Supplementary Materials

Supplementary Tables

Supplementary Figures

Table S1. Treatment information.

Treatment	Overall (N = 418)	Survivors (N = 327)	Non-Survivors (N = 91)	P value
Corticosteroid	418 (100%)	327 (100%)	91 (100%)	1.000
IVIG	71 (17%)	24 (7.3%)	47 (52%)	<0.001
IVCY	234 (56%)	184 (56%)	50 (55%)	0.822
Tacrolimus	102 (24%)	71 (22%)	31 (34%)	0.015
Cyclosporin	72 (17%)	57 (17%)	15 (16%)	0.832
Tofacitinib	50 (12%)	31 (9.5%)	19 (21%)	0.003
Treatment				0.635
Corticosteroid alone	52 (12%)	42 (13%)	10 (11%)	
Combined therapy	366 (88%)	285 (87%)	81 (89%)	

Note: Data are given as n (%). IVIG, intravenous immunogloblin; IVCY, intravenous cyclophosphamide.

Table S2. Patient Characteristics after imputation of missing values.

Characteristic	Overall (N = 418)	Development (N = 282)	Validation (N = 136)	P value
Age	56.0 (50.0-65.8)	55.5 (50.0-66.0)	56.0 (50.0-65.0)	0.496
Gender				0.811
Female	264 (63%)	177 (63%)	87 (64%)	
Male	154 (37%)	105 (37%)	49 (36%)	
Smoke	99 (24%)	73 (26%)	26 (19%)	0.127
Cough	350 (84%)	234 (83%)	116 (85%)	0.548
Breathless	375 (90%)	252 (89%)	123 (90%)	0.734
Fever				0.404
Absent	288 (69%)	198 (70%)	90 (66%)	
Present	130 (31%)	84 (30%)	46 (34%)	
Heliotrope sign				0.058
Absent	355 (85%)	233 (83%)	122 (90%)	
Present	63 (15%)	49 (17%)	14 (10%)	
Gottron sign				0.434
Absent	219 (52%)	144 (51%)	75 (55%)	
Present	199 (48%)	138 (49%)	61 (45%)	
Myasthenia				0.600
Absent	335 (80%)	224 (79%)	111 (82%)	
Present	83 (20%)	58 (21%)	25 (18%)	
Arthralgia				0.135
Absent	326 (78%)	214 (76%)	112 (82%)	
Present	92 (22%)	68 (24%)	24 (18%)	
HRCT				0.258
NSIP	156 (37%)	100 (35%)	56 (41%)	
OP or UIP	262 (63%)	182 (65%)	80 (59%)	
MDA5				0.228
Negative	272 (65%)	178 (63%)	94 (69%)	
Positive	146 (35%)	104 (37%)	42 (31%)	
RO52				0.072
Negative	161 (39%)	117 (41%)	44 (32%)	
Positive	257 (61%)	165 (59%)	92 (68%)	
WBC	7.4 (5.4-10.0)	7.2 (5.4-10.0)	7.7 (5.4-10.0)	0.724
PLT	226.5 (173.0-285.8)	227.0 (173.3-295.3)	226.0 (172.0-276.8)	0.467
Lymphocyte	1.1 (0.8-1.7)	1.2 (0.7-1.7)	1.1 (0.8-1.7)	0.840
$CD3^+CD4^+$ T	0.4 (0.2-0.6)	0.4 (0.2-0.6)	0.3 (0.2-0.5)	0.132
LDH	299.0 (237.0-429.0)	293.5 (233.3-409.0)	320.5 (246.5-439.3)	0.069
CRP	6.7 (3.8-21.4)	6.7 (3.8-20.7)	6.7 (3.9-21.6)	0.805

IgG	11.9 (9.6-14.7)	12.3 (9.7-14.8)	11.3 (9.2-14.5)	0.083
ESR	27.5 (16.0-44.0)	28.0 (16.0-45.8)	26.0 (13.0-41.5)	0.158
CK	49.0 (30.0-101.8)	46.5 (30.0-93.5)	55.0 (32.8-123.8)	0.142
FVC%	61.1 (49.5-71.0)	61.2 (50.8-71.2)	59.1 (46.3-68.7)	0.141
FEV1%	67.5 (55.9-76.1)	67.7 (56.3-75.8)	67.1 (54.6-76.9)	0.552
DLCO%	50.3 (41.0-64.6)	50.6 (41.9-65.1)	50.1 (39.8-63.2)	0.391
PO2	73.0 (64.0-85.0)	73.0 (64.0-86.0)	71.5 (63.8-82.8)	0.459
PCO2	35.3 (32.7-39.7)	35.5 (33.0-39.6)	35.1 (32.1-39.8)	0.621
PaO2/FiO2	310.0 (220.3-376.0)	319.0 (221.0-380.0)	305.0 (218.8-376.0)	0.249

Note: Data are given as median (IQR) or n (%). A Gottron's sign and inverse Gottron's sign were pooled in data collection. Abbreviations: WBC, white blood counts; PLT, platelets; LDH, lactate CT, CRP, C-reactive protein; IgG, immunoglobulin G; computed tomography; ESR, Erythrocyte Sedimentation Rate; CK, creatine kinase; FVC%, forced vital capacity predicted; DLCO%, diffusing capacity of the lung for carbon monoxide predicted; FiO2, fraction of inspiration O2; MDA5, melanoma differentiation-associated gene 5; HRCT, high-resolution computed tomography; NSIP, nonspecific interstitial pneumonia; OP, organizing pneumonia; UIP, usual interstitial pneumonitis.

Table S3. Univariate and multivariate associations between fifteen candidates markers and rapid progression in patients with PM/DM-ILD.

	Univariate Logistic Regression		Multivariate Logistic Regression*	
Variable	**OR (95% CI)**	**P value**	**OR (95% CI)**	**P value**
WBC	1.01 (0.98-1.05)	0.532	-	-
PLT	1.00 (1.00-1.00)	0.420	-	-
Lymphocyte	0.26 (0.14-0.46)	<0.001	-	-
$CD3^+CD4^+$ T	0.01 (0.00-0.07)	<0.001	0.09 (0.02-0.48)	0.005
LDH	1.00 (1.00-1.00)	<0.001	1.00 (1.00-1.00)	0.013
CRP	1.03 (1.01-1.04)	<0.001	1.01 (1.00-1.03)	0.071
IgG	0.99 (0.93-1.06)	0.792	-	-
ESR	1.02 (1.01-1.03)	0.001	-	-
CK	1.00 (1.00-1.00)	0.159	1.00 (1.00-1.00)	0.056
FVC%	0.96 (0.92-1.00)	0.035	-	-
FEV1%	0.97 (0.93-1.01)	0.186	-	-
DLCO%	0.98 (0.94-1.01)	0.138	-	-
PO_2	0.95 (0.94-0.97)	<0.001	-	-
PCO_2	0.87 (0.81-0.93)	<0.001	-	-
PaO_2/FiO_2	0.99 (0.98-0.99)	<0.001	0.99 (0.99-1.00)	<0.001

Notes: A stepwise multivariate logistic regression model guided by Akaike's information criterion (AIC) as the stopping criterion was conducted and the results of final multivariate logistic regression model were given.
Abbreviations: PM/DM-ILD, polymyositis/dermatomyositis-associated interstitial lung disease; WBC, white blood counts; PLT, platelets; LDH, lactate dehydrogenase; CRP, C-reactive protein; IgG, immunoglobulin G; ESR, Erythrocyte Sedimentation Rate; CK, creatine kinase; FVC%, forced vital capacity predicted; DLCO%, diffusing capacity of the lung for carbon monoxide predicted; FiO2, fraction of inspiration O_2.

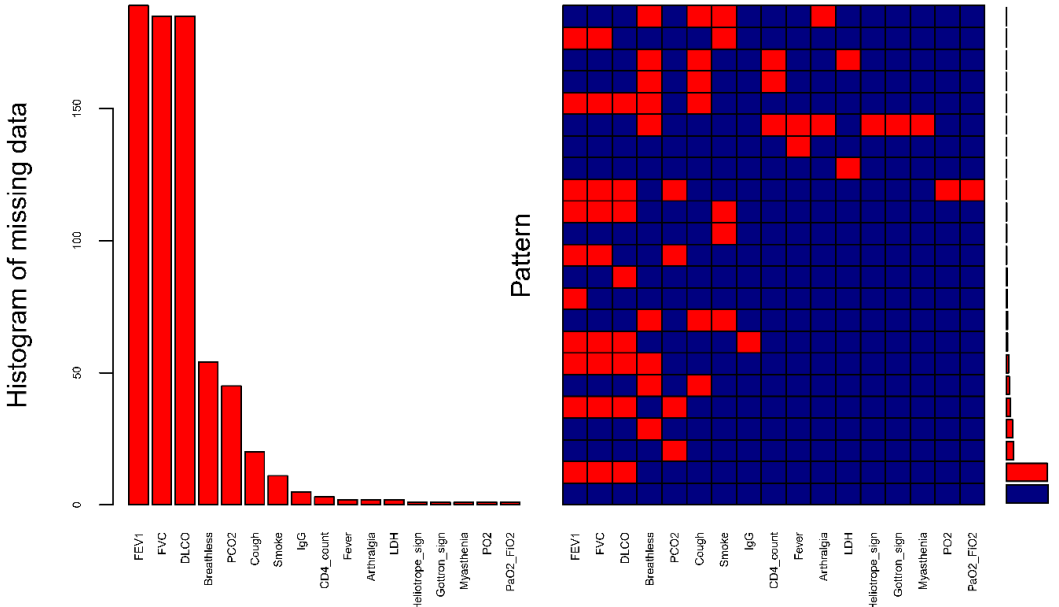

Figure S1. The pattern of missing values.

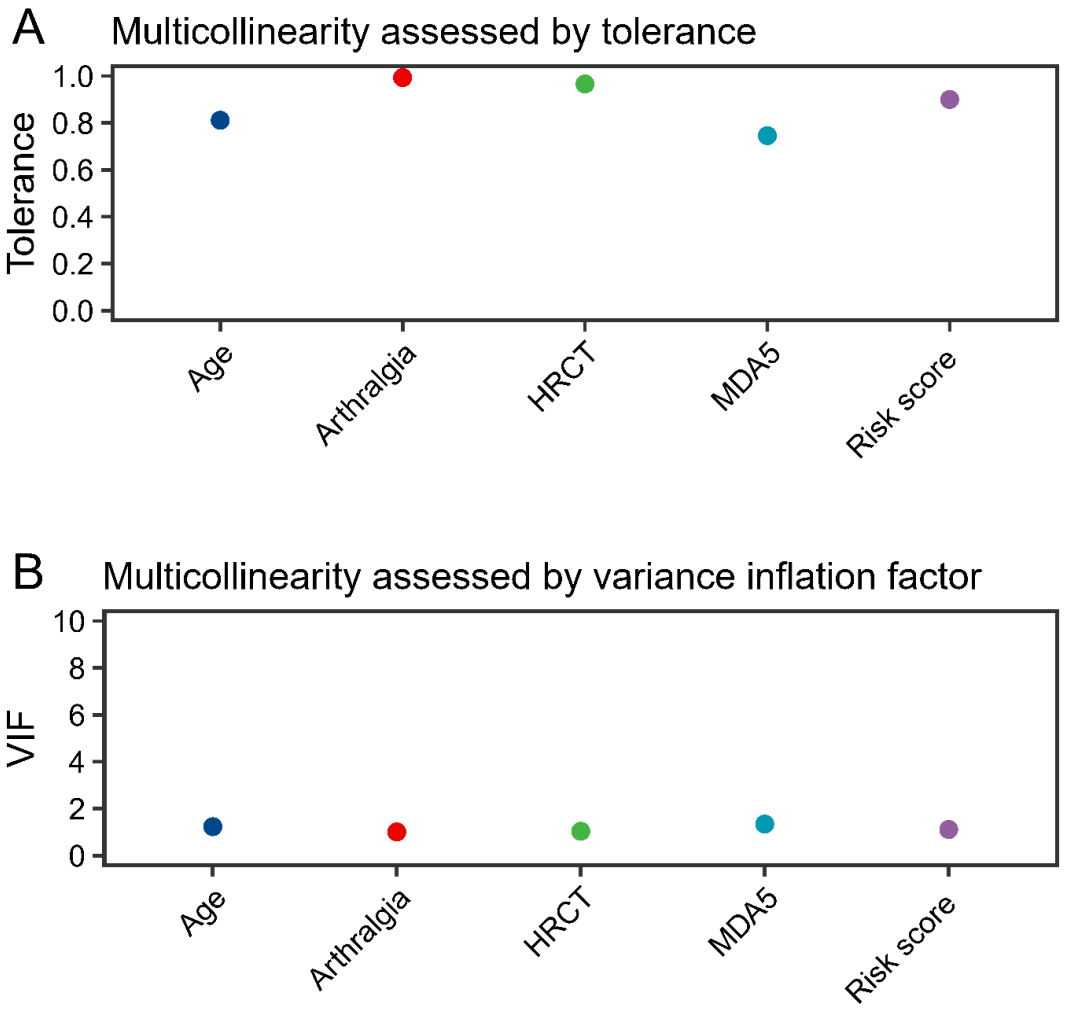

Figure S2. The multicollinearity of final model was assessed by tolerance (A) and variance inflation factor (B).

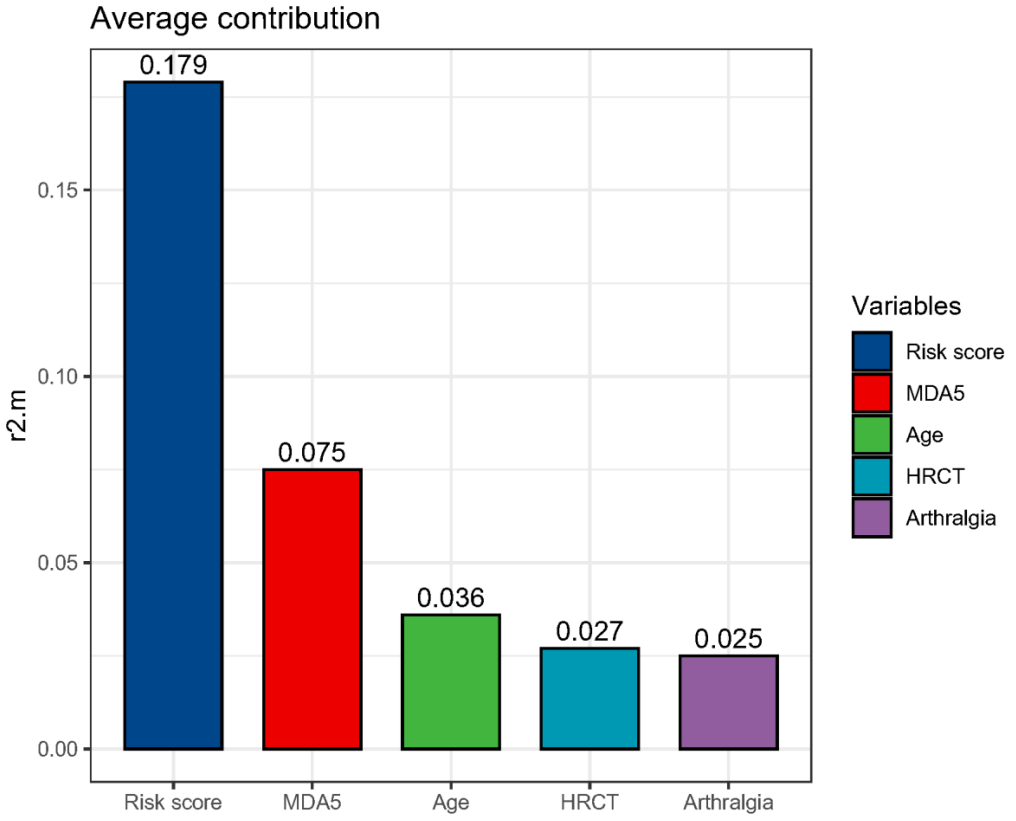

Figure S3. Dominance analysis assessed the relative importance of each independent predictor within the prediction model.

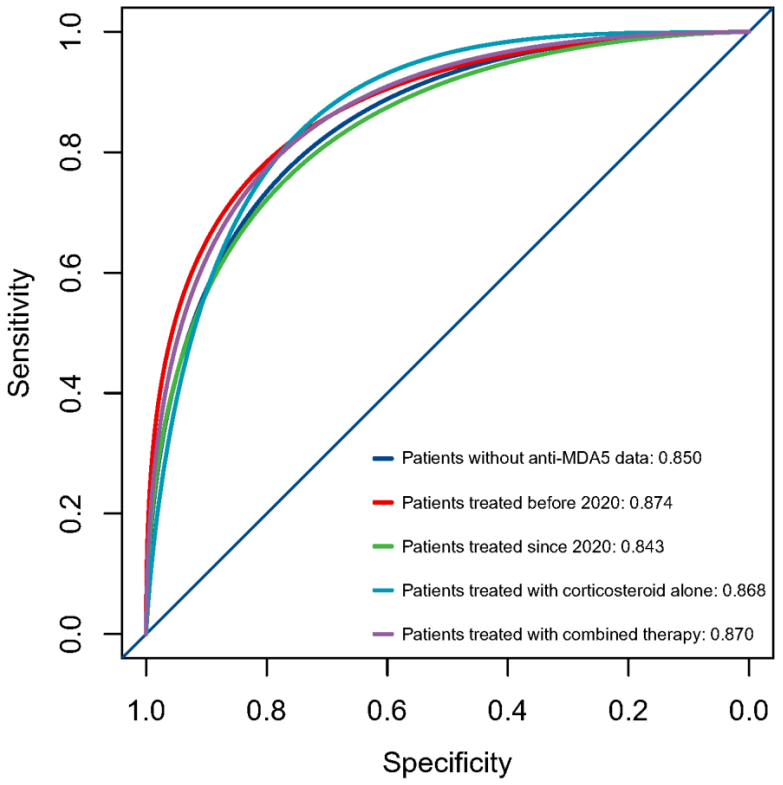

Figure S4. Sensitivity analyses verify the model's robustness.

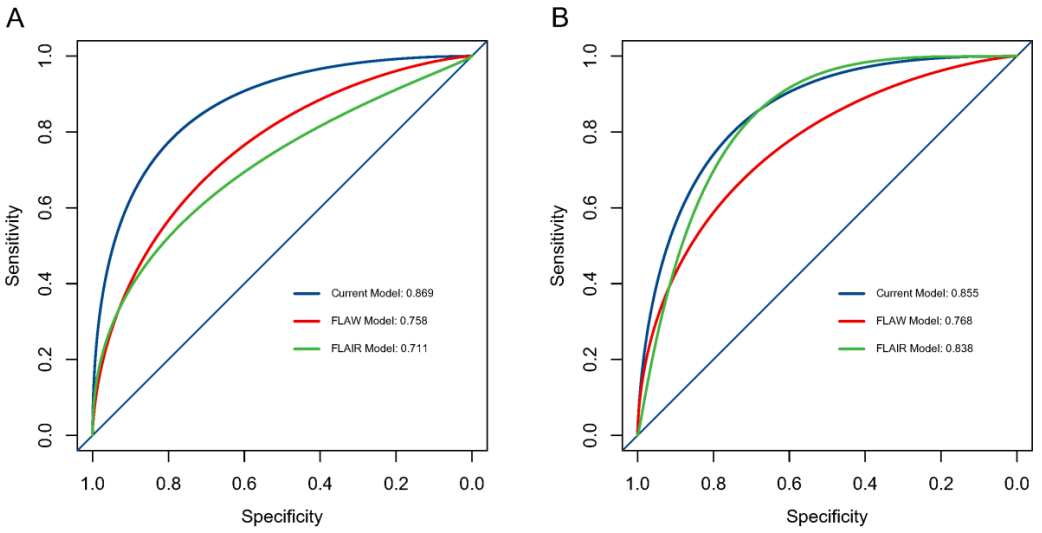

Figure S5. Comparative assessments against previous models.