize it to have it biopsied. So there is further work being done with this and we will see where the role comes. I think we would all like to find a tumor specific agent so that when you have a test that is positive you know that it is truly positive for breast cancer because I think that is our biggest concern right now, there is no imaging study that is 100% specific, meaning 100% of the abnormalities indicate cancer, nor is there a test out there that is 100% sensitive, meaning that it will find 100% of the cancers. So this is something that is being looked at and we are in the process of considering participating in some trials as the technology is improving.

Karen: **So there are some studies going on with this?**

Dr. Judith Wolfman: Yes. Now having said that there is a commercially available product that is FDA approved and woman can get a gen off study, but I would not recommend doing it in place of a mammogram and I again would encourage that women who are looking at having this done question the facility and their experience with it and then lastly, the insurance reimbursement on it.

Karen: Thank you.

Operator: *Our next question comes from Mary from Illinois. Please go ahead.*

Mary: **Yes, hi. My question would be actually that my niece is (inaudible) and we are a family ourselves, my sister is on the other end also listening, we both had breast cancer and it did not get seen in the mammograms and mine was not also seen in an ultrasound, but was felt, and we have three other people in our family also that have just gone through all of the breast cancer and some maybe ten years ago to fifteen years ago. So my daughter now is being put into a category of high risk. We are just curious how you feel about having because now she is going to a regular breast surgeon because she is going to be 35 and I had it ten years before, they say you start, your daughters should do it ten years from the time that you were first diagnosed, am I correct on that?**

Dr. Judith Wolfman: Correct.

Mary: **For her to do a mammogram?**

Dr. Judith Wolfman: Yes.

Mary: **So because she is high risk they want to do both. The first part of the year they do a mammogram and then the second part of the year they do an MRI to compare the two and what do you think of that process?**

Dr. Judith Wolfman: That has been a recent proposed way of imaging women like your…I am sorry you said it was your daughter or your niece?

Mary: **Well actually my niece also had over six years ago breast cancer.**

Dr. Judith Wolfman: When we see families like yours where there is statistically an increased risk, and I think that that is probably a reasonable approach. We are starting to do that with some of our patients. Our preference is when we do the first baseline study is to have both the MRI and the mammogram at the same time so that we can correlate those two, but then as we move on in time to alternate them and then if one study shows something abnormal you can go back and you might add another imaging study to find out why something changed or developed. So yes, this is something that has been proposed, it is not what we would call standard of care at this time. I think again many of our patients have had some frustration of getting insurance coverage for the MRI.

Mary: **Well that part I was thinking no matter what, I mean if your car needed brakes or a new engine, if they said no, you would say well and in our case**

here, you could probably just say well just couldn't you, go ahead and do it and we will pay for it.

Dr. Judith Wolfman: And that is fine and I understand that approach. I think we all have the right after paying our insurance premiums to try and get the insurance companies to cover it, so it sounds like your family is being followed in a high risk setting, that she is seen. I would ask the staff there to try and help find out or to see if there is anything that they can do or write the order in a way that her insurance may consider paying for it.

Mary: **That is what we are hoping.**

Dr. Judith Wolfman: Ask first. I am not saying do not do the exam because your insurance will not pay for it, but I do encourage our patients to ask the insurance companies first, you have no negotiating ability after.

Mary: **I see what you mean and one little quick question also is now the first time it was on my left side and then the second time it was on my right, it came back. Now I had a double mastectomy and now because the last tumor was seven years ago or so was near the chest wall very close and now I am wondering, for people that have had both breasts removed, should they be having any type of testing on their chest at all, CT's or anything, what do you regard in case it is, I mean you always feel yourself and stuff, but there is no more breast there, but you are thinking to yourself should there be something done every so often, a CT?**

Dr. Judith Wolfman: And you have not had reconstructions?

Mary: No.

Dr. Judith Wolfman: I think that there is nothing that I am aware of that has been proposed for imaging of the chest wall as a screening.

Mary: I see.

Dr. Judith Wolfman: I think again it is very important that you continue to have good follow up with your physician and that they are examining your chest wall. I think that certainly it sounds like you are doing it as you need to do it and it keeps life in balance.

Mary: **No I know, but it has been actually like almost eight years since the second time it came back and I am on the Femara now.**

Dr. Judith Wolfman: There is always that concern.

Mary: **Then we worry about my sister who cannot go on it, but she does her thing with the mammograms. But with that high of a rate also with her, I think she is one of those maybe that should she have both every time she goes?**

Dr. Judith Wolfman: I think she really needs to talk with her physician and needs to look at the exams she has had.

Mary: Okay.

Dr. Judith Wolfman: I wish you well.

Arline: **I hope we can do another question, but here's a quick one. Since you just talked about imaging a mastectomy without reconstruction, is there anything that you recommend, if someone has had reconstruction?**

Dr. Judith Wolfman: Depending on the type of reconstruction, imaging, again, there is no standard for imaging with reconstruction. Certainly we all agree that a woman who is having symptoms of the reconstructed breast should discuss it with her physician and they can discuss it with the radiologist for what the appropriate imaging might be. It differs between women who have implant reconstruction, it is very difficult to get satisfactory imaging or mammography anyway when their implants and implant is present. For women who have had a tissue flap done, mammography may be helpful. We really tailor the exams depending on the type of reconstruction and if the woman is having symptoms. There have been some discussions in the literature of doing routine imaging of a reconstructed breast that has been reconstructed such as with the trans flap or tissue flap reconstruction. Finding anything abnormal is relatively low probability, so again, not a lot of good data. There is a single institution study that came out with their experience suggesting that it may be helpful. From my own experience, when I have found something on imaging the reconstructed breast, most times it is superficial under the skin and we could find it by the patient. Having said that, if a woman has symptoms deep near her chest wall, a mammogram is not going to show that. So when it comes to testing wall deep to a reconstruction, MRI is probably the best imaging modality that we have at this time. So the women that

I see getting MRI's are being evaluated for screening of the other breast because they are at risk for recurrence in the other breast. I emphasize for most women the likelihood of them not having a cancer is far greater than developing a new cancer in the other breast, but MRI might be helpful and when we look at the remaining breast we also image an MRI of the reconstructed breast. But there is no standard recommendation that I am aware of at this point.

Arline: **I did promise to one last question and I hope it will be a quick one, so let us do one more question.**

Operator: *Janine from North Carolina is on. Please go ahead.*

Janine: **I was a participant in the women's health initiative study and found out that I was on the hormone replacement therapy. During that time I developed a cancer that under biopsy was 0.5 millimeters invasive ductal cancer. There is absolutely no follow up from the women's initiative on the women's new developed cancer. So I had brachyradiation from Dr. Robert Tuski* at the University of Madison, Wisconsin which was completed it will be four years in March. My radiologist here in North Carolina is recommending PET scans and breast MRI's. Is that a good follow up with having invasive ductal at such a small size unpalatable by anybody?**

Dr. Judith Wolfman: To my knowledge I do not know of routine screenings with PET scanning. They at the institution, your physicians they may be doing some work with this and I would simply ask them about it. Certainly you are fortunate, I know no one likes to get the diagnosis of breast cancer, but a 0.5 millimeters to have it identified,

excised and treated certainly should have an excellent outcome. So again, I cannot tell you specifically. I think MRI we certainly are finding is helpful in women that are at increased risk and have dense breast patterns on mammography. So I think you need to discuss it with your physician. I would ask about studies regarding PET for follow up because I am not aware of any large volume studies where this is being used or being used in the clinical setting and again, balancing it. So at this point I certainly would continue with your mammograms and consider breast MRI. I would talk with your physician as to why they think there may be some benefit with PET.

Janine: **Okay and one additional question. How do you access these studies and become part of them?**

Dr. Judith Wolfman: You can go through the NCI website. The ACRON study that are sponsored through the American College of Radiology, there is a website which is ACR.org which through their link you can link to ACRON, but I know that those are also accessible through the NCI website and there may be others.

Janine: Thank you.

Arline Kallick: I would like to thank Dr. Wolfman now for the wonderful program we had this evening. You covered everything very clearly and gave us a lot of information and I hope everyone comes away from our program with a clear view of all of the breast imaging techniques there are and I thank you so much. We all thank you.