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00:00.000 --> 00:13.000 Support for Yale Cancer Answers comes from AstraZeneca, committed to pioneering the next generation of innovative lung cancer treatments. Learn more at astrazeneca-us.com.

00:13.000 --> 00:42.100 Welcome to Yale Cancer Answers with doctors Anees Chagpar and Steven Gore. Yale Cancer Answers features the latest information on cancer care by welcoming oncologists and specialists who are on the forefront of the battle to fight cancer. This week, it is a conversation about lung cancer screening with Dr. Isabel Cortopassi. Dr. Cortopassi is Section Chief for Thoracic Imaging at Yale School of Medicine, where Dr. Chagpar is a Professor of Surgery.

00:42.100 --> 00:46.800 <vChagpar>Isabel, maybe you can start off by telling us a little bit about what exactly you do.

00:46.800 --> 02:07.100 <vCortopassi>As a thoracic radiologist, we are involved in the care of patients that have lung disease, including lung cancer as well. And, imaging has evolved a lot and we always have new techniques that we need to be up-to-date on. As a radiologist, we are not only involved in the scanning part of the process, but before the scan happens, we have to do the appropriate protocol and tell the technician what to do for each patient because the scan is tailored for the individual. We also make sure that the scan is done appropriately in terms of radiation exposure. If the patient is contrast or not. So, you are not getting anything you do not need and you are not short of anything as well. And then, after the images are acquired, we look at them and we interpret them and decide what we think we see and what does it mean. And we provide recommendations on what should be done next. We also participate in the tumor board of the Smilow Tumor Board with all cancers. So, every specialized radiologist joins the group, and we go to the thoracic oncology group.

02:07.100 --> 02:53.000 <vChagpar>Just to pick up on a couple of points that you made there, I think a lot of patients and a lot of people in general might not realize how involved the thoracic radiologist is in the care of lung patients. For example, you may think, my doctor ordered a chest x-ray, I went and I got a chest x-ray or chest CT and the radiologist read it and that is it. Tell us more about how you really tailor care in terms of the diagnostic approach for patients with lung disease. Because many people may think, you know a chest x-ray is a chest x-ray and a CT scan is a CT scan but are there differences?

02:53.000 --> 04:11.700 <vCortopassi> Yes, we have different imaging modalities. And for each body part you have specific modalities, but in terms of the lung itself, you can image it with radiographs or with CAT scan or CTs and the main difference is how much you see. So, there are pros and cons. With chest radiograph, you do not see as much detail of the lung parenchyma, but the radiation exposure is much less than a CT scan. Having said that, the CT scanners have evolved. Radiology is interconnected with technology and as we evolve in the technology area, the scanners are faster and they can be done with

much less radiation. In the old days, it used to be the equivalent of 1 chest CT would be 100 chest radiographs, but now it is only 10. So, a tenth of the dosage that it used to be. Having said that, we have to be actively involved in that. So, not every CT scanner is the same and at Yale, we try to provide the lowest possible radiation and we are constantly working with the physicists on the scanners to make sure the patients are not exposed to more than they should.

04:11.700 --> 04:38.400 <vChagpar>And are there different ways of scanning patients with CT? For example, there may be particular protocols if you are looking for a blood clot in the lung versus particular protocols if you are looking for a cancer in the lung? Tell us more about the nuances that you use in terms of figuring out what kind of CT because not all CTs are the same, is that right?

04:38.400 --> 05:44.700 <vCortopassi>Exactly, correct. And that is what we call protocalling, that is the role of the radiologist before the exam happens. We have a list of all the tests that are ordered and we go one by one and we look at the history of the patient and what needs to be answered. If they are looking for a blood clot, you want to do a CTA with the timing of contrast in the pulmonary artery. So, it is different than if you are looking for a screening for lung cancer, you do not need contrast, and if you do not need contrast, you are not going to give it because anything you may provide or give to the patient as a medication has side effects. So, we tailor contrast, no contrast, the dosage that you are going to do. If it is a screening, we do very low dose because you are looking just for early cancers, malignancies. If it is staging a patient that has known cancer and you want to know the extent of the disease, you need contrast and you need more extensive imaging of the whole chest and abdomen. So, that is how we tailor the scan itself to the patient's question of disease.

05:44.700 --> 05:56.500 <vChagpar>And so, what people may not know is that, your radiologist is very much involved in actually picking the right test for you based on your presumed diagnosis or the question that they are trying to answer.

05:56.500 --> 06:10.400 <vCortopassi>Exactly, and we are in direct contact with the referring physicians, they always call us and we always advise them to call us if they have a question about which kind of CT to order because there are different kinds of CAT scans that you can do.

06:10.400 --> 07:09.500 <vChagpar>And then, once you have the images and you look at them, how can you tell because a lot of people, you look at a scan and you say there is something there. But how can we know whether that something is a high likelihood to be a cancer or at low likelihood to be a cancer? I know that in my field, in breast, people often get really kerfuffled about the lexicon that the radiologist will use. So, sometimes they will say something is suspicious or highly suspicious, sometimes they will say something is normal or benign and the one that they hate the most is the probably benign. So, tell us a little bit about how you as a radiologist can look at something, a mass, a calcification or something and know or have a degree of suspicion that this is

something good or is this something bad?

07:09.500 --> 08:25.200 <vCortopassi>I think what some people may not understand as well is that not every radiologist is the same. I think being specialized on something is very important because you see a lot of that disease and you see the follow up of it and then you learn. Even to be a thoracic radiologist, you have to do a year of fellowship after you finish your residency. If you are doing abdomen, it is a year of abdomen. So, not every radiologist is the same. In a practice, you want to be seen by a specialized radiologist, by a thoracic radiologist. And we look at features of the abnormality. Even if you have the word nodule, not every nodule is the same, you look at the borders, how it looks around it, the density, how white it is on the image. If there are other features in the image, if that patient smokes they may have lung emphysema and holes in his lungs, all those things we put together and we also look at the patient's history and medical record to see the exposure he has had, how much pack years he has smoked and the notes from the symptoms from the physician that is referring the patient. So, a lot goes into it. It is not just how it looks, but there are several features and the background.

08:25.200 --> 08:47.300 <vChagpar>So, it is a little bit like being a bit of detective. You look at all of the clues that are there, you look at the images and then you put it together with the context and then you add in your experience, which for a specialized radiologist is significant. And then you are able to kind of give the clinicians an idea of how suspicious you are.

08:47.300 --> 09:25.500 <vCortopassi>And then you go into a range. I mean, we are not doing a biopsy to know definitely what it is, but some things really look like cancer and some things really look benign and you can be very definite on those, and unfortunately, there will be those cases that you are in between and what helps most actually are prior exams and some patients have CAT scans in other institutions that we do not have access to and we may need to look at those before we come to a conclusion because the behavior of the lesion over time also tells us a lot about it.

09:25.500 --> 10:16.600 <vChagpar> Right. It is just part of that story that the detectives are putting together. And I think that is a really good point for people to keep in mind, you know we often ask patients, please bring your films or have your films sent and people may wonder why that is, but it is really so that we have all of the information we need so that our radiologist can really help to make that diagnosis. So, now I understand that in radiology, there are times when you are doing tests for screening and there are times when you are doing tests for diagnosis or where you know a particular abnormality exists and you are working that up. Tell us a little bit about the differences between those two kind of mindsets.

10:16.600 --> 11:20.000 <vCortopassi>So, even the modality would change. So, when you are screening, I am talking about lung alone, when you are screening for lung cancer, you want to find little nodules. So, you can do that with a

very low-dose CT and no contrast. When you have a patient that has a known abnormality, so for example, the patient had a chest radiograph and they saw a mass and now they want to know what it is, that is different. The first one, you are looking for something, yes or no. Now, we have to characterize it. Then, you can even go into the MRI scanner to get that better characterization. If it is in the lung, we usually give contrast and you are looking to see how vascular something is and what are the contents of it, and you are not just looking if there or not, but you are actually analyzing its internal contents to see what it is. And MRI has very good contrast. So, if you have a mass in the middle of your lungs, in the mediastinum, MRI is the best to look at that and see what is causing the surrounding structure as well.

11:20.000 --> 11:50.200 <vChagpar>I want to take both of those branches of the tree and talk about them in turn. In many cancers, we talk about screening as being a great way to try to find cancer as early as possible when it is most treatable. Tell us about lung cancer screening, who is eligible for it and what exactly is it? You talked a little bit about a low-dose CT, but how frequently, who gets it, what is it like. Tell us a bit more.

11:50.200 --> 13:15.600 <vCortopassi>Yeah. We have a history of people we have been trying to screen for lung cancer. Lung cancer is unfortunately associated with high mortality, so it is a very bad disease, like all cancers, but the mortality is very high so we want to prevent the progression. You want to see it when people have it early; because if you treat it early, the survival is much better. So, initially, in the 60s, people were trying to do that with chest radiographs, but they were not successful and the best trial that really hit it was the National Lung Cancer Screening Trial that had 53,000 people involved and they saw that there was a 20% difference in mortality if you screen with low-dose CT versus chest radiograph. So, all the recommendations we do for screening is based on the data we have. This is the main data we have and on the trial, people that were scanned were between 55 and 74 years old, the US preventive service taskforce has included up to 77. So, if you are a patient, a person 55-70 years old and you have smoked more than 30 pack years and you are currently smoking, you are eligible to get a low-dose screening CT and that would be yearly, every year you will get one.

13:15.600 --> 13:23.800 <vChagpar>Okay, so this is not for everybody, this is for people between 55 and 77 who are current smokers?

13:23.800 --> 13:43.600 <vCortopassi>So, current smokers or if you have quit smoking, it has to be within the last 15 years. Because if it is longer than that, then your risk decreases dramatically. So, the longer you are not smoking, the better. But if it is within 15 years, you still need to be screened.

13:43.600 --> 13:59.500 <vChagpar>And we are going to get more into who exactly gets screening and how right after we take a short break for a medical minute. Please stay tuned to learn more about screening for lung cancer with my guest, Dr. Isabel Cortopassi.

13:59.500 --> 14:09.200 Medical Minute Support for Yale Cancer Answers comes from AstraZeneca, working to eliminate cancer as a cause of death. Learn more at astrazeneca-us.com.

14:09.200 --> 14:53.900 This is a medical minute about genetic testing, which can be useful for people with certain types of cancer that seem to run in their families. Patients that are considered at risk receive genetic counseling and testing so informed medical decisions can be based on their own personal risk assessment. Resources for genetic counseling and testing are available at federally designated comprehensive cancer centers. Interdisciplinary teams include geneticists, genetic counselors, physicians and nurses who work together to provide risk assessment and steps to prevent the development of cancer. More information is available at YaleCancerCenter.org. You are listening to Connecticut Public Radio.

14:53.900 --> 16:04.700 <vChagpar>Welcome back to Yale Cancer Answers. This is Dr. Anees Chagpar, and I am joined tonight by my guest, Dr. Isabel Cortopassi. We are talking about lung cancer screening, but really about radiology as a whole. Right before the break, Dr. Cortopassi was telling us the importance of having a specialized thoracic radiologist, how this special team is so integral to the care team -- they help in figuring out what test to do, did you know there are different kinds of CT scans, different protocols depending on what they look at and how they figure out whether something is of high suspicion, medium suspicion or a low suspicion for cancer. We started talking about lung cancer screening, which Dr. Cortopassi was saying is really between the ages of 55 and 77 for either current smokers or people who have quit within the last 15 years. But you also said that these people have to have smoked 30-pack years. Tell us what that means.

16:04.700 --> 16:30.400 <vCortopassi>So, the more you smoke, the higher the risk. And how we in medicine calculate their risk is based on pack years, and hwo pack years are calculated , we multiply the average number of packs of cigarettes that are smoked per day by the number of years a person has smoked, so that is packs x years. So, if you smoke 1 pack of cigarette a day for year, you have 1-pack year.

16:30.400 --> 16:47.700 <vChagpar>I get it. So, if you are a current smoker and you have been smoking for the last 15 years, but you have only smoked a pack a day, so your pack years is 15, and so you would not be eligible for screening, is that right?

16:47.700 --> 17:03.400 <vCortopassi>That's correct. They consider high risk population are the people who have smoked more than 30 pack years. So, either 1 pack a day for 30 years or 2 packs a day for 15 years and so forth.

17:03.400 --> 17:21.800 <vChagpar>I am with you. And so, if you have been smoking for 30 years but you have smoked 3/4 of a pack a day or you have smoked a pack a day but then you quit for a couple of years and then you restarted, you are still not eligible?

17:21.800 --> 17:25.200 <vCortopassi>That's correct. It has to be at least 30-pack years.

17:25.200 --> 17:40.400 <vChagpar> And how do they know that you are still not at risk, I mean that is a lot of smoking, what gave them the magic number of 30-pack years or was this something that they pulled out of the air?

17:40.400 --> 18:25.700 <vCortopassi>Well, going back to that National Lung Screening Trial, which was the biggest data we ever had, looking at history, we learned from our own history and saw that patients who have smoked less than 30-pack years are not as much as a risk as the ones who have smoked more than 30, and we do have a division between high risk, moderate risk and low risk, and I think the moderate risk is about 20-pack years, but those are not eligible by Medicare and they are not recommended to get the scanner because they are not high risk. Any smoking is bad right, but the more you smoke, more frequently and more intense, the worse it is for your lungs.

18:25.700--> 18:47.200 <vChagpar>And so, the people who meet that 30-pack year, who are current smokers who are between the ages of 55 and 77 and who have not quit within the last 15 years, they are eligible for screening once a year with a low-dose CT scan.

18:47.200 --> 18:52.200 <vCortopassi> That's correct. And make sure you do get a low-dose CT and not a regular dose.

18:52.200 --> 19:10.100 <vChagpar>And so, how do you do that? Do you talk to your family doctor, do you go to a cancer center, I mean should your doctor be talking to you about that, is that something that you should initiate, how does that happen?

19:10.100 --> 20:10.200 <vCortopassi>Currently there are 2 ways: You could go to your doctor, to your primary care physician and ask about lung cancer screening and they may recommend if you are eligible to get a CT scan, a low-dose CT and he would then review the results with you. There is another way, which we believe is the ideal way because it is a team that supports you, a lung cancer screening program instead of having just this scan. In the program, you would have a support group that is going to meet with you, assess your risk and educate you as well on the findings you may have on the CT that may not be cancer, maybe other things. And then, you will also be referred if their scan is positive, either for a spot in your lung, a nodule or for something, they would know where to send you next because the radiologist, when we read the scan, we recommend things for incidental findings as well.

20:10.200 --> 20:23.100 <vChagpar>And so, how do you know where such programs exist? I mean, presumably these are at large academic centers but other than that, how would you find out?

20:23.100 --> 20:55.100 <vCortopassi>Here at Yale, in the Smilow Cancer Hospital, we have the Yale Lung Scan Program and you can just call 200-LUNG and you reach them and they know how to direct you to get the scanner and

get the counseling and the smoking cessation and everything. Otherwise, if you ask your primary care, they probably know which institutions, but I would imagine it is mainly academic, larger institutions. The small private practices can provide you a scan but not the support that you need.

20:55.100 --> 21:21.700 <vChagpar>What if you are outside of those criteria, but let us say you are in that moderate risk, you have smoked quite a bit, you know that you are at risk, and you are thinking I am kind of a little bit scared now of getting lung cancer. I know it has got high mortality, can they still get into the program even if it is not covered by Medicare?

21:21.700 --> 21:39.500 <vCortopassi>I do not think in the program now. The program is for eligible patients. You can still ask your doctor and self-pay for a scan, but the only thing is that has not been proven by data that it would change your survival.

21:39.500 --> 21:56.100 <vChagpar> Okay. So, who should get a scan when they think that there is a problem? In other words, let us suppose you are in that moderate risk group, but now all of a sudden, you have started coughing up blood for the past 2 weeks, is that a different category?

21:56.100 --> 22:27.200 <vCortopassi>Absolutely. So, the screening is specifically for asymptomatic patients. If you are having symptoms, you need to go see your doctor right away, especially coughing up blood or new cough, usually patients who smoke a lot, they have shortness of breath, but if you have any change on that baseline status of catching air, you need to see a doctor because there may be even progression of your chronic disease or you may have some acute thing on top of it.

22:27.200 --> 22:39.500 <vChagpar»As a radiologist, would you then be recommending that they have a routine screening scan or is the type of scan that you would recommend different?

22:39.500 --> 23:13.600 <vCortopassi>Absolutely different because now the patient has symptoms. So, the screening with a low dose and no contrast is for people who do not have symptoms and we want to do a check on their lungs and make sure there are no nodules. If you have symptoms, then you are worried about either a cancer or any other abnormality that may lead you to bleeding and pain and things like that. So, you want to be as complete as possible with the scan. So, usually you do in that case a contrast-enhanced, with contrast IV chest CT and with full dose. You would not do a low dose.

23:13.600 --> 23:24.400 <vChagpar>Some patients, they say that they have either iodine allergies or allergies to contrast dye, what do you do in those patients?

23:24.400 --> 24:02.800 <vCortopassi>So, it depends on the type of allergy. That is another thing we do before protocol is to look at the patient's history and see if they have had any allergies to CT contrasts or iodinated contrast. If they have had severe allergy, like anaphylaxis, they cannot receive it again

because the risk is too high and you try to have an alternative test. So, we can try to do a CT without contrast. The other option is to do an MRI because the contrast of the MR scan is different than the CT scan and if you have been allergic to a CT contrast, does not mean at all that you are allergic to MR contrast.

24:02.800 --> 24:10.400 <vChagpar>And some people say that they allergic to shellfish, is there a cross-reactivity between shellfish and contrast dye?

24:10.400 --> 24:19.600 <vCortopassi>It is more like an urban legend these days. In the old days, people used to think so, but now no, there is no proven correlation between those two.

24:19.600 --> 24:37.900 <vChagpar»Okay. So, lets suppose somebody goes and they have the full-dose contrast-enhanced CT scan and you see something, is that sufficient for you to make a diagnosis or do you then have to do additional tests?

24:37.900 --> 25:00.700 <vCortopassi>Depends on what we see. Every case is very different. We do care that it is patient tailored and every patient is different and it depends on what we see on the scanner. We have to put everything together and many times we do come up with a final conclusion, maybe there is only an infection. The patient can get better, but sometimes you want to investigate further to get to a better diagnosis.

25:00.700 --> 25:02.900 <vChagpar>And what are some of those investigations?

25:02.900 --> 25:45.400 <vContropassi>So, you may do additional testing, if the patient who could not get IV contrast, you may start with a chest CT without contrast and then something that you need to further characterize because you need to know the tissue. Then, you would refer them to an MRI or PET scan. PET scan is another cancer imaging that looks at the FDG avidity. So, you may refer to further testing or you can see something outside the chest because when we do a CAT scan of the chest, we also image a piece of the neck and a piece of the abdomen and you may see something there that indicates that there is more pathology, so you may recommend an abdominal study, a CT or an MRI.

25:45.400 --> 25:52.900 <vChagpar> And ultimately after you are finished all of the imaging, how do you actually make the diagnosis?

25:52.900 --> 26:06.900 <vCortopassi>We put it altogether, but in terms of cancer, I would say most of the patients, if not all, we end up getting a tissue sampling in a biopsy.

26:06.900 --> 26:11.600 <vChagpar» And how does that work? Is it the radiologist that does the tissue sampling or is it a surgeon or does it really depend?

26:11.600 --> 26:34.400 <vCortopassi>It depends on the location of the lesion, you can get to a lesion through your mouth and your airways, bronchoscopically which a pulmonologist would do. You can get a interventional radiologist to go

through your chest wall and take a little piece of the lesion or you can also have the thoracic surgeon go in if it is in the middle of the lungs, in the mediastinum.

26:34.400 --> 26:56.800 <vChagpar>And so, after the diagnosis is made and it is lung cancer, one of the things that people often worry about are the follow up scans. What do they need to get, how frequently do they need to get it to see whether this cancer is responding to therapy or whether it is going to come back, which is everybody's fear?

26:56.800 --> 27:55.600 <vCortopassi>Right. It is very anxious. So, the first thing is in patients who have even suspicions or a new diagnosis of lung cancer, we all get together in a room -- surgery, pulmonologist, radiologist, pathologist, and we discuss the case and we come up with a plan, a multi-disciplinary plan. If the patient is going to go to a surgical resection or if the patient is going to undergo chemotherapy, chemoradiation and things like that. Depending on how you are being treated that is what is going to define the followup. If you have a surgical resection and they take out the entire tumor, you are not going to need a scan as often as if you are undergoing chemotherapy or radiation therapy. Usually, depends also if you are part of a trial. So, the new drugs that come out, people have trials and they have specific times they need to be imaged, every 1 month or every 3 months and usually the oncologists follow that protocl.

27:55.600 --> 28:28.900 <vChagpar>And so, once a patient has been definitively treated, they have gotten through their surgery, their chemotherapy, they have been told essentially okay we have got it, live long and prosper. Often patients have a little bit of anxiety about I had cancer, could this come back. Is radiology involved in getting routine scans periodically to make sure that it did not come back just like the screening studies initially?

28:28.900 --> 28:56.100 <vCortopassi>So, I think right after you have your treatment and you are declared free of disease, you still get yearly scans for a short period of time for a few years. After those have been cleared, then that is no longer the case. Right now, there is no guideline to screen patients with history of lung cancer, but there has been discussion of that and may be part of the close future.

28:56.100 --> 29:18.500 Dr. Isabel Cortopassi is Section Chief for Thoracic Imaging at Yale School of Medicine. If you have questions, the address is canceranswers@yale.edu and past editions of the program are available in audio and written form at YaleCancerCenter.org. We hope you will join us next week to learn more about the fight against cancer here on Connecticut Public Radio.