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Original Research Paper

The Evaluation of Accidental Chest Radiographic Findings in Adult Patients With Respiratory Complaints

Medical Science

KEYWORDS :

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ABSTRACT

Aims and Objectives:

Chest X ray is nowadays being considered as the basic initial modality for diagnosing the various chest modalities. Chest X Ray sometimes produce unexpected or incidental findings with consequences for patients and ordering of future investigations. Chest radiography in patients with respiratory symptoms is among the most common reasons for imaging in tertiary health care, but data on associated incidental findings are generally lacking. In the study we describe the type and prevalence of incidental chest radiography findings in tertiary health care patients with cardinal respiratory complaints mainly cough with expectoration, chest pain, breathlessness , haemoptysis.

METHODS:

A cross-sectional study was conducted in Department of Pulmonary Medicine , Rohilkhand Medical College and Hospital , Bareilly, a tertiary health care centre on 3,105 patients that presented with respiratory symptoms, all of whom had chest radiography as part of a research study workup. Apart from assessment for specified signs of pneumonia and acute bronchitis, we evaluated any additional finding on the radiographs. For the 2,823 participants with good-quality chest radiographs, these findings were categorized according to clinical relevance based on previous research evidence and analyzed for type and prevalence by network, sex, age, and smoking status.

RESULTS:

Incidental findings(613) were reported in 19%(524) of all participants, and ranged from 0% to 25% . Of all participants 3% had clinically relevant incidental findings. Suspected nodules and shadows were reported in 1.8%. Incidental findings were more common is older participants and smokers (P <.001).

CONCLUSIONS Clinically relevant incidental findings on chest radiographs in tertiary care care adult patients with respiratory symptoms are uncommon, and prevalence varies by setting.

INTRODUCTION

Cough followed by the breathlessness is one of the most common reasons for consulting in tertiary care.1,2 Prompt, accurate diagnosis of pneumonia and tuberculosis in these patients is important to rule in the need for timely appropriate antibiotic treatment in some patients and to rule out the need for antibiotic treatment in others. In all the patients we ordered chest radiographs in a minority of patients with respiratory symptoms.3 These radiographs confirm pneumonia in 5% to 19% and exclude pneumonia in most patients.2,4,5 Imaging provides information relevant to the acute illness but may also reveal incidental findings.6-9 Such findings can benefit patients through earlier diagnosis and treatment, for example, in as yet undiagnosed heart failure or malignancy. Incidental findings, however, may have unknown or doubtful clinical relevance and lead to patient anxiety, expensive workup, and potentially harmful investigations and treatment without improving quality and length of life.10,11

METHODS

A cross-sectional an observational study with a trial randomizing patients with LRTI . We included patients 18 years or older, complaining of cough (less than 14 days) , breathlessness , chest pain as the main symptom. Further inclusion criteria were ability to fill out study materials and provide written informed consent. Exclusion criteria were active pulmonary tuberculosis infection, diabetes mellietus and immunodeficiency. Medical ethics committees of the college approved the study. Chest X Ray were performed in all patients. All the radiographs findings and their diagnosis were noted. All chest radiograph findings diagnosed as abnormal were defined as incidental, and the prevalence and type were evaluated by sex, age, and smoking behavior, as these patient characteristics are most commonly related to prevalence of pulmonary disease.14-16 All incidental findings were categorized according to their clinical findings.

RESULTS

We collected data on 3,105 patients was assessed. Patients without a chest radiograph (n = 259) or with a chest radiograph of insuffi cient quality for adequate interpretation (n = 23) were excluded.

Table 1. Characteristics of 2,823 Tertiary care Care Patients With Respiratory symptoms by Radiographic Diagnosis

Characteristic	Normal Chest Radiograph	Acute Bronchitis	Pneumonia	Incidental Findings
Patients, n (%)	1,975 (70)	213 (8)	140 (5)	524 (19)
Age, mean (SD),	48 (16)	50 (17)	54 (15)	60 (15)
Male, n (%)	742 (38)	96 (45)	62 (44)	231 (47)

DISCUSSION

It was observed that 19% of 2,823 patients with cardinal respiratory symptoms had incidental findings on the chest radiograph.

In our study, all chest X ray were taken into account.

Table 2. Percentage of Incidental Radiographic Findings in tertiary Care Patients With Respiratory Symptoms.

Clinical Relevance	Incidental Findings (N = 613)	Radiographs (N = 2,823)
Suspected nodules, density, or shadow (n = 51)	8.3	1.8

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Aortic dilatation (n = 2)	0.3	0.1
Hilar/mediastinal enlargement (n = 27)	4.4	1.0
Interstitial lung disease (n = 8)	1.3	0.3
Pleural fluid (n = 5)	0.8	0.2
Cardiomegaly or pulmonary congestion (n = 101)	16.5	3.6
Signs suggesting asthma (n = 116) and COPD (n = 29)	23.7	5.1

The findings like mediastinal enlargement, and interstitial lung disease, judgments of the clinical implications of other radiographic findings will vary by clinician and the clinician's

patients. The evidence base supporting the definition of some radiological diagnoses is incomplete. Some interobserver variability remained, but the moderate agreement for pneumonia (κ = 0.47) was comparable to other studies.19- 21 .The main benefit of chest x ray was of early diagnosis and treatment or prevention, 8,22. However radiation exposure, iatrogenic illness, patient inconvenience from additional testing, potentially unnecessary costs, and the psychological burden of false-positive results.

In our study we found large differences in prevalence of reported in earlier studies. These differences might be explained by difference in socioeconomic status, for which we had no data. Uniformity in reporting could be improved through radiologist and referring clinicians agreeing on clinical relevance and need for reporting of incidental findings. We found few potentially clinically relevant incidental findings that would require additional investigations; therefore, there appears to be little reason for raising thresholds for requesting chest radiographs for respiratory findings because of fear of revealing incidental findings.

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