Autoantibody and Radiological Profiles as Prognostic Indicators in Idiopathic Inflammatory Myopathies: Insights into Mortality and Interstitial Lung Disease Development

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Background

- Idiopathic inflammatory myopathies (IIMs) constitute a diverse group of acquired muscle disorders, often involving multiple organs such as the skin, heart, and lungs.
- **Interstitial lung disease (ILD) is a common pulmonary manifestation in IIM (IIM-ILD),** significantly impacting morbidity and mortality. However, the **prognostic implications of autoantibody and radiological profiles in IIM-ILD remain inadequately characterized.**

Objectives

- This study aims to investigate the **influence of immunological and radiological profiles at baseline on both mortality and the development of ILD in individuals with IIM**

Methods

- A retrospective analysis was conducted on a cohort of IIM patients, stratified based on the presence or absence of ILD. The study encompassed a comprehensive evaluation of **epidemiological, clinical, immunological, treatment, chest HRCT scans and pulmonary function test at baseline (%FVC and %DLCO). Univariate and multivariate Cox proportional hazards** analyses were employed to compare **mortality and ILD incidence across distinct autoantibody groups**. **Logistic regression assessed predictors for ILD and mortality**. **Kaplan-Meier survival curves** were generated and the log rank ratio was used to identify differences

Results

- **80 patients diagnosed with IIM** (62.5% female) with a mean age of 62.2±26 years and disease duration of 5.6±6 years. 22 patients had ILD (28%) and 10 (12.5%) patients died during follow-up.
- **ILD** was associated with **Anti-Ro52** (OR 8.42, CI 95% 1.48-12.3, p=0.004), **anti-Jo1** (OR 12.7 CI 95% 2.29 –82.45, p=0.0003) and **anti-PL12** (OR 8.62 CI 95% 1.06-16.02. p=0.003) positivity and **anti-synthetase syndrome** (OR 27, CI 95% 16.2-52.4, p<0.0001).
- **Mortality** was associated with **anti-Ku positivity** (OR 13.9 CI 95% 1.78 – 8.23, p=0.0003), **anti-MDA5** (OR 2.4 CI 95% 1.2-7.53, p=0.03), **ILD** (OR 10.2 CI 95% 6.24-14.3, p=0.02) and **dermatomyositis** (OR 12, CI 95% 6.4-21.5, p=0.003).

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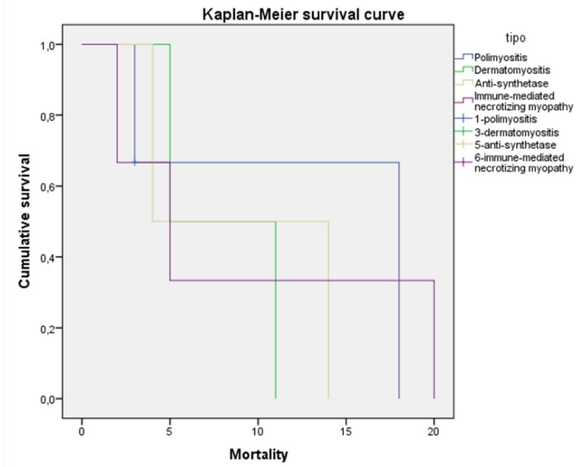
- Multiple logistic regression identified as **predictors for developing IIM-ILD and mortality are represented in table 1 and 2. Survival rate at 20 years was lower in dermatomyositis patients (log rank test p < 0.001) and in patients with UIP pattern (log rank test p =0.02) (figure 1 and 2).**



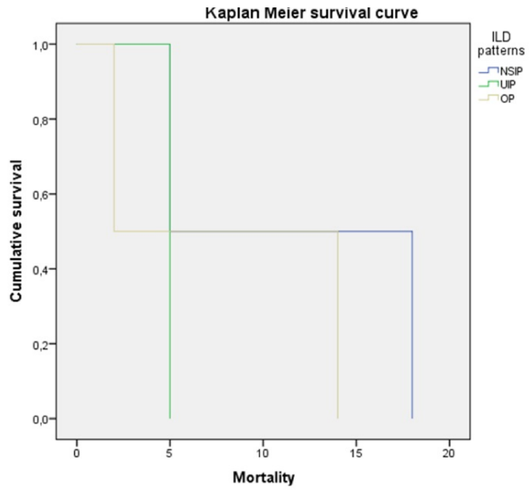


Table 1. Significant logistic regressions for predictors for IIM-ILD

Predictor	β value	P value
Respiratory symptoms	0.40	0.03
Smoking	0.37	0.003
Anti-PL12	0.76	0.013
Anti-Jo	0.52	0.013
ESR	0.29	0.004
%DLCO	-0.4	0.001
Anti-synthetase	0.32	0.04

Table 2. Significant logistic regressions for predictors for IIM-associated mortality

Predictor	β value	P value
Age at diagnosis	0.186	0.036
Anti-Ku	0.40	0.002
Anti-MDA5	-0.322	0.01
ILD	-0.59	0.001
Dermatomyositis	0.41	0.03
UIP pattern	0.21	0.04

Conclusion

- **Anti-PL12 and anti-Jo1** conferred a **higher risk of ILD**, meanwhile **anti-Ku and anti-MDA5 a higher risk of mortality in IIM patients**. **Survival rate at 20 years was lower in dermatomyositis patients and in patients with UIP pattern**.
- These findings provide crucial insights in predicting the development of ILD and mortality in individuals with IIM, guiding prognostic assessments and personalized treatment approaches for individuals with idiopathic inflammatory..

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