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A Closer Look at Thyroid Ultrasound

ADVANCES IN MEDICAL IMAGING

You are listening to ReachMD, The Channel for Medical Professionals. Welcome to Advances In Medical Imaging, a program discussing the latest innovations in clinical radiology and imaging technologies. Your host is Dr. Beverly Hashimoto, ultrasound section head of Virginia Mason Medical Center in Seattle, Washington.

Thyroid ultrasound has become extremely sensitive. From now, we can detect nodules only a few millimeters in size. Since about 10% of these nodules can be cancerous this technology seems like a good trend. However, is this technology leading to over treating the disease? So this leads us to the topic thyroid ultrasound, boom or burst? Welcome to advances in medical imaging. I am Dr. Beverly Hashimoto, your host and with me today is Dr. John J. Cronan. Dr. Cronan is professor and chairman of the Department Of Radiology at Rhode Island Hospital and Brown University Medical School, Providence, Rhode Island. Today, we are discussing the medical implications of thyroid ultrasound.

BEVERLY HASHIMOTO, MD.

Thank you, Dr. Cronan for speaking with us today.

JOHN J. CRONAN, M.D., FACR.

You are welcome.

BEVERLY HASHIMOTO, MD.

You had a wonderful editorial article in the journal Radiology, reviewing a study about thyroid nodules and I have seen a great increase in thyroid nodules in my laboratory. Is this increase a national trend?

JOHN J. CRONAN, M.D., FACR.

Beverly, it's absolutely a trend that everyone is seeing. I think most of us who perform ultrasound encountered a few thyroid ultrasounds a week approximately 10 years ago and now it has become a major element in our practice and not just the performance of the

ultrasound for screening or looking for nodules, but the whole level of biopsying nodules has been created and would billings so that it occupies almost a third of my ultrasound practice now versus as I said 10 or 15 years ago were it probably would not even be 5%.

BEVERLY HASHIMOTO, MD.

Well, is this because of improvement in technology or is there a change in the prevalence of the disease?

JOHN J. CRONAN, M.D., FACR.

No. I do not think the prevalence has changed at all. If you look at when the increase in the detection of thyroid nodules occurred, it is pretty much synchronous with the utilization of ultrasound to screen the thyroid and there was a wonderful article by Davis and Welch in JAMA in 2007 and they had looked at the increasing incidences of thyroid cancer in the United States in 1973 to 2002 and they were startled by the incidence changing from 3.6 per 100,000 in 1973 to 8.7 per 100,000 in 2002. In the most recent numbers which I was just able to get a hold of in the last week or two show its now 12.5 per 100,000. So we have gone from 3.6 to 12.5. Now you might initially say, well may be this has been some epidemic. The only epidemic is the use of technology. These nodules were there before, but they were only diagnosed pre-ultrasound by palpation and by putting the ultrasound transducer on the patient we are detecting nodules below the size of palpation. In the article by Davis and Welch, they showed that the entire increase in the incidence of thyroid cancer in Unites States was due to papillary cancers and due to cancer detection of nodules below 2 cm, i.e. below the detection level of the physical examination. So it's a disease incidence and prevalence that we have created by turning on the ultrasound machines and finding this and then preceding to biopsy and treat these, we have never even addressed the issue. Are we doing any good here or are we creating more harm?

BEVERLY HASHIMOTO, MD.

Well. Now you specifically differentiated this treatment of palpable thyroid nodules from nonpalpable. Is there a difference in the way these nodules should be treated?

DR. JOHN J. CRONAN, M.D., FACR.

That's a very good question, but I sort of stick to the point that if you're taking the differentiated thyroid cancer, the papillary, it is so ubiquitous in the population that previously before ultrasound it was never found until it was palpated and in that incidence, we still had a disease, which is absolutely well controlled dealing with 30 years survival of approximately 95-98%. It has an extraordinarily good prognosis so why would you get more aggressive for this and try to go after all the smaller nonpalpable lesions and I think we have done it because we can. Because we have ultrasound we can look. There are many studies which is questioned whether even thyroid nodules are almost part of the normal life cycle, I mean its studies that have shown that 50% to 60% of people have a thyroid nodule and a very famous study published in cancer in 1985 talked about the incidence of thyroid cancer incidentally detected in thyroids and they took a group of young patients who had expired mainly because of trauma and they sectioned the thyroid glands to 2-3 mm and out of 100 patients they found 36 micropapillary carcinomas. These are the same nodules we referred to early as the 2 and 3 mm nodule which are now attacking. In the article by Manning Harris in cancer in 1985 raised the issue is this a "normal finding" in a population and that is cancer not even nodules and the point people have made since then, if you would have sectioned the thyroid more finely than 2-3 mm, would you have found more than 36% of this population. So, I have been contesting that we are just looking for trouble here. Papillary cancers have manifested themselves well by palpation, treated absolutely well, extraordinarily survival levels. I mean other than skin cancers no other cancer has a higher survivability rate. Much about confusion in the history about thyroid cancers comes because anaplastic thyroid cancer is a thyroid cancer, but is very very rare and we know that has a very very bad prognosis, but the cases of the deaths per year in United States, almost 70% of the deaths from thyroid cancer in United States are due to anaplastic cancer and they are almost uniformly <_____> within the year. So papillaries don't kill people. They're annoying and finding them has

never been proven that by just operating and getting involved with them you can improve the prognosis <_____>. There was a fascinating article by <_____> who took a series a patients from Japan and he was able to get a 160 patients with papillary thyroid cancer less than 1 cm in size biopsy proven and they agreed not to be operated on and he followed them for 5 years and he had a similar group of patients who were operated on and he followed them for 5 years and what you think he found? Well it is shocking, 70% of the lesions that he had known was thyroid cancer, papillary thyroid cancer actually stayed the same or got smaller. Only 1% of the patients actually developed any cervical lymph nodes and the group of patients that had been operated on, say they had a thyroidectomy performed, 5% of those patients subsequently had to go back because they developed lymph nodes. So, the patients who were ignored, in the polite way of putting it, did much better in the small micropapillary cancers and that is the kind of information we need to do on the bigger study because right now there is a hysteria attacking the tsunami of thyroid nodules and we have got clinicians thinking it's a biggest healthcare epidemic sweeping the country and calling up asking us can't you get the patient in sooner for a biopsy, I mean reschedule patients out approximately a week. We have clinicians sometimes calling us saying the patient is so nervous, can't you get him in today or tomorrow and I don't think we are doing a service to anybody.

BEVERLY HASHIMOTO, MD

Well, that's is extremely interesting and certainly similar to my experience.

For those of you who are just joining us, you're listening to Advances In Medical Imaging on ReachMD, The Channel for Medical Professionals. I am Dr. Beverly Hashimoto and I am speaking with Dr. John Cronan, professor and chairman of Radiology at Brown University Medical School and we're discussing the medical implications of thyroid ultrasound.

So John, now looking at your discussion, then is having better equipment improving our ability to detect thyroid cancer?

DR. JOHN J. CRONAN, M.D., FACR.

Beverly, I think that's one of the problems. Both of us are old enough to remember when a 10 MHz rtransducer was like the highest frequency you could possibly have and now we have 16 MHz transducers which you can routinely use. They allow much better detection and the idea and routine study of seeing several 2 mm nodes in the thyroid is almost a daily occurrence. Something that was impossible to see only, I think, 5 or 6 years ago. So the technology is allowing us to see smaller nodules and creating the same issues because the clinicians and the patients do not understand that why he had a particular size level and not get involved. I think people make the association with breast carcinoma and mammography. A screening in the breast has clearly been proven to improve women's lives and decrease the incidence of cancer deaths. That proof has never been carried out with the thyroid.

BEVERLY HASHIMOTO, MD.

So, basically what you're saying, because I have noticed that great similarity as well because I think it is easy to confuse sonographically a lot of the signs of thyroid cancer sound actually a lot like breast cancer, that is the taller and wide the speculated margin, and so what you are saying then is that unlike breast cancer, thyroid cancer detection doesn't really improve survivorship, is that correct?

JOHN J. CRONAN, M.D., FACR.

That is correct. I think there is absolutely no proof that we have made any impact on survivorship and frankly I think we have done this service to many patients because when we get the patients in and we do the biopsy and if we find a papillary cancer at 10 mm or 11 mm

it's a binary process with the endocrine surgeon. The patient is going to have a total thyroidectomy and next thing an order to get radioiodine in their mind and now a cancer victim the patient is stuck taking a thyroid supplement everyday the rest of their life and have to come back for surveillance looking for recurrence, so it's a major impact and you would wonder if we stuck to just doing physical examination and palpation would we be better off, particularly in view of the fact that we know that from the Finland study, papillary thyroid cancer may be extraordinarily common finding in the general population.

BEVERLY HASHIMOTO, MD.

Well, now in terms of the palpable nodule then do you still see a role for ultrasound, for example those clinicians who feel a palpable nodule and decide a biopsy that way?

JOHN J. CRONAN, M.D., FACR.

Well. I think that, you know, there is a very good use to have ultrasound when you do the biopsy because the literature is replete with reports of false-negative biopsies. When you look at those articles, they're all done when the person is doing non-ultrasound guided biopsy where I think it is easy to miss even a palpable nodule. So, ultrasound is very useful when we are actually doing the biopsy, so I do think it has a role in that particular scenario.

BEVERLY HASHIMOTO, MD.

Well, thanks Dr. John Cronan, Professor and Chairman of Radiology at Brown University Medical School who hs been our guest in a very interesting discussion about the medical implications of thyroid ultrasound.

I am Dr. Beverly Hashimoto. Thank you for listening.

You have been listening to Advances In Medical Imaging. For more details on this week show or to download this segment, visit us at www.reachmd.com. Thank you for listening.