

Table S1. Baseline Characteristics of HP cohort On Immunosuppression

Characteristics	Prednisone (n=41)	Azathioprine (n=20)	Mycophenolate (n=32)	p-value
Age, mean (\pm SD)	62.3 (12.8)	55.9 (13.5)	62.8 (8.4)	0.080
Female gender, n (%)	29 (70.7)	14 (80)	16 (50)	0.149
Race/Ethnicity				
Caucasian, n (%)	34 (82.9)	16 (80.0)	30 (93.8)	0.284
BMI, mean (\pm SD)	31.9 (9.8)	35 (10.4)	32.1 (7.2)	0.431
Ever smoker, n (%)	24 (58.5)	11 (55)	19 (59.4)	0.950
Antigen exposure				
Avian, n (%)	19 (46.3)	10 (50.0)	13 (40.6)	0.787
Mold, n (%)	10 (24.4)	4 (20.0)	14 (43.8)	0.109
Hot tub, n (%)	2 (4.9)	0 (0.0)	0 (0.0)	0.274
Unknown, n (%)	14 (34.1)	6 (30.0)	9 (28.1)	0.852
Gastroesophageal reflux, n (%)	25 (61.0)	14 (70.0)	19 (59.4)	0.722
Crackles, n (%)	35 (85.4)	19 (95.0)	31 (96.9)	0.178
Clubbing, n (%)	8 (19.5)	6 (30.0)	12 (37.5)	0.230
TLC [`] (% predicted) (\pm SD)	72.6 (17.4)	65.2 (18.1)	66.9 (15.3)	0.208
FVC [@] (% predicted) (\pm SD)	61.4 (19.3)	56.7 (14.6)	60.2 (16.3)	0.627
DLCO (% predicted) (\pm SD)	48.5 (20.3)	47.2 (22.7)	45.6 (24.0)	0.853
Oxygen therapy, n (%)	28 (68.3)	15 (75.0)	23 (71.9)	0.855
HRCT features				
HRCT fibrosis score, mean (\pm SD)	127.2 (19.1)	120.8 (14.0)	127.3 (18.8)	0.367
Mosaic attenuation, n (%)	36 (87.8)	18 (90.0)	27 (84.4)	0.827
Ground glass opacities, n (%)	35 (85.4)	20 (100.0)	31 (96.9)	0.064
Honeycombing, n (%)	21 (51.2)	7 (35.0)	14 (43.8)	0.480
Histopathologic features**				
Surgical lung biopsy obtained, n (%)	23 (56.1)	17 (85.0)	22 (68.8)	0.076
Poorly formed granulomas, n (%)	18 (43.9)	8 (40.0)	15 (46.9)	0.116
Honeycombing with UIP pattern, n (%)	9 (22.0)	11 (55.0)	9 (28.1)	0.219
Mean follow-up time, months (\pm SD)	34 (28)	42 (32)	40 (22)	0.582

HP = Hypersensitivity Pneumonitis; IS = Immunosuppressive therapy (Prednisone, Azathioprine, Mycophenolate mofetil); [`]n=127;

[@]n=130; HRCT= High-resolution computerized tomography scan. P-value depicts level of significance for comparison between means of the prednisone, azathioprine and mycophenolate groups using the one-way analysis of variance (ANOVA) test.

Table S2. Dose and duration of prednisone therapy

Treatment	Prednisone (n=41)	Aza (n=20)	MMF (n=32)	p-value
Median				
Prednisone dose (range), mg	40 (10 - 60)	40 (5 - 60)	20 (5 - 60)	0.021
Duration of treatment (range), weeks	11 (4 - 156)	8 (5 - 52)	9 (4 - 56)	0.280
Mean				
Prednisone dose (SD), mg	35.3 (16.0)	31.5 (13.4)	23.9 (14.0)	0.013
Duration of treatment (SD), weeks	18.8 (26.9)	15.1 (15.8)	17.1(15.7)	0.834

Abbreviations: ILD = Interstitial Lung Disease; MMF = mycophenolate mofetil; Aza = azathioprine

*Values depicted represent the maximum dose administered as chronic therapy

Table S3. Grades of Treatment Emergent Adverse Events (TEAE) substratified by Immunosuppressive Therapy* administered

Therapy	TEAE Count	TEAE Grade
Mycophenolate mofetil (MMF)		
Constipation	0	I
Nausea	0	I
Vomiting	0	II
Headache/dizziness/blurry vision	5	I
Diarrhea	2	II
Stomach upset/pain/gas	8	II
Edema	4	II
Htn	0	I
Fever	1	II
Tremor	2	I
Insomnia	2	I
Bruising/cellulitis?	3	II
Recurrent UTIs	3	III
Respiratory hospitalization	4	IV
Azathioprine (AZA)		
Nausea/anorexia	2	I
Vomiting	1	II
Diarrhea	0	II
Mild ALT, AST elevated (medication continued)/jaundice/itching/hepatotoxicity	2	I
ALT, AST elevated with immediate cessation of drug	2	II
ALT, AST elevated (medication discontinued; patient hospitalized)/hepatic veno-occlusive dx	2	III
Fever + malaise/myalgia/night-sweats	6	II
Rash/hair loss	3	I
Leukopenia/thrombocytopenia/anemia/myelosuppression/easy bruising or bleeding	6	I
Immunosuppression/upper respiratory infection/thrush	4	II
Immunosuppression/recurrent UTI/fungal esophagitis	2	III
Progressive multifocal leukoencephalopathy	0	IV
Gastrointestinal hypersensitivity rxn	0	III
Pancreatitis	0	III
Lymphoma/malignancy	0	IV
Acute febrile neutrophilic dermatosis	0	II
Edema/weight gain	10	II
Thrush	1	II

Belching/bloating/GERD/dyspepsia	3	II
Moon facies	1	I
Respiratory hospitalization	5	IV
Prednisone		
Appetite changes	2	I
Nausea/vomiting	1	I
Hypokalemia	0	I
Headache/dizziness/blurry vision	6	I
Glucose intolerance	7	II
Stomach upset/pain/ gas/dyspepsia	10	II
Edema/weight gain	24	II
Hypertension	3	I
Fever/diaphoresis	2	II
Tremor	3	I
Insomnia	6	I
Petechiae/bruising/cellulitis/skin atrophy/impaired wound healing	3	II
Facial erythema/skin pigmentation/hair loss/acne/rash/urticaria	2	I
Emotional lability/anxiety/depression	9	II
Raised IOP	0	I
Cushings syndrome/moon facies/hirsutism/ menstrual irregularities	1	I
Muscle atrophy/deconditioning/proximal myopathy	8	II
Osteopenia/osteoporosis	5	I
Cataracts/glaucoma	2	III
Upper respiratory infection/thrush	7	II
Recurrent urinary tract infection/Fungal esophagitis	2	III
Respiratory hospitalization	6	IV

***MMF** - Constipation, nausea, vomiting, headache, dizziness, blurry vision, diarrhea, stomach upset/pain, gas/bloating/dyspepsia, edema, HTN, fever, tremors, insomnia, petechiae/bruising, cellulitis, recurrent urinary tract infections, lower respiratory tract infections.

***Azathioprine**: Constipation, nausea, vomiting, headache, dizziness, blurry vision, diarrhea, stomach upset/pain, gas/bloating/dyspepsia, edema, HTN, fever, tremors, insomnia, petechiae/bruising, cellulitis, recurrent urinary tract infections, lower respiratory tract infections, liver function test abnormalities, rash, leukopenia, thrombocytopenia, anemia, myelosuppression, progressive multifocal leukoencephalopathy, pancreatitis, lymphoma, malignancy, acute febrile neutrophilic dermatosis, myalgia.

***Prednisone**: appetite changes, nausea, vomiting, hypokalemia, headache, dizziness, blurry vision, glucose intolerance, stomach upset/pain, gas/dyspepsia, edema, sodium retention, hypertension, fever, diaphoresis, tremors, insomnia, petechiae/bruising, cellulitis, skin atrophy, impaired wound healing, facial erythema, skin pigmentation, hair loss, acne, rash, urticaria, emotional lability, anxiety, depression, raised IOP, Cushings syndrome/moon facies, hirsutism, menstrual irregularities, muscle atrophy/deconditioning/proximal myopathy, osteopenia/osteoporosis, cataracts, glaucoma, thrush, recurrent urinary tract infections, LRTIs.

Table S4. Variables Predicting Survival in Patients with CHP

Variable	Unadjusted (n=131)			Adjusted* (n=115)		
	HR	p-value	95% CI	HR	p-value	95% CI
Immunosuppressive therapy	4.95	0.008	1.51 - 16.20	5.37	0.040	1.08 - 26.67
Age	1.03	0.141	0.99 - 1.06	1.04	0.083	0.99 - 1.09
Male gender	1.14	0.704	0.58 - 2.24	1.48	0.351	0.65 - 3.41
Identified environmental antigen	1.53	0.217	0.78 - 3.01	1.57	0.269	0.71 - 3.48
FVC	0.95	<0.001	0.93 - 0.97	0.98	0.295	0.95 - 1.01
DLCO	0.97	0.006	0.96 - 0.99	1.00	0.921	0.97 - 1.02
Caucasian race/ethnicity	8.60	0.034	1.17 - 62.93	--	--	--

*Adjusted for age, gender, race, FVC (% predicted), DLCO (% predicted), and identified antigen. CHP=chronic hypersensitivity pneumonitis

Table S5. Other Baseline Characteristics of External CHP cohort On Immunosuppression

Characteristics	Prednisone	Azathioprine	Mycophenolate	p-value
National Jewish Health				
Age, mean (\pm SD)	56.5 (13.9)	58.9 (10.2)	61.3 (9.6)	0.600
Female gender, n (%)	40 (54.8)	4 (21.0)	3 (42.8)	0.030
DLCO (% predicted) (\pm SD)	62.4 (18.7)	48.4 (15.4)	46.3 (12.9)	0.010
Identified antigen, n (%)	33 (45.2)	10 (52.6)	2 (28.6)	0.530
University of Kansas Medical Center				
Age, mean (\pm SD)	70.5 (8.1)	55.9 (13.5)	62.8 (8.4)	<0.001
Female gender, n (%)	15 (50.0)	8 (61.5)	8 (47.1)	0.749
DLCO (% predicted) (\pm SD)	53.0 (13.1)	55.4 (18.5)	57.1 (19.6)	0.701
Identified antigen, n (%)	27 (90.0)	13 (100.0)	15 (88.2)	0.589
Columbia University Medical Center				
Age, mean (\pm SD)	55.0 (14.0)	--	60.0 (5.0)	0.338
Female gender, n (%)	3 (50.0)	--	5 (55.0)	0.999
DLCO (% predicted) (\pm SD)	60.8 (20.4)	--	41.4 (14.0)	0.155
Identified antigen, n (%)	5 (83.3)	--	6 (66.7)	0.604
University of California Davis				
Age, mean (\pm SD)	74 (13.0)	75 (0.0)	77 (6.0)	0.898
Female gender, n (%)	2 (20.0)	0 (0.0)	3 (30.0)	0.549
DLCO (% predicted) (\pm SD)	55 (22.0)	16 (0.0)	44 (18.0)	0.271
Identified antigen, n (%)	3 (75)	1 (100)	3 (60)	0.700

CHP = Chronic Hypersensitivity Pneumonitis; National Jewish Hospital - Prednisone, n=73; Azathioprine, n=19; Mycophenolate mofetil, n=7; University of Kansas Medical Center - Prednisone, n=30; Azathioprine, n=13; Mycophenolate mofetil, n=17; Columbia University Medical Center - Prednisone, n=6; Azathioprine, n=0; Mycophenolate mofetil, n=9; University of California Davis - Prednisone, n=4; Azathioprine, n=1; Mycophenolate mofetil, n=5