

December 2013 Phoenix Pulmonary Journal Club: Lung Cancer Screening

During this month's pulmonary journal club we reviewed several of the sentinel studies looking at lung cancer screening. Since the National Lung Screening Research Team (NLSRT) (1) published the impressive results showing a 20% reduction in lung cancer mortality, the debate on when and if to initiate a national lung cancer screening program has been at the forefront of debate. The American Lung Association and American Cancer Society have issued statements that are not guidelines, but did offer insight on the price we pay for earlier lung cancer detection and reduction in mortality...which is the increased rates of false positives detected and increased rates of biopsies.

The US Task Force on Lung Cancer Screening has yet to decide on a screening program and have yielded a statement that neither supports nor refutes the current level of evidence.

Prior to the NLSRT study there were others that showed conflicting results on lung cancer screening. The PLCO Cancer Screening Trial (2) was a large randomized prospective trial that recruited 77,464 patients and used chest X-rays at yearly intervals for 3 years in patients aged 55-74. This study included nonsmokers. The results are ongoing but the preliminary data showed that a total of 564 cancers were detected with 87% as non-small cell. Further data on outcomes will be reported in 2015.

The PANCAN and BCCA Study were 2 prospective cohort studies (3) done to see which CT detected incident nodules on more likely to be malignant. The results of the 2 combined studies showed that out of the 12029 incident nodules detected only 142 were biopsy proven malignant. Nodules were more likely to be malignant if the size was greater than 1cm, spiculated, multiple nodules, and more upper lobe predominant. In addition a nodule along the perifissure region was highly unlikely to be cancer. The study also noted that biopsy of the largest nodule was often not the malignant nodule in 20% of cases. Subsequent image with volumetric imaging may help with this.

The results of the 2 year incidence screening results (4) demonstrated that the low dose CT screening was superior to chest radiography in detecting earlier stage cancers as well as showing lower incidence rates of lung cancer when the initial CT screening was negative. The highest rates of lung cancer were detected at the T2 interval screening due detection of enlarging nodules. Overall the 2 year incidence study showed that the use of CT screening was superior to chest Radiography in detecting earlier stage non-small cell lung cancers.

The review of the prior papers yielded a healthy discussion on where do we go as clinicians in offering lung cancer screening to patients. There was a consensus that nearly all curable lung cancers have been found incidentally, and that it makes sense to have a screening process. What this screening process should be is still uncertain. By limiting the screening option to smokers with a significant 30 pack year history and limiting the initial screening age to 55 we have set initial targets to look at. The price of CT screening will inevitably result in higher costs and higher rates of false positives. Future algorithms will need to be adjusted to limit rates of false positives by looking

more at volumetric analysis and nodule characteristics to limit unnecessary biopsies.

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References

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