Incidental Findings on LDCT for Lung Cancer Screening: Prevalence and Clinical Management

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OBJECTIVES
- To define the frequency of incidental findings on low-dose CT (LDCT) scans among patients undergoing lung cancer screening.
- To determine the current reporting methods for incidental findings and measure the frequency of clinical follow-up.

BACKGROUND
- The US Preventive Services Task Force (USPSTF) recommends adults aged 55-80 with ≥30 pack-year smoking history undergo annual screening for lung cancer with a LDCT of the chest.
- The American College of Radiology (ACR) reports incidental detection of liver, kidney, adrenal gland, and thyroid lesions at incidences ranging from 3-40%. Among lung cancer screening patients, 41-94% have incidental findings (IFs) on LDCT, and coronary artery calcifications (CAC) are the most common IF. CAC is an independent predictor of cardiovascular events in post-hoc analyses of lung cancer screening cohorts.
- To our knowledge, there is no standardized approach to radiologic analyses of lung cancer screening cohorts.
- To determine the current reporting methods for incidental findings (IFs) on LDCT for lung cancer screening with a LDCT of the chest.
- Among LDCT scans with extrathoracic IFs, follow-up recommendations were included in radiology reports in a minority of cases (1.9-17.8%). Specifically, 13 incidental findings warranted follow-up by ACR guidelines, but no recommendations were reported (Table 3).

METHODS
- The Jefferson Lung Cancer Screening Program (LCSP) is a centralized screening program for patients at high risk for lung cancer based on CMS, USPSTF, and NCCN criteria.
- Data from patients screened between Jan 2018 and Feb 2019 were collected prospectively (IRB consent 17D.150).
- Patients with ≥1 IF reported on LDCT were identified, and radiology reports and other clinical data were retrospectively reviewed.
- For patients with liver, kidney, thyroid, and adrenal gland lesions, LDCT reports were reviewed for presence of IF and follow-up recommendations and these were compared with ACR guidelines.
- A subset of patients with CAC, screened between Jan 2018 and April 2019, were reviewed for history of atherosclerotic cardiovascular disease (ASCVD), cardiac medications, cardiovascular workup, and presence of cardiac evaluation.

RESULTS
- Our data demonstrate variability in radiologic reporting of IFs detected on screening LDCTs and in clinical follow-up of IFs.
- Inconsistent communication of incidental findings and their clinical relevance may lead to increased healthcare costs, unnecessary radiation exposure and procedures, and/or missed opportunity for intervention.

CONCLUSIONS and FUTURE DIRECTIONS
- Future directions include development of standardized guidelines for IFs reporting to primary care providers, followed by reassessment of patients with severe CAC not seen by a cardiologist (p=0.001) (Figure 2).

DISCUSSION
- The occurrence of incidental findings on LDCT for lung cancer screening was common, with 75% of screened patients demonstrating some degree of CAC (Table 2). Extrathoracic IFs included liver, kidney, thyroid, and adrenal gland lesions.
- Among LDCT scans with extrathoracic IFs, follow-up recommendations were included in radiology reports in a minority of cases (1.9-17.8%). Specifically, 13 incidental findings warranted follow-up by ACR guidelines, but no recommendations were reported (Table 3).
- Patients with severe CAC detected on LDCT for lung cancer screening have a high incidence of previously known ASCVD (Table 4).
- Patients referred to Cardiology undergo subsequent procedures at a significantly higher rate than patients with severe CAC not seen by a cardiologist (p<0.001) (Figure 2).

TABLE 1. Baseline characteristics of LCSP participants (n=1,168 patients reviewed for history of atherosclerotic cardiovascular disease (ASCVD), cardiac medications, cardiovascular workup, and presence of cardiac evaluation.

TABLE 2. Frequency of incidental findings on LDCT

TABLE 3. Incidental findings and radiologic recommendations for follow-up

TABLE 4. Baseline characteristics of patients with severe CAC detected on LDCT

CONCLUSIONS and FUTURE DIRECTIONS
- Future directions include development of standardized guidelines for IFs reporting to primary care providers, followed by reassessment of patients with severe CAC not seen by a cardiologist (p=0.001) (Figure 2).

REFERENCES