

SHORT REPORT



Diagnosis and management of interstitial lung disease with concomitant lung cancer in Italy: Results from the ICARO clinician survey

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ABSTRACT

Background: Coexistence of interstitial lung disease (ILD), particularly idiopathic pulmonary fibrosis (IPF), and lung cancer poses major diagnostic and therapeutic challenges, yet clinical management remains heterogeneous. The project aims to describe current Italian practices for integrated management of ILD with concomitant lung cancer.

Methods: ICARO (Interstiziopatia e Cancro del polmone: AppRoccio al management clinico integratO) is a national cross-sectional clinician survey conducted in Italy on behalf of the Italian Respiratory Society from November 2024 to March 2025. A 12-item multiple-choice questionnaire assessed diagnostic strategies, treatment preferences, and perceived toxicity risks. Invitations were sent to X physicians, among which 38 answered (35 specialists and senior 3 registrars (age range: 28–68 years)).

Results: An ILD multidisciplinary team was available in 26/38 (71.1%) centres. Diagnostic procedures for lung cancer in ILD patients were reported as performed "always/often" by 14/38 (36.8%), with the main concern being ILD progression after procedures (31/38 - 81.6%). Most respondents continued antifibrotic therapy during systemic cancer treatment (28/38- 73.7%). Combined chemotherapy plus immune checkpoint inhibitors was perceived as the highest-risk regimen by 19/38 physicians (50%), and 20/38 (52.6%) were hesitant to offer neo-adjuvant immunotherapy in stage II–IIIa NSCLC. Severe toxicity from radiotherapy was reported as frequent by 8/38 (21.1%).

Conclusions: Italian clinicians report substantial variability in diagnostic and therapeutic strategies for lung cancer in ILDs, driven mainly by concern for ILD progression and treatment-related pulmonary toxicity. Although limited, this study unveils an urgent need for further prospective studies to better define the safety and efficacy of combined therapeutic approaches and to establish evidence-based guidelines to support clinical decision-making.

Key words: Interstitial lung diseases, lung cancer, survey, multidisciplinary board

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Authors' contributions: Study design: GMS, EC, PC, LC, FL; data analysis: GMS, VMC, SL, GA, FP; writing: GMS VMC, SL, FP; supervision: GMS, PC, LC, FP.

Ethics approval and consent to participate: This survey collected only anonymous, non-identifiable information from clinicians. No personal data were recorded. According to national regulations, ethics approval was not required for studies involving anonymous surveys of healthcare professionals.

Consent for publication N.a

Availability of data and material: The data generated and analyzed will be available from the corresponding author on reasonable requests

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Introduction

Interstitial lung diseases (ILDs) comprise a heterogeneous group of disorders characterized by varying degrees of inflammation and fibrosis of the lung parenchyma. Among them, idiopathic pulmonary fibrosis (IPF) is the most common and aggressive form, associated with a median survival of 3–5 years from diagnosis, in absence of treatment [1]. Notably, patients with IPF have a substantially increased risk of developing lung cancer, with incidence rates reported to be five-fold higher than in the general population and ranging between 5% and 22% [2,3]. IPF and lung cancer, in fact, share some risk factors, like cigarette smoking, air pollution and dust exposure, and recognize common pathogenetic features including microsatellite instability, epigenetic alterations, telomere shortening and impaired cellular bioenergetics [4–6]. These overlapping risk profiles and pathogenic features suggest a biologically plausible link between fibrotic lung remodeling and carcinogenesis. The coexistence of ILDs and lung cancer poses significant clinical challenges, as these patients often exhibit reduced pulmonary reserve, increased susceptibility to treatment-related toxicities, and worse overall outcomes [7,8]. Diagnosis of lung cancer in the context of lung fibrosis is often tricky: the identification of lung nodules within extensive fibrotic tissue can be difficult and the lung biopsy carries increased risks of complications, like pneumothorax or acute exacerbations of ILDs. In addition, some patients are not suitable for histologic assessment due to their overall frailty. Similarly, clinical management is complicated by the lack of standardized guidelines, heterogeneous disease presentations and high risk of complications

from lung cancer treatment. Standard oncologic therapies, in fact, may induce pneumonitis or exacerbate underlying interstitial disease, contributing to worse overall survival outcomes in patients with coexisting ILDs and lung cancer compared with those with lung cancer alone [9,10]. In the context of growing complexity of fibrotic and oncologic patients, multidisciplinary teams (MDTs) have emerged as an essential component to guide the decision-making framework. MDTs have been shown to improve diagnostic accuracy, and optimize individualized treatment planning in both ILDs and lung cancer when considered separately. Nonetheless, their role in managing coexisting disease remains underexplored [11–13]. This study aims to evaluate current real-world practices in Italy for the management of patients with concomitant ILDs and lung cancer, with a focus on diagnostic strategies, treatment approaches, and the involvement of multidisciplinary care. Secondary aims include identifying commonly adopted therapeutic strategies for both early-stage and advanced lung cancer and evaluating concurrent pharmacologic management of ILDs, particularly antifibrotic therapy.

Methods

A structured national survey (**ICARO** survey: **I**nterstiziopatia e **C**ancro del polmone: **A**ppRoccio al management clinico integrato, Figure 1 and Supplementary Figure 1) was conducted in Italy between November 2024 and March 2025 on the behalf of the Oncology, Interstitial Lung Diseases and Epidemiology Group of the Italian Respiratory Society (SIP-IRS).

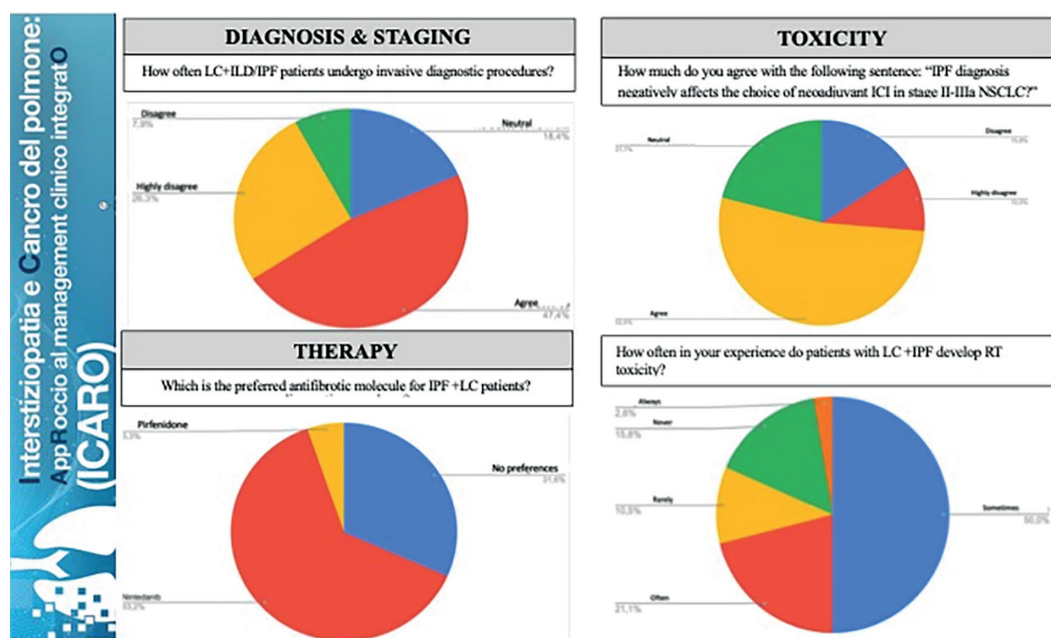


Figure 1. The ICARO survey. Most relevant answers to key issue related to diagnosis, treatment options and drug-related toxicities in patients carrying LC and ILD/IPF. ICI: immune checkpoint inhibitors, RT: radiation therapy, TKI: tyrosine kinase inhibitors.

Participants were recruited via the SIP-IRS professional network (academic and non-academic), through a direct link on the SIP-IRS website and invitation via email.

A total of 38 physicians, including 35 specialists and 3 senior consultants (age range 28–68 years), accepted to participate. The survey was administered using a structured online form; no incentives were provided. The survey comprised 12 multiple-choice questions with four predefined response options, covering diagnostic strategies, treatment preferences, and perceived risks of therapy-related complications in patients with ILDs and lung cancer. Data were collected, anonymized, and analyzed descriptively to summarize current practices and identify patterns in clinical decision-making. No patient data and no directly identifiable personal information were recorded. We additionally collected centre-level descriptors from respondents (geographic macro-area, academic vs non-academic setting, availability of an ILD multidisciplinary team/clinic) to contextualise practices. Given the rarity and complexity of ILD/IPF with concomitant lung cancer, ICARO was conceived as an exploratory

survey focusing on clinicians working in referral contexts, to map current decision-making patterns and unmet needs.

Results

Responses were received from clinicians working in centres located across Italy.

Seventy-one percent of respondents (26/38, 71.1%) reported the presence of a dedicated ILD multidisciplinary team in their hospital, suggesting growing recognition of the importance of collaborative care. Multidisciplinary management of ILD patients involves < 50 new diagnosis and re-evaluations per month in 25 cases (65.7%); from 50 to 100 in 10 cases (26.3%), whereas only three responses (7.9%) confirmed more than 100 discussions/month. These teams typically included pulmonologists, thoracic oncologists, radiologists, and pathologists. Only 14 physicians (36.9%) routinely perform diagnostic procedures for lung cancer in patients with ILDs (always or often). ILD progression due to the procedure was the main concern

(31/38, 81.5%), followed by doubts regarding the efficacy of lung cancer therapies (11/38, 28.9%). Most physicians (28/38, 73.7%) reported continuing antifibrotic therapy during chemotherapy or immunotherapy in patients with advanced lung cancer. The 18.4% of Italian interviewed pulmonologists (7/38) were not able to take a decision on this issue, whereas 7.9% (3/38) believed discontinuation of antifibrotic agents should be preferable. Fifty-five percent of respondents (19/38) considered combination therapy with chemotherapy and immune checkpoint inhibitors (ICIs) to carry the highest risk of complications; for about 16% (6/38) of responders the ICI monotherapy is at risk for the onset of toxicity; the 11.4% of the interviewed reported toxic effects related to the use of TKIs (tyrosine kinase inhibitors). Fifty-two percent (20/38) were hesitant to offer neoadjuvant immunotherapy in stage II–IIIa non-small cell lung cancer (NSCLC) when ILD coexists. Radiotherapy was perceived as frequently toxic, with 23.7% (9/38) of responders reporting frequent severe adverse events in this population.

Discussion

This exploratory national survey provides a picture of current Italian clinical approaches to patients with coexisting ILD and lung cancer, a population in whom diagnostic and therapeutic decisions are frequently constrained by limited pulmonary reserve and concern for ILD exacerbation. ICARO survey was shared online through the SIP-IRS website and obtained a limited response rate (38 pulmonologists). The modest number of respondents should not be interpreted as low clinical relevance; rather, it likely reflects the targeted sampling strategy (centres involved in ILD and thoracic oncology pathways) and the inherent difficulty of surveying a highly specialised field. Importantly, our findings highlight variability in diagnostic aggressiveness and treatment choices, consistent with the paucity of disease-specific guidance and the need to balance oncologic benefit against pulmonary risk. Furthermore, these observations point out the significant gap that still exists between the preclinical setting (Figure 2), that is hugely

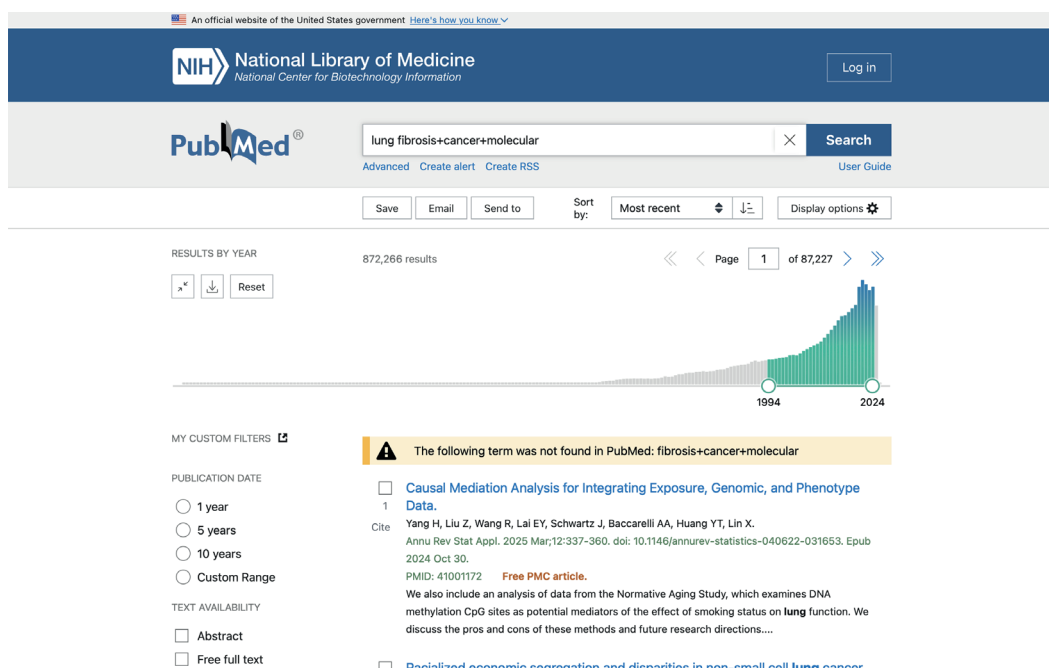


Figure 2. Temporal trend of research interest derived from a PubMed search with the keywords “lung fibrosis” and “lung cancer” and “molecular”. However, the increasing volume of mechanistic research on fibrosis–cancer interplay over time contrasts with the limited availability of evidence-based, integrated clinical pathways for this specific comorbidity.

growing in the last decades, and the limited translation of results to the clinical scenario. In this perspective it should be underlined that, although limited, the survey unveils that, in about 29% of cases, ILDs are managed in absence of a multidisciplinary board. The main limitations include the small sample size and the potential for selection bias, as participants were recruited through a professional society network and may not fully represent all Italian centres. Responses reflect self-reported practices rather than audited clinical activity, and centre-level characteristics were captured in a simplified manner. The survey was designed to be descriptive and hypothesis-generating; therefore, inferences regarding causality or superiority of specific strategies cannot be made. Nonetheless, the study identifies key areas of heterogeneity and uncertainty that can inform future prospective research and guideline development.

Conclusion

The management of patients with concurrent ILDs and lung cancer in Italy demonstrates a trend toward multidisciplinary, individualized care, and confirms significant heterogeneity in clinical practice. Most clinicians continue antifibrotic therapy during cancer treatment and carefully weigh the risks of chemotherapy, ICIs, and radiotherapy. These findings highlight the need for further prospective studies to better define the safety and efficacy of combined therapeutic approaches and to establish evidence-based guidelines to support clinical decision-making.

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Appendix

Supplementary files

Interstiziopatia e Cancro del polmone: AppRoccio al management clinico integrato (ICARO)

Il razionale di questo progetto è quello di avere il primo dato in real life di come vengono gestiti i pazienti con concomitante interstiziopatia polmonare e cancro del polmone a livello nazionale dal momento che la diagnosi e la gestione di queste patologie diventano sempre più frequenti. Questa survey è stata coordinata dal GdS Oncologia in collaborazione con il GDS Pneumopatie Infiltrative Diffuse ed Epidemiologia e prevenzione. Il risultato di questa analisi preliminare consentirà lo sviluppo di strategie uniformi di diagnosi e cura di queste patologie e pone le basi per il disegno di studi di ambito traslazionale e meccanicistico.

Aims

- 1) Definire la stima di casi di paziente con concomitante interstiziopatia polmonare e cancro del polmone che vengono trattati nei gruppi multidisciplinari
- 2) Analisi delle principali barriere alla diagnosi dei pazienti affetti da interstiziopatia e carcinoma polmonare
- 3) Stimare le strategie terapeutiche più utilizzate sia nel paziente oncologico con malattia localmente avanzata/metastatica sia nel paziente in stadio iniziale
- 4) Analisi del trattamento farmacologico delle fibrosi nei pazienti con neoplasia polmonare

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Partecipa alla survey

Figure S1. ICARO survey: Interstiziopatia e Cancro del polmone: AppRoccio al management clinico integrato.

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