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Clinical Relevance of the Incidentaloma:
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Abstract

Background: CT scanning remains one of the most routinely used diagnostic tools in a setting of Interstitial Lung Disease (ILD). New and improved technologies, such as High Resolution Computer Tomography (HRCT) have revolutionized the quality of imaging, leading to a prominent increase in number of incidental findings that may or may not be of any clinical significance. The aim of this study was to evaluate the prevalence of incidental findings on thoracic CT and their clinical significance.

Methods: Retrospective analysis was conducted on a cohort of 84 patients referred to our academic center as cases of ILD. Patients were referred for further evaluation between January 2000 and January 2014 and were followed over the disease course. CT scans were done annually as part of clinical management and patients were screened for any incidental findings. All incidental findings were reviewed, recorded in a clinical database and followed up on subsequent visits.

Results: 25 (30%) patients were found to have incidental findings. Liver abnormalities were found in 12 (14.29 %) patients. 11(13.10 %) patients were reported to have coronary artery calcifications. 5 (5.95 %) and 3 (3.57%) patients had thyroid abnormalities and renal cysts, respectively. A malignant lesion was found in 1 patient each in liver and thyroid abnormality subgroup.

Conclusion: Incidental findings are common on thoracic CT scans providing valuable and unexpected findings which warrant investigation by health care providers to exclude malignant processes.

Introduction

Incidentalomas are tumors or nodules that are found by coincidence without any symptoms or clinical suspicion. They are often found on routine radiological imaging for other primary reasons. A small percentage of these Incidental Findings (IFs), eventually through clinical investigation turn out to be malignant processes. Though some recent studies dispute reporting or searching for IFs [1] finding them to be an unnecessary financial burden on our health system [2], we firmly believe that radiological IFs should be fully investigated in the proper clinical setting.

Thoracic Computer Tomography (CT scans) remains one of the most commonly used radiological tools. However improved technologies such as High Resolution Computer Tomography (HRCT) have revolutionized image quality, leading to an increase in number of IFs. IFs have been reported on up to 54.8% thoracic CTs [3]. With this perspective we conducted a study to evaluate the prevalence and clinical outcome of incidentalomas on thoracic CT scans consistently done as part of clinical management in patients with Interstitial Lung Disease (ILD).

Materials and Methods

We conducted a retrospective review of data collected on 84 patients with a diagnosis of ILD. Patients were seen at the outpatient pulmonary department of the North Shore — Long Island Jewish Health System. For the purposes of the study ILD was defined in accordance with the guidelines set forth by the American Thoracic Society [4]. All patients who underwent complete physical exam, pulmonary function testing as well as CT scans of the chest were considered for the study. CT scan of the chest results were read and noted for any thyroid abnormalities, splenomegaly, liver abnormalities, coronary artery calcifications, renal cysts or any other incidental findings. If any clinical worsening was observed, a more frequent CT scanning was performed. Institutional Review Board approval was obtained for this study (IRB# 14-202a).

Results

There were a total of 84 patients (25 males, 59 females mean age 60.7 years) who were found to have ILD between January 2000 and January 2014 who were followed over the disease course. Of these 84 patients, 25 (29.8%) were found to have IFs, some of them with more than one. Out of our

Table 1: Incidental Finding Frequency in ILD Patients

	N (% of ILD Patients)
Total cohort of ILD patients	84 (100)
Incidental Finding	
Patients with at least one IF	25 (29.8)
Liver Abnormalities	12 (14.3)
Coronary Artery Calcifications	11 (13.1)
Thyroid Abnormalities	5 (6.0)
Renal Cysts	3 (3.6)
Splenomegaly	0 (0)

IF – incidental finding

84 ILD patients, liver abnormalities were seen in 12 (14.3 %) patients and were the most frequently noted IF. 11 (13.1%) ILD patients were found to have coronary artery calcifications. 5 (5.95 %) and 3 (3.57%) out of the 84 ILD patients respectively had thyroid abnormalities and renal cysts (Table 1). IFs were followed if clinically indicated. From our cohort 2 patients, whose IFs were further investigated were found to have malignancy, one with adenocarcinoma of the common bile duct and one renal cell carcinoma. Both of these patients were referred to specialty specific oncologist and were managed expectantly.

Discussion

In general, incidental findings have increased as non-invasive medical imaging technology has improved. Traditional ILD diagnosis methods of roentgram and open biopsy fail to provide a holistic and detailed image as compared to computer tomography of the lungs. Our results indicate when correlating clinical details with radiological findings, IFs uncovered 2 (2.38%) potentially life threatening processes. In a study by Swensen et al. non-pulmonary CT IFs have been observed in up to 14% of patients. In the same study 15/210 patients (7.14%) were found to have newly discovered

malignancy [5]. Additionally in studies which utilized chest computer tomography as the primary mode of imaging it was found that prevalence of patients with at least one incidental imaging abnormality varied from 3% to 41.5% [6]. Another study focusing on lung cancer screening discovered IFs in 3% which led to 12 invasive procedures; however, only 8 of these were clinically relevant [7]. With such data we can say that the fiscal burden of additional testing is worth it as we can't put a price on life. Use of HRCT will inevitably produce false positive findings of incidentalomas as compared to traditional diagnostic methods. Incidentalomas may lead to a clinical "dead end" but as physicians our duty is to investigate findings which we deem necessary to preserve our patients' health. In the end it is the responsibility of the physician to clinically correlate radiological findings and act appropriately in the investigation of IFs.

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