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Pathways in Cancer

Clinical insight and analysis in advanced cancer care

Dignity Health Cancer Institute's Lung Screening Practices

Costanzo Di Perna, MD

Effective February 5, 2015 certain Medicare beneficiaries gained coverage for lung cancer screening with low-dose CT scans. According to a CMS press release, the coverage is a first for this particular disease. We as thoracic surgeons have been waiting for CMS approval with great excitement.

To qualify for the once-per-year benefit, patients must be 55 to 77 years old. Additionally, Medicare beneficiaries must:

- Currently smoke tobacco products or have quit within the past 15 years
- Have smoked an average of one pack of cigarettes a day for 30 years
- Have a physician or other health care professional's written order requesting the test

Medicare coverage supports and pays for an office visit dedicated to patient counseling on tobacco-related issues and a conversation about the relative harms and benefits of lung cancer screening.

The pros and cons of lung cancer screening for patients in this age group have been controversial discussion topics for physicians and other stakeholders since at least the summer of 2011.

Dignity Health Cancer Institute and Mercy Medical Group have led Sacramento's first lung cancer screening program since 2011. Patients at risk, according to NCCN guidelines mentioned above, have been screened with a low-dose CT scan since 2011. We are currently screening two to four patients per week. We meet the patient in the office and offer a formal history and review of symptoms. We also discuss and document risks, benefits and alternatives to low-dose CT scanning including follow-up protocols. Working in partnership with Mercy Imaging Centers' Gregory Rogalski, MD, we develop an appropriate follow-up imaging plan should this be required. Patients who require surgery or other therapeutic modalities are referred to radiation oncology or medical oncology as soon as possible. Recently, at the Mercy Cancer Center on C Street, we held our first lung cancer screening session. Of the ten people we screened using NCCN guidelines, we found two people with suspicious lung nodules, one of whom was brought to the operating room seven days later and underwent a curative lobectomy. This particular patient now has the best chance for cure because of early lung cancer identification and surgical resection.

Our plan now and for the future is to aggressively direct a lung cancer/lung nodule clinic in which we screen patients, counsel them against further smoking while offering them acceptable pathways to a smoking-free life, and discuss directly the pros and cons for low-dose CT lung screening. This nodule clinic will be held in Dignity Health Cancer Institute's Mercy San Juan Medical Center campus. Doctors including thoracic surgeons, Arshad Ali, MD, Chief of Pulmonary Medicine, Mercy Medical Group, and Greg Rogalski, MD of Mercy Imaging Centers will all be involved.

Lung screening saves lives and could increase lung cancer survival to as much as 80% over 10 years. As physicians, we know that any imaging modality can have risks. However risks will be minimized because of our multidisciplinary approach to this new screening initiative. All newly found nodules will be discussed in our multidisciplinary nodule clinic as well as our thoracic tumor board held monthly at Mercy San Juan. Finally, any procedures, imaging follow ups, biopsies, radiation therapeutics, etc. will be approved with the classic checks and balances afforded by a multidisciplinary endeavor.

Dignity Health™
Cancer Institute of Greater Sacramento

Lung Cancer Screening Using Low Dose CT

Gregory Rogalski, MD

Effective screening for lung cancer, still one of the most deadly forms of malignancy, has been elusive for decades. We have known for a long time that lung cancer is curable only if discovered very early, before it can metastasize to lymph nodes or distant sites. The cure rates for stage IA lung cancer approach 70%, yet more than 75% of patients present with incurable or locally advanced disease. Unfortunately, multiple prior trials of screening with chest radiographs and even CT have been negative or inconclusive because of technical or methodological problems.

The National Lung Screening Trial (NLST)[i] published in 2011 is the first large study showing that properly performed lung cancer screening with low dose lung CT scans leads to 20% reduction in lung cancer-specific mortality in former smokers, and 6% decrease in all-cause mortality compared with chest x-ray screening. Recent analysis has shown that such screening is cost-effective, costing $81,000 per quality-adjusted life year (QALY) saved, which compares favorably with costs of other current screening programs such as breast cancer screening.[ii]

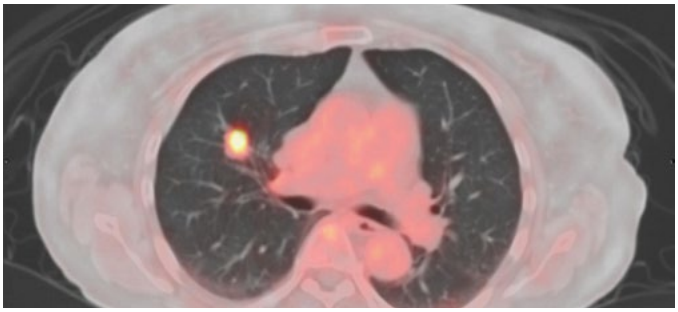

Figure 1. PET-positive nodule discovered on low dose CT screening in the right upper lobe, which was subsequently resected and proved to be an adenocarcinoma, stage I. This is the stage when we will ideally discover the majority of lung cancers in smokers through lung cancer screening.

On the strength of this evidence, the National Comprehensive Cancer Network, American Cancer Society, American Lung Association, and many other organizations have embraced the idea of screening for lung cancer. Recently, Centers for Medicare and Medicaid Services (CMS)[iii] has decided to cover the cost of lung cancer screening for Medicare beneficiaries.

Working in partnership with Costanzo Di Perna, MD of thoracic surgery, Mercy Imaging Centers has been preparing to offer this service to our patients in the Sacramento area. We have the scanners and protocols in place to start a screening program today. Our scanners are certified by the American College of Radiology, and we will be part of the national registry set up by the ACR for tracking of the effectiveness of local screening programs once it becomes operational.

However, in order to maximize the efficiency and reduce the harms of screening, such as unnecessary workup for false positive nodules, it is critically important to select the proper patients who will undergo screening. The latest patient guidelines issued by CMS in March 2015 are as follows:

- Patients 55–77 years old, who are either current smokers or have quit smoking within the last 15 years
- Tobacco smoking history of at least 30 "pack years" (packs per day × number of years)
- Patients must have a written order from a physician or qualified non-physician practitioner that meets certain requirements
- Imaging centers and radiologists must meet specific eligibility criteria and participate in data collection to demonstrate ongoing effectiveness

The special low dose chest CT technique involves a dedicated scanning protocol, which keeps the x-ray dose to a level equivalent to six months of normal background radiation received by anyone living at sea level. Even with the reduced technique, it is possible to detect nodules as small as 2mm, although for purposes of screening, nodules 6mm or larger are considered a "positive" screen. The low radiation dose is important because the screening will be an ongoing process like mammography, with annual CT scans until the age of 77 (per current guidelines). Even with yearly scanning, the radiation-related risks in this population of older smokers is considered negligible compared with the risk of an unnoticed lung cancer, though this again underscores the need for proper patient selection to enter the screening process.

[i] Aberle DR, Adams AM, Berg CD, et al. Reduced lung-cancer mortality with low-dose computed tomographic screening. N Engl J Med. 2011;365:395-409.
[ii] Black WC. CT Screening for Lung Cancer in the NLST. J Thorac Imaging 2015;30:79-87.
[iii] http://www.cms.gov/Newsroom/MediaReleaseDatabase/Press-releases/2015-Press-releases-items/2015-02-05.html

Radiosurgery: A Powerful Treatment Option for Lung Cancer Patients

Matt Wheatley, MD

Lung cancer is the leading cause of cancer death in the country. It is estimated that there will be more than 200,000 cases diagnosed in 2015, with close to 160,000 deaths. This is more than the combined total cancer deaths attributed to the next three most common malignancies, breast, colon, and pancreatic cancer. The ability to screen for this disease has been limited in the past due to a poorly defined screening population, cost, and the uncertainty of whether screening would actually help those participating. In general, five-year survival for early stage lung cancer is 54%, which drops to 26% once lymph nodes are involved. With the publication of the National Lung Screening Trial (NLST), a benefit in the high risk population has been established by decreasing the lung cancer related mortality. This is achieved by detecting cancers before they have a chance to metastasize. However, the patients who qualify as high risk individuals do so because of an extensive smoking history. This not only increases their risk for lung cancer, but also all the other smoking related diseases that increase operative risk.

If a patient is unable to tolerate a lobectomy for an early lesion, a second treatment option must be available. Stereotactic body radiotherapy (SBRT), also known as stereotactic ablative radiotherapy (SABR), is an alternative technique for treating early stage lesions. More and more evidence is being accumulated supporting its use as a vital treatment option for those unable to have surgery. Studies that support the use of SBRT have thus far been limited to the old and frail population, those unfit for surgery. An observational study from Denmark was recently presented at the annual meeting for the American Society of Therapeutic Radiology and Oncology. They evaluated patients diagnosed with early stage lung cancer prior to the practice of SBRT and were thus observed, compared to a matched group of patients who were treated with SBRT. This demonstrated a dramatic improvement in five-year overall survival in medically inoperable patients from 6% to 37%. Patients with inoperable early stage non-small cell lung cancer (NSCLC) can still be cured.

A meta-analysis recently published comparing the numerous trials for management of early stage NSCLC showed that the average age of patients enrolled in SBRT trials was 74 years compared to 66 years for surgical studies. This suggests that there are two different treatment populations, making outcome statistics difficult to compare. When controlled for patient age and operability the outcomes are very similar.

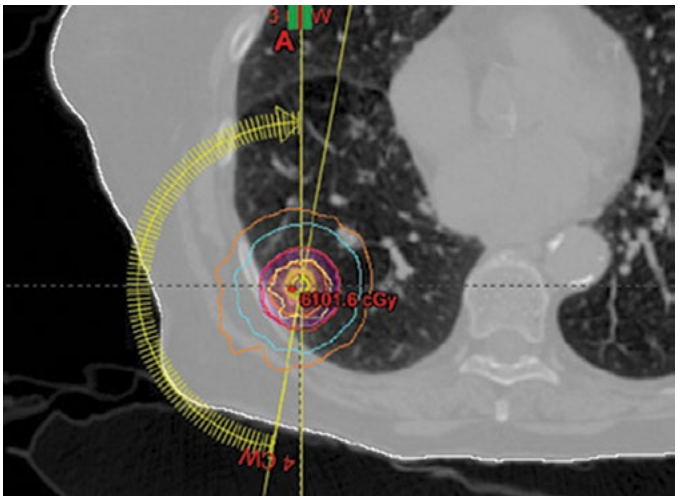

Figure 1. This image is representative of a typical SBRT plan. The treatment machine treats continuously as it rotates around the patient creating a rapid radiation dose fall-off as seen above. The lines represent radiation doses, similar to a topographical map.

The precise details and techniques regarding the optimal treatment regimen have yet to be determined. Randomized controlled trials are currently evaluating the most beneficial dose and fractionation schedules, comparing single fraction treatments to multi-fraction treatments. With additional randomized trials standard techniques will likely emerge.

We utilize the Varian Edge Radiosurgery System. This is at the forefront of the radiosurgery field with its technological capabilities. The targeting and treatment of lesions are accurate to within a millimeter. Infrared cameras track the breathing of the patient to pause the treatment when the patient moves more than expected. This machine also has the fastest treatment time of any other machine available, improving patient comfort by dramatically shortening treatment time to 10-15 minutes. Figure 1 demonstrates the rapid dose fall-off seen in a typical SBRT plan. This maximizes radiation dose while minimizing side effects.

Lung cancer is a daunting diagnosis when discovered late. Early detection and treatment with effective therapies can reduce this burden in these high-risk patients. Despite lung cancer's long history of grim outcomes, the future of lung cancer is looking brighter with early detection strategies and innovative therapies.

Dignity Health
Cancer Institute of Greater Sacramento

6501 Coyle Avenue
Carmichael, CA 95608

TUMOR BOARDS

Dignity Health Cancer Institute of Greater Sacramento's multidisciplinary approach to cancer care includes regularly scheduled Tumor Boards held throughout Greater Sacramento, offering clinical review of patient cases for optimal treatment results. For each of our Tumor Boards, physicians are eligible for 1 CME credit.

To present a case at an upcoming Tumor Board, please email, fax, or call contacts noted below. To present a case, please provide:

- **Patient's name**
- **Date of birth and/or medical record number**
- **Disease site**
- **Diagnosis**
- **Where path and imaging can be found**

Hospital Cancer Conferences

Mercy General Hospital
Wednesdays at 12:15 p.m.
Location: Greenhouse Conference Room

Contact: Renae Huwes
renae.huwes@dignityhealth.org
916.536.3157 (phone)
916.536.3044 (fax)

Mercy Hospital of Folsom
4th Wednesday of every other month at Noon
(January, March, May, July, September, November)
Location: CC1 and 2 or PCU conference room

Contact: Mansoor Javeed, MD
mansoor.javeed@dignityhealth.org
916.984.6230 (phone)

Mercy San Juan Medical Center
Thursdays at 12:30 p.m.
Location: Conference Room 2

Contact: Renae Huwes
renae.huwes@dignityhealth.org
916.536.3157 (phone)
916.536.3044 (fax)

Methodist Hospital of Sacramento
3rd Friday of each month at Noon
Location: Bistro Conference Room

Contact: Starr Fesler
sfesler@uscmc.com
916.683.9616 (phone)

Sierra Nevada Memorial Hospital
Thursdays at 12:30 p.m.
Location: OPC 110-120

Contact: Debby Kirk
debby.kirk@dignityhealth.org
530.274.6872 (phone)

Woodland Healthcare
Tuesdays at 12:15 p.m.
Location: DCR 5

Contact: Michelle Ing, PA
michelle.ing@dignityhealth.org
530.662.3961 (phone)

Tumor-specific Cancer Conferences

Breast Cancer Conference
3rd Friday of each month at 12:30 p.m.
Location: Mercy Cancer Center
3301 C Street, Suite 550
Large Conference Room

Contact: Renae Huwes
renae.huwes@dignityhealth.org
916.536.3157 (phone)
916.536.3044 (fax)

GU Cancer Conference
4th Tuesday of each month at 7:30 a.m.
Location: Mercy San Juan, CC3

Contact: Renae Huwes
renae.huwes@dignityhealth.org
916.536.3157 (phone)
916.536.3044 (fax)

Cases may be brought directly to the conference. Pathology and imaging will not be routinely ordered unless there is a question regarding the results.

Thoracic Cancer Conference
2nd Wednesday of each month at 4 p.m.
Location: Mercy San Juan, CC3

Contact: Renae Huwes
renae.huwes@dignityhealth.org
916.536.3157 (phone)
916.536.3044 (fax)

Cases may also be brought directly to this conference.