CONTROL THORACIC RADIOGRAPHY AFTER PNEUMONIA DIAGNOSIS

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ABSTRACT

Background: In patients diagnosed with pneumonia, radiographic findings of the infectious process might mask the coexistence of a lung tumor. In some cases, in order to rule out the presence of cancer, a follow-up chest X-ray is performed, approximately one month after the diagnosis of pneumonia.

Objective: To analyze and synthesize the available evidence on the added value of performing a control X-ray compared to not doing so. As a secondary objective, we will evaluate what time after diagnosis the control X-ray should be taken.

Methods: On 11/05/2024, a bibliographic search was carried out in Pubmed for systematic reviews, clinical trials and observational studies. The following strategy was used: (lung[Title] or pulmonary[Title]) AND (carcinoma[Title] OR malignan*[Title] or neoplasm*[Title] OR cancer[Title]) AND pneumonia*[Title], obtaining 544 records. In addition, the following search was performed: pneumonia*[Title] applying the "Practice Guideline" filter, obtaining 173 records). On the other hand, a search was carried out on the radiological resolution of pneumonia with the following strategy: (radiograph*[Title] or X-ray[Title]) AND resol*[Title] AND pneumonia*[Title], obtaining 23 records.

Key points:

- No systematic reviews, clinical trials, or observational studies were found that answered our research question. The available evidence primarily evaluates the incidence of lung cancer in patients diagnosed with pneumonia, but does not study the added value of performing a follow-up chest X-ray after the diagnosis of pneumonia compared to not doing so.

- In the analysis of a cohort including 42,743 cases of pneumonia diagnosed in the Navarre Health Service between 2016 and 2023, lung cancer incidence 90 days after pneumonia was 0.1% (no control X-ray group) vs 0.5% (control X-ray group), ORa = 5.8 (95% CI, 3.7 to 9.1). The most important risk factors were age, male sex, smoking, personal history of cancer (other than lung), COPD/pulmonary emphysema.

- More lung cancers were diagnosed in the group where a control X-ray was taken before 90 days, although the difference in absolute terms was rather small (0.4% more tumors diagnosed in the control X-ray group). Furthermore, we should not assume that the control chest X-ray is the only reason why more lung tumors are detected. Control chest X-rays were defined as those performed between 21 and 90 days from the diagnosis of pneumonia. During this period, some patients might have been ordered the X-ray according to the protocol, while others after clinical suspicion of an underlying disease. Therefore, the observed difference in lung cancer incidence between groups (with and without control chest X-ray) should not be attributed exclusively to the recommendation of performing this test regardless patient's symptoms or health status.

Recommendations:

- **In patients diagnosed with pneumonia and experiencing clinical improvement, a routine control chest X-ray is NOT indicated.**

- This could be performed in patients who, despite a good clinical evolution, have a higher risk of malignancy, namely, ≥ 50 years-old, male sex, smokers/ex-smokers or those with COPD.*
- In the event that a control chest X-ray is indicated, it should be taken between 60 and 90 days after pneumonia diagnosis.

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* According to data from the Navarre Health Service, the incidence of lung cancer in patients recovering from pneumonia (at day 180) was as follows: 0.06% (<50 years-old) and 0.5% (≥50 years-old [0.3% in women and 0.7% in men]). The incidence was 0.8% in smokers or ex-smokers ≥50 years-old; 0.3% in non-smokers; and 1.2% in patients with COPD.