Lung Cancer Awareness Month

Guest Expert:  
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Director, Yale Cancer Center; Physician-in-Chief, Smilow Cancer Hospital at Yale-New Haven

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Welcome to Yale Cancer Center Answers with doctors Francine Foss and Anees Chagpar. Dr. Foss is a Professor of Medical Oncology and Dermatology, specializing in the treatment of lymphomas. Dr. Chagpar is Associate Professor of Surgical Oncology and Director of the Breast Center at Smilow Cancer Hospital at Yale-New Haven. If you would like to join the conversation, you can contact the doctors directly. The address is canceranswers@yale.edu and the phone number is 1888-234-4YCC. This week, in observation of lung cancer awareness month, Dr. Chagpar welcomes Dr. Tom Lynch, Director of Yale Cancer Center and Physician in Chief of Smilow Cancer Hospital at Yale-New Haven. Here is Anees Chagpar.

Chagpar Let’s start off by having you tell us a little bit about what you do within the Cancer Center and within Smilow Cancer Hospital?

Lynch I have two jobs at Yale. One of my jobs is to direct the Yale Cancer Center, which is a large complex research organization, and the second job is as physician-in-chief of Smilow Cancer Hospital where I work to create an environment and culture that delivers the very best in cancer care. Since we built and open Smilow Cancer Hospital two years ago, I think we have come a long way in being able to do that.

Chagpar You actually have yet another hat, which is as a lung cancer doctor, tell us a little bit about that?

Lynch I become involved in lung cancer as my main area of focus from a medical standpoint about 25 years ago. What really drew me into the field of lung cancer was that here you have the leading cause of cancer death in the United States, more people will die of lung cancer, in the year 2013, then will die of prostate cancer, colon cancer, lymphoma, and pancreas cancer combined. So we are talking about an enormous disease that impacts more than 220,000 Americans every year and of those we are only curing 15%. That is progress, it used to be we were curing 10% of the patients who are diagnosed with lung cancer, but we still have a long way to go to make a significant dent in the outcome from lung cancer.

Chagpar What are you doing to make that dent?

Lynch What we are doing is working on several fronts to try to get better outcomes from lung cancer. The first is recognizing that this is a disease where we know what the major cause of this cancer is, which is tobacco smoke. And efforts in society to reduce smoking have been incredibly successful in reducing the number of patients who smoke. It takes many years before changes in society smoking habits actually appear in reductions in deaths from lung cancer. The good news is if you stop smoking today, your heart disease risk will return to that of a nonsmoking population, but it does take about 20 to 30 years for your lung cancer risk to return to that of a nonsmoker or never smoker. It takes a while before we will see the benefit, but smoking rates are dramatically less

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than they were in this country 30 years ago, and we have noticed that in many parts of our society less than 20% of people smoke, which is terrific. Some of the things that have been very productive and very exciting in this area are the creation of smoke-free workplaces, that has caused a lot of people who were former smokers to quit tobacco smoking, because it was something they could not do in the workplace. So, smoke-free workplaces made a huge impact and the continuing effort to educate people who smoke about the danger of tobacco, plus some of the new drugs and pharmaceuticals to help people quit smoking make a big difference. The only thing I am concerned about on the tobacco front is we are not at 0% smoking yet, and the other issue is we still see that among young people, particularly risk taking behavior among young people who are considering smoking, that we are still seeing a substantial number of teens begin smoking. So, it is not something we can really take our eye off in terms of smoking. We do see tobacco consumption as absolutely crucial and we want to reduce the number of deaths from lung cancer, and the second big thing is even if you get rid of all tobacco we would still have 40,000 people a year who develop non-small cell lung cancer. So tobacco is just one part of the lung cancer problem, and so aside from tobacco control, the next thing is understanding the biology and the genetics of what drives lung cancer. We are making a lot of efforts and a lot of progress in that at Yale Cancer Center.

Chagpar Tell me a little bit more about how you are making that progress, because I know that as Director of Yale Cancer Center you have invested a lot in terms of genetics and genomics and your vision is that that might hold a key piece to this puzzle, tell us a little bit about that front?

Lynch I was lucky, about nine years ago now I met a patient who was able to teach me a lot about this disease. It was a young woman who had presented with lung cancer that had spread to her brain and by looking at her cancer very carefully we were able to be the first group to define something called the EGFR mutation. We found that mutations in HER cancer made HER cancer malignant and caused cancer to grow. It also gave us some hints as to drugs that could be used against cancers that had this mutation. That was the first example in lung cancer of a situation where we could find a mutation that both explained the cancer and gave us a target to go after. Since then we have identified probably another dozen mutations in lung cancer that are important in driving the cancer. We only have three mutations where we actually have drugs that can go after those. I know that in your area of work in breast cancer, you have made extraordinary input and insight into treating breast cancer driven by HER2. And in lung cancer we have made some in roads in treating EGFR mutated lung cancers and something called ALK mediated lung cancers what I think both breast cancer and lung cancer teach us is that this concept of personalizing therapy based on understanding the molecular profile becomes huge and patients increasingly will want to have their cancers sent to the laboratory and have their genome searched, breakdown the DNA within the cancers cells and look at it and find out why is that cancer being driven, what genes are

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causing that cancer to grow? At Yale Cancer Center and Smilow we are putting a lot of effort into being able to do that for patients. Your field of breast cancer has clearly led the way in molecular profiling as you have pointed out to me many times, you were doing molecular profiling of estrogen receptors and progesterone receptors 35 to 40 years ago, back way before we ever knew about the mutations in lung cancer. I think one of the reasons women with breast cancer do so much better today is because we know to look for estrogen receptors, progesterone receptors and HER2 and in lung cancer we are beginning to understand those important molecular changes.

Chagpar  Aside from smoking cessation, and for people who are smokers, and a small segment of our audience today may be sitting on the couch on this Sunday evening actually puffing on a cigarette thinking, “My gosh! Tom Lynch is telling me that I ought to quit smoking, but how do I do that?” Are there any programs or any resources that they can avail themselves of that can help?

Lynch  There are many ways to think about this. You can certainly talk to your personal doctor about smoking cessation and they can give you some hints and some resources that are available in the local community. At Yale Cancer Center and Smilow we have a quit smoking service that sees patients and offers tips on smoking cessation and also some guidance in terms of which of the multiple available drugs that are out there now can be helpful, but I think the key thing you need is motivation, and you are not surprised to hear, most patients want to stop. Most people who smoke do not want to keep smoking after a certain age and that age is usually around 25 or 26 and what we need to do as doctors is give people the tools to overcome an amazingly addictive chemical substance being nicotine, and if we can help people to get over that, we can make a big difference. Both my parents were smokers. My father was an oncologist himself and did not stop smoking until he was about 40. My mother smoked until she was 60, so I understand how powerful an addictive substance tobacco can be. The difference now is we have tools to help patients overcome nicotine and actually quit smoking and the quit smoking service at Yale is doing a terrific job.

Chagpar  So, that is one piece, trying to prevent getting the disease. The second piece that we talked about a little bit was finding the targets so that we can create the drugs that can be more effective in treating lung cancer, but the other thing that we found in breast cancer is early detection and screening. Tell me a little bit about that in lung cancer.

Lynch  As you point out, in breast cancer we have got some great examples where mammography and MRI have made a big difference in picking up early lesions that surgeons can then operate on and we can take those tumors out and women can be cured. For colorectal cancer, we have shown that colonoscopies for people over 50 have clearly been shown to reduce mortality from colorectal...
cancer and again for anyone who is listening who is over 50 who has not had their colonoscopy, sign up, have it done, it is easy, it saves lives. Now for lung cancer, for the first time two years ago, we learned that screening can actually help patients who have a history of smoking. What we learned through a big study that was published a year and half ago that looked at people who had a significant smoking history between the ages of 55 and 75, and looked at the value of low-dose CT scans, that if you had a low-dose CT done once a year for three years, we are able to reduce mortality, meaning reduce the percentage of the people who end up dying from lung cancer by 20% in the group that received screening versus the group that did not receive screening. Now, I am not saying that reduced the total mortality of those patients. It just reduced the lung cancer specific mortality of patients from screening. We believe that low dose CT screening can be helpful for the right patient. Now, should every patient be screened, every person be screened for lung cancer, no, I really believe it should be limited to patients with a heavy tobacco history. What is the right age to start screening? Again, that is controversial, the guidelines and the one study that we have would tell you that 55 is the right age, but if I had a 48-year-old patient with a super heavy smoking history, I might consider it for that patient. How often should you be screened? The data right now suggests that yearly, for three years, is the only evidence base that we have. I would suspect it will follow mammography pretty closely and yearly will probably be a recommendation, but my gut is you probably can go to every other year eventually once we have more guidelines, but for now it is yearly for three years and then we are going to need to get some additional data. The difficulty is there are not any large studies coming out soon that would necessarily change this interpretation. So, doctors and patients are going to have to make decisions for the individual patient on less than perfect data that they may have.

Chagpar

This being Lung Cancer Awareness Month, many patients are going to be hearing about lung cancer, many people who have not been diagnosed with lung cancer are going to be hearing about lung cancer. Tell us a little about how lung cancer presents, if you are a fairly heavy smoker, what symptoms should you be looking for that might prompt you to start thinking about going to see a doctor about this diagnosis?

Lynch

Dr. Chagpar, that is actually a really interesting point. Think about what you would do in breast cancer, many, many breast cancers are picked up when a woman has a mammogram that shows no abnormality. Many other breast cancers are picked up when a woman notices a lump during a breast self examination. When we think about colon cancer, it is often picked up because you develop rectal bleeding, but for lung cancer it is a much more difficult process. Often, we do not pick up lung cancers symptomatically until the cancer has grown and has gone to other sites. So, detecting lung cancer can be challenging and after the break we can talk about some of the symptoms that can come up for patients in terms of how they present with lung cancer.

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Fantastic, and with that we will take a break for a medical minute. Please stay tuned to learn more information about lung cancer with Tom Lynch.

There are over 12 million cancer survivors in the United States right now and the numbers keep growing. Completing treatment for cancer is a very exciting milestone, but cancer and its treatment can be a life changing experience. To return to normal activities and relationships may be difficult and cancer survivors face other long-term side effects of cancer including heart problems, osteoporosis, fertility issues, and an increased risk of second cancers. Resources for cancer survivors are available at federally designated comprehensive cancer centers such as Yale Cancer Center to keep cancer survivors well and focused on healthy living. This has been a medical minute brought to you as a public service by the Yale Cancer Center. More information is available at valecancercenter.org. You are listening to the WNPR Health Forum on the Connecticut Public Broadcasting Network.

Welcome back to Yale Cancer Center Answers. This is Dr. Anees Chagpar and I am joined today by my guest Dr. Tom Lynch and we are discussing lung cancer. Tom, right before the break you started to tell us a little bit about the fact that lung cancer rarely presents early, but there are some warning symptoms?

It is unlike colon or breast cancer, the vast majority of patients with lung cancer present with at least what we called regional disease, which is disease that has spread to lymph nodes and often about half of our patients present because the disease has spread outside the chest to bone or to liver or to other parts of the lung. What I tend to think of as being important is for people to look for any kind of changes in underlying breathing, so if you are someone with a chronic smoking history if your cough has changed or if there blood in the sputum in the morning when you wake up, or you become more short of breath with exertion. For most people with a smoking history who have those symptoms, it turns out it is from what we call emphysema or chronic obstructive pulmonary disease, otherwise known as COPD, those diseases cause symptoms just like that, but be sure to get a chest x-ray or CAT scan. Once you have those symptoms, there is really no way to know whether it is lung cancer or not, or whether it is worrisome for lung cancer or not. So any change in breathing, any change in phlegm production, any change in breathing when you exert yourself. Everyone notices when they walk up a flight of stairs, it is harder to breathe than when they are walking on flat ground, and for people with a smoking history, if they notice that becomes harder, we always recommend having that looked at. Sometimes pneumonia can be a good tipping point for somebody with a history of smoking. If you are a smoker and you get pneumonia, that is often a good reason to get a chest x-ray to make sure there is nothing else going on.

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Chagpar  Let's say you get that chest x-ray and there is something suspicious. What happens then?

Lynch  So once we have a chest x-ray done, usually that is followed pretty quickly with a CAT scan. As I mentioned earlier, if it happens to be pneumonia, sometimes you have to wait for the pneumonia to be treated before you can evaluate the lungs because if you have a lot of infection in the lung, treating with antibiotics first makes good sense and then you get the CAT scan to take a look and make sure there is nothing else that could be there depending upon what the chest x-ray looks like. So, the chest x-ray almost always is followed with a CAT scan if there is something suspicious. Once we have the CAT scan, then the question is, what is the best way to find out if the abnormality on the CAT scan is cancer? Generally there are two ways of doing that. One way to do that is to have a pulmonary doctor put a scope down into lungs called a bronchoscopy and you can put the scope down into the lungs to actually biopsy the abnormality through the scope. The other way is sometimes we have a radiologist using a CAT scan direct a very fine needle into the abnormality from outside the chest and take a biopsy that way, but just like in breast cancer, in lung cancer we have to have tissue to be able to know what type of lung cancer it is and what the right treatment should be.

Chagpar  So at that point in breast cancer, oftentimes as surgeon I am called in. What happens in lung cancer?

Lynch  In lung cancer at the point the surgeon is called in just like in breast cancer, meaning we want to always find out if the cancer is operable? Can the surgeon take it out? Our surgeons at Yale Cancer Center and Smilow are absolutely spectacular. The thoracic surgeons spend the vast majority of their time thinking about how can we try to give our lung cancer patients the best chance with surgery because surgery is the best way to treat lung cancer if possible, it is the way that most patients with lung cancer are cured, they have had surgery as part of their treatment. When a surgeon looks at a patient with lung cancer, there are two key questions, the first is can I technically get the cancer out without causing a significant problem, and the second problem is if I take the lung to get the cancer out, will I leave the patient with enough lung to be able to breathe okay? For people who have not smoked, almost always the second question is yes because they have enough lung reserve. So for the nonsmokers, the surgeon really has to ask can I get the cancer technically out while not affecting the heart or other structures? For smokers, it is not so clear because if you have somebody who has got marginal lung function and has a lung cancer, sometimes taking out even half of the lung would be too much and the patient will be left unable to breathe. So those are the real big questions. The other big question a surgeon asks along with the medical oncologist and pulmonary doctor is has the cancer spread outside the lung? Has it gone to the bones, the brain, the liver, adrenal glands, other parts of the body, and that is a really important.
process and for that we usually get what is called a PET scan and then an MRI. The PET scan lights up any areas of the body where cancer can be present, and the MRI of the brain looks specifically at the brain. We know that lung cancer, like breast cancer, goes to the brain. Breast cancer tends to go to brain later in the course of a woman’s disease and I would imagine as a breast surgeon not many of your patient’s at diagnosis have brain metastases, but for our thoracic surgical colleagues, we do see that even early with lung cancer, so that is always an important thing to look at. I think one things I am giving a plug for is the importance of multidisciplinary care, that as a medical oncologist I do not want to see a patient without a thoracic surgeon to help me make that decision as to whether or not we should operate. And I know the thoracic surgeons benefit from the pulmonary doctor, the medical oncologist and our radiation oncology colleagues because sometime adding radiation either before or after surgery can make a big difference for patients.

Chagpar And so, regardless of whether or not the tumor is resectable, then what happens?

Lynch If it is resectable, they have surgery and after surgery sometimes we give chemotherapy to try to increase the chances that the cancer never comes back. Sometimes we give radiation to increase the chance that the cancer never comes back. That is the most hopeful way to go if we find that it is operable. If the cancer is not operable and you can’t remove it surgically then sometimes we use a combination of chemotherapy and radiation and yes we can still get some cure of patient’s with just chemotherapy and radiation, but it is a much tougher treatment than surgery. For those patient's where we find it has spread outside the lung, that is when we have to talk about treatments for what we call metastatic lung cancer or stage IV lung cancer. If you look at breast cancer, the disease you treat, 5% of women might present with metastatic breast cancer where breast cancer has spread to the liver and the bones, whereas with lung cancer 50% present with metastatic cancer to the bones, adrenal gland, liver, and in places that make it not curable. Once it spreads to those areas in lung cancer it is usually not curable, now what does cure mean, cure means something we can get rid of forever. Treatable though is different and I think that metastatic lung cancer is treatable and for many of our patient's we are able to actually get survivals measured in years, several years. For others, despite our best efforts we are not able to do that and so that becomes an important distinction, has this cancer spread outside the area where radiation surgery can be of help? And if it has spread to those areas, that is where a medical oncologist sits down with the patient, looks at the molecular profiles that we talked about earlier, the molecular profile is so important and decides upon the right path for the patient based on what the molecular profile shows.

Chagpar There is a very interesting intersection between being a lung cancer doctor who treats patients, but also being a scientist. Tell me where you see cancer care and cancer research going in the next 10 to 15 years?

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Dr. Chagpar, I think one of the real key challenges for us is how do we get scientists and doctors to speak the same language? Both of us are clinicians and both of us spend a lot of time hanging around scientists. Yet, I would argue that we struggle sometimes to talk their language, the scientist's language and scientists struggle to talk our language as clinicians, and yet if we are going to make substantial breakthroughs in cancer treatment, we have got to learn to talk each other's language and that is one of the things I am so proud of that we have done at Yale, I think better than most places, which is to really bring our scientific colleagues and our clinical colleagues together in forums that lead to exchange of ideas. There are things that are happening in laboratories at Yale that are absolutely extraordinary. They are giving us brand new insights into how cancer cells work and how cancer cells signal and we are getting those insights out to the clinical arena at Smilow Cancer Hospital. Two good examples, under the leadership of Mario Sznol and Harriet Kluger, the group that takes care of melanoma patients at Yale, is working very carefully with Ruth Halaban and Yossi Schlessinger, who are prominent Yale scientists, to understand the genetics of melanoma and understand what treatments we can offer melanoma patients. In lung cancer, Dr. Roy Herbst who is our Chief of Medical Oncology has put together a terrific group along with Dr. Frank Detterbeck from the surgical division and Dr. David Rimm from pathology and some prominent scientists in the area of immunology like Dr. Chen to understand how the body's immune system recognizes lung cancers, or does not recognize lung cancers. So that interface between science and clinical care is going to be enormously important in the next 5 to 10 years and at the same time that happens, real time molecular profiling will come of age and as I mentioned earlier, breast cancer has led the way in this area in that we now routinely look for five to six different genes on most breast cancer patients who come here. I think in five years every cancer patient will have their entire exome sequenced and we'll be dealing with the information on all 21,000 coding genes. As you know, of these 21,000 genes we do not know what 13,000 or 14,000 of them do in any great degree. So there is a lot more work that needs to be done on the science side to get to understand what these things do so we can come up with treatments, but I think that knowledge base has the potential of transformed cancer care as we move forward.

One of the questions that I think is begging to be asked, and is a little political, but I am going to ask it anyways is, as you are on the threshold of making these huge advances and the NIH has budgets that are being capped, how is that going to affect your ability and the scientists who work for you to really move cancer care forward?

It’s a great question and there is a segment that Anderson Cooper does on his show called, “What keeps you up at night?” And I think if you ask me or any other Cancer Center Director what keeps them up at night, it is the concept that we are at a time in our lives where we have the ability to briefly understand the biology of cancer, and not only cancer, but many other diseases and the

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budget for the NIH and the National Cancer Institute has been dead flat, in fact not only flat it has been declining for the past two years. So that is frustrating to me that we have the tools to really make advances in health and as a society we have chosen not to fund cancer research or health research at the level that we had been doing previously, and I think what makes it even more of a shame, is it is a terrific American success story. The United States leads the world in scientific innovation and leads the world in scientific research and that lead will be lost by continuing to flat fund the NCI and NIH, and that is true for democrats or republicans. This is not a partisan issue, it used to be that healthcare and cancer were bipartisan issues and we have found that neither party right now has chosen to make funding the National Cancer Institute or the NIH a number one priority in terms of how to advance government intervention in that area, so I worry a lot about that. The question then becomes understanding that the republicans or democrats are not going to rescue us from the funding difficulties in Washington. How do we make advances with that? Well, if you’ve got reducing resources in terms of finances, you have got to find ways of diversifying, getting other types of people involved and you will see in your field particularly advocacy and groups like Susan Komen and groups that are raising money for breast cancer research have begun to make a huge impact in that disease. The Multiple Myeloma Foundation has made a huge impact and so I think people need to understand that help is not going to come from the government, it has got to come from private citizens and the people who have been affected by cancers to get involved in the effort, be it cancer, rheumatoid arthritis, or Alzheimer’s disease, and to become actively involved in trying to help fund those areas. I think that is going to be important as we go forward.

Chagpar I agree. We have spent a lot of time today talking about lung cancer. We have a talked a little bit about research, but we really have not given a whole lot of time to your third hat as physician and chief of Smilow Cancer Hospital. Tell us about that role?

Lynch As I have gone through my career, I have realized that the most important thing you can do is remember when a patient walks in that it is a life changing experience for them and to be cognizant of what that means for that patient, and to make sure we do everything to reach out and touch that family and make things go as smooth as we can for that family and make sure we meet all of their needs. Not just looking at patients as tumors or gene profiles or molecular profiles, but to really understand that it is a mom or a dad, a husband or wife that has this illness and we need to support the entire family in this process.

Dr. Tom Lynch is Director of Yale Cancer Center and Physician-in-Chief of Smilow Cancer Hospital at Yale-New Haven. If you have questions or would like to add your comments, visit yalecancercenter.org where you can also get the podcast and find written transcripts of past programs. You are listening to the WNPR Health Forum on the Connecticut Public Broadcasting Network.