Supplementary Table S1. Thyroid-related autoantibodies in the study population.

Items	
Autoantibody positivity	
Any thyroid-related antibodies	71 (36.2)
Anti-TG	31 (15.8)
Anti-TPO	28 (14.3)
Both anti-TG and anti-TPO	12 (6.1)
TRAb	28 (14.3)
Antibody titres in seropositive patients	
Anti-TG, IU/mL	90.0 [71.0-175.0]
Anti-TPO, IU/mL	954.0 [185.5-1956.5]
TRAb, IU/L	1.34 [1.26-1.54]

Data are presented as number (%) or median [interquartile ranges].
TG: thyroglobulin, TPO: thyroid peroxidase, TRAb: anti-TSH receptor antibodies.

Supplementary Table S2. Comparisons of patients' characteristics according to anti-TPO positivity.

	Anti-TPO (-) (n=168)	Anti-TPO (+) (n =28)	p-value
Women	162 (96.4)	28 (100.0)	0.597
Age at enrolment (year)	57.7 [45.6-66.0]	64.5 [53.1-70.8]	**0.026**
Elderly (age > 60 years)	73 (43.5)	19 (67.9)	**0.017**
Age at diagnosis (year)	49.4 [38.9-58.0]	57.4 [44.6-61.6]	**0.024**
Disease duration (year)	6.3 [2.8-12.4]	5.7 [0.8-12.0]	0.835
SS-related autoantibodies			
Anti-SSA/Ro	150 (89.3)	25 (89.3)	1.000
Anti-SSB/La	92 (54.8)	12 (42.9)	0.243
ANA	151 (91.0)	26 (92.9)	1.000
RF	88 (53.7)	20 (71.4)	0.080
ACA	15 (9.0)	7 (25.0)	**0.014**
Cryoglobulin	8 (4.8)	3 (10.7)	0.200
IgG (g/dL)	1.76 [1.46-2.10]	1.67 [1.41-1.89]	0.235
Low C3 or C4 level	14 (8.3)	1 (3.6)	0.700
No. of ESSDAI domains ever affected*	1.0 [1.0-2.0]	1.0 [1.0-2.0]	0.139
No. of ESSDAI domains ever affected* ≥ 3	31 (18.5)	1 (3.6)	0.054
ESSDAI	2.0 [1.0-4.0]	2.0 [1.0-4.0]	0.811
ESSDAI ≥ 5	31 (18.5)	3 (10.7)	0.424
ClinESSDAI	2.0 [0.0-2.0]	1.0 [0.0-2.0]	0.545
ClinESSDAI ≥ 5	30 (17.9)	3 (10.7)	0.427
ESSPRI	5.0 [3.3-6.3]	4.3 [3.3-5.3]	0.468
Fatigue VAS	5.0 [4.0-7.0]	5.0 [2.0-7.0]	0.460
ESSPRI ≥ 5	87 (51.8)	12 (42.9)	0.382
$F_{fatigue}$	1.13 [0.93-1.36]	1.06 [0.93-1.39]	0.583
Fatigue-dominant subgroup	42 (25.0)	8 (28.6)	0.688
EQ-5D index score	0.93 [0.90-0.97]	0.94 [0.87-0.97]	0.835
TSH (uIU/mL)	1.64 [1.25-2.31]	2.02 [1.47-4.48]	**0.015**
fT4 (ng/dL)	1.08 [1.01-1.16]	1.08 [0.98-1.16]	0.798
Subclinical hypothyroidism	16 (9.5)	7 (25.0)	**0.018**
Anti-TG positivity	19 (11.3)	12 (42.9)	**<0.001**
TRAb positivity	22 (13.1)	6 (21.4)	0.243
Current medications			
Pilocarpine	102 (60.7)	15 (53.6)	0.476
Hydroxychloroquine	53 (31.6)	6 (21.4)	0.280
Glucocorticoids	19 (11.3)	1 (3.6)	0.318
Non-hydroxychloroquine DMARDs	18 (10.7)	4 (14.3)	0.528

Data are presented as number (%) or median [interquartile ranges].
*Among 11 domains excluding biological domain.
TPO: thyroid peroxidase; SS: Sjögren's syndrome; ANA: antinuclear antibody; RF: rheumatoid factor; ACA: anticentromere antibody; ESSDAI: EULAR SS disease activity index; ClinESSDAI: clinical ESSDAI; ESSPRI: EULAR SS Patient Reported Index; VAS: visual analogue scale; $F_{fatigue}$: fraction of fatigue; EQ-5D: EuroQoL-5 dimensional; TSH: thyroid-stimulating hormone; fT4: free T4; TG: thyroglobulin; TRAb: anti-TSH receptor antibody; DMARDs: disease-modifying anti-rheumatic drugs.

Supplementary Table S3. Age- and sex-adjusted logistic regression analysis to determine factors associated with anti-TPO positivity.

Variables	Univariate		Multivariate	
	OR [95% CI]	*p* value	OR [95% CI]	*p*-value
Age (year)	1.058 [0.999-1.068]	0.058	-	-
Domains ever affected* ≥ 3	0.164 [0.021-1.251]	0.081	-	-
TSH (uIU/mL)	1.385 [1.094-1.754]	**0.007**	1.461 [1.123-1.901]	**0.005**
S-Hypo	3.167 [1.167-8.595]	**0.024**	-	-
Anti-TG positivity	5.882 [2.421-14.291]	**<0.001**	7.163 [2.737-18.749]	**<0.001**
ACA positivity	3.356 [1.226-9.182]	**0.018**	3.541 [1.179-10.634]	**0.024**
RF positivity	2.976 [1.210-7.325]	**0.018**	-	-
Albumin (mg/dL)	3.539 [0.831-15.080]	0.087	-	-

*Among 11 domains excluding biological domain.
TPO: thyroid peroxidase; OR: odds ratio; CI: confidential interval; TSH: thyroid-stimulating hormone; S-Hypo: subclinical hypothyroidism; TG: thyroglobulin; ACA: anticentromere antibody; RF: rheumatoid factor.

Supplementary Table S4. Comparisons of patients' characteristics according to TRAb positivity.

	TRAb (-) (n=168)	TRAb (+) (n =28)	*p*-value
Women	163 (97.0%)	27 (96.4%)	1.000
Age at enrolment (year)	58.2 [46.5-67.0]	60.9 [45.7-68.0]	0.786
Age at diagnosis (year)	50.4 [39.1-58.8]	51.1 [43.3-64.3]	0.255
Disease duration (year)	6.5 [3.0-12.9]	4.7 [0.1-9.6]	**0.024**
Clinical features at diagnosis			
Salivary gland dysfunction	145 (87.9%)	22 (84.6%)	0.749
USWSF ≤ 0.1 mL/min	131/160 (81.9%)	21/25 (84.0%)	1.000
Lacrimal gland dysfunction	139/166 (83.7%)	18 (64.3%)	**0.015**
Sialadenitis with focus score ≥ 1	108/132 (81.8%)	16/23 (69.6%)	0.175
Current organ involvement*			
Constitutional	2 (1.2%)	0 (0.0%)	1.000
Lymphadenopathy	3 (1.8%)	1 (3.6%)	0.463
Glandular	2 (1.2%)	0 (0.0%)	1.000
Articular	6 (3.6%)	1 (3.6%)	1.000
Pulmonary	8 (4.8%)	5 (17.9%)	**0.010**
Renal	5 (3.0%)	2 (7.1%)	0.262
Peripheral nervous system	5 (3.0%)	2 (7.1%)	0.262
Haematological	73 (43.5%)	15 (53.6%)	0.319
Lymphopenia**	16 (9.5%)	9 (32.1%)	**0.001**
No. of ESSDAI domains ever affected	1.0 [1.0.2.0]	2.0 [1.0.3.0]	0.098
ESSDAI	2.0 [1.0.4.0]	4.0 [2.0.7.0]	**0.004**
ESSDAI ≥ 5	24 (14.3%)	10 (35.7%)	**0.006**
ClinESSDAI	2.0 [0.0.2.0]	2.0 [0.0.5.9]	**0.014**
ClinESSDAI ≥ 5	25 (14.9%)	8 (28.6%)	0.073
ESSPRI	4.8 [3.3-6.0]	5.0 [3.7-6.2]	0.534
Fatigue VAS	5.0 [3.0-7.0]	5.5 [5.0-7.0]	0.479
ESSPRI ≥ 5	84 (50.0%)	15 (53.6%)	0.726
$F_{fatigue}$	1.13 [0.91.1.36]	1.15 [1.00-1.36]	0.504
Fatigue-dominant group	43 (25.6%)	7 (25.0%)	0.947
EQ-5D index score	0.94 [0.89.0.97]	0.93 0.90-0.96]	0.430
SS-related autoantibodies			
Anti-SSA/Ro	151 (89.9%)	24 (85.7%)	0.511
Anti-SSB/La	87 (51.8%)	17 (60.7%)	0.381
ANA	151/166 (91.0%)	26 (92.9%)	1.000
RF	88/164 (53.7%)	20 (71.4%)	0.080
ACA	20/166 (12.1%)	2 (7.1%)	0.747
Cryoglobulin	8 (4.8%)	3 (11.1%)	0.184
IgG (g/dL)	1.74 [1.44-2.01]	2.00 [1.64-2.35]	**0.027**
IgG > 2.0 g/dL	42 (25.0%)	14 (50.0%)	**0.007**
Low C3 or C4 level	15 (8.9%)	0 (0%)	0.135
ESR (mm/h)	22.5 [11.0-34.8]	33.5 [15.3-54.5]	**0.007**
TSH (uIU/mL)	1.69 [1.31-2.39]	1.73 [1.24-2.43]	0.924
fT4 (ng/dL)	1.08 [1.00-1.15]	1.11 [1.03-1.21]	0.237
S-Hypo	2 (1.2%)	0 (0%)	1.000
Current medications			
Pilocarpine	101 (60.1%)	16 (57.1%)	0.766
Hydroxychloroquine	48 (28.6%)	11 (39.3%)	0.253
Glucocorticoids	17 (10.1%)	3 (10.7%)	1.000
Non-hydroxychloroquine DMARDs	15 (8.9%)	7 (25.0%)	**0.013**

Values are presented as number (%) or median [interquartile ranges].
*Based on the definition of ESSDAI domain; **absolute lymphocyte counts <1,000/mm³.
TRAb: anti-TSH receptor antibodies; USWSF: unstimulated whole salivary flow; ESSDAI: EULAR SS disease activity index; ClinESSDAI: clinical ESSDAI; ESSPRI: EULAR SS Patient Reported Index; VAS: visual analogue scale; $F_{fatigue}$: fraction of fatigue; EQ-5D: EuroQoL-5 dimensional; SS: Sjögren's syndrome; ANA: antinuclear antibody; RF: rheumatoid factor; ACA: anticentromere antibody; ESR: erythrocyte sedimentation rate; TSH: thyroid-stimulating hormone; fT4: free T4; S-Hypo: subclinical hyperthyroidism; DMARDs: disease-modifying anti-rheumatic drugs.

Supplementary Table S5. Comparisons of patient characteristics based on thyroid function states.

	Euthyroid state (n=171)	Subclinical hypothyroidism (n=23)	Subclinical hyperthyroidism (n=2)	*p*-value*
Women	166 (97.1%)	22 (95.7%)	2 (100%)	0.536
Age (year)				
Age at enrolment	59.3 [46.7-66.9]	58.2 [45.8-71.2]	46.6 [42.2-51.0]	0.675
Age at diagnosis	50.5 [39.9-59.3]	51.3 [37.1-59.0]	43.3 [40.6-46.0]	0.484
Disease duration (year)	5.3 [2.2-12.0]	11.2 [6.9-15.2]	3.4 [1.7-5.1]	**0.003**
Duration >5 years	94 (55.0%)	20 (87.0%)	1 (50.0%)	**0.003**
At diagnosis				
Salivary gland dysfunction	144/168 (85.7%)	21/21 (100%)	2 (100%)	0.081
Lacrimal gland dysfunction	140/170 (82.4%)	16/22 (72.7%)	1 (50.0%)	0.276
Anti-SSA/Ro	151 (88.3%)	22 (95.7%)	2 (100%)	0.478
Anti-SSB/La	90 (52.6%)	13 (56.5%)	1 (50.0%)	0.726
Focus score ≥1	110/135 (81.5%)	13/18 (72.2%)	1 (50.0%)	0.353
TSH (uIU/mL)	1.61 [1.25-1.99]	5.26 [4.75-5.96]	0.17 [0.50-0.29]	**<0.001**
fT4 (ng/dL)	1.08 [1.01-1.15]	1.10 [0.98-1.24]	1.31 [1.16-1.45]	0.910
Anti-TPO	21 (12.3%)	7 (30.4%)	0 (0.0%)	**0.020**
Anti-TG	28 (16.4%)	3 (13.0%)	0 (0.0%)	1.000
TRAb	24 (14.0%)	4 (17.4%)	0 (0.0%)	0.751
Any thyroid-related Abs	61 (35.7%)	10 (43.5%)	0 (0.0%)	0.466
ANA	156/170 (91.8%)	20/22 (90.9%)	1 (50.0%)	1.000
Cryoglobulin	10/169 (5.9%)	1 (4.3%)	0 (0.0%)	1.000
RF	96/169 (56.8%)	11/21 (52.4%)	1 (50.0%)	0.700
ACA	16/170 (9.4%)	6/22 (27.3%)	0 (0.0%)	**0.013**
Haematologic complications	5 (2.9%)	0 (0.0%)	1 (50.0%)	1.000
ESSDAI	2.00 [1.00-4.00]	2.00 [2.00-4.00]	2.00 [1.00-3.00]	0.583
ESSDAI ≥ 5	31 (18.1%)	3 (13.0%)	0 (0.0%)	0.771
ClinESSDAI	2.00 [0.00-2.00]	2.00 [0.00-2.00]	1.00 [0.00-2.00]	0.636
ClinESSDAI ≥ 5	30 (17.5%)	3 (13.0%)	0 (0.0%)	0.771
ESSPRI	4.67 [3.33-6.00]	5.00 [3.33-6.33]	6.00 [5.67-6.33]	0.968
Fatigue VAS	5.00 [3.00-7.00]	6.00 [4.50-7.00]	6.00 [5.00-7.00]	0.519
Top quartile of fatigue VAS	30 (17.5%)	3 (13.0%)	0 (0.0%)	0.771
Sicca VAS	5.00 [3.00-7.00]	5.00 [3.00-6.50]	7.00 [7.00-7.00]	0.673
Pain VAS	3.00 [1.00-6.00]	4.00 [1.00-6.00]	5.00 [3.00-7.00]	0.624
ESSPRI ≥ 5	85 (49.7%)	12 (52.2%)	2 (100.0%)	0.824
$F_{fatigue}$	1.12 [0.93-1.33]	1.20 [1.00-1.50]	1.01 [0.79-1.24]	0.110
Fatigue-dominant group**	40 (23.4%)	10 (43.5%)	0 (0.0%)	**0.039**
EQ-5D index	0.93 [0.89-0.97]	0.96 [0.90-0.97]	0.98 [0.96-1.00]	0.847
Drugs				
Pilocarpine	101 (59.1%)	15 (65.2%)	1 (50.0%)	0.572
HCQ	52 (30.4%)	5 (21.7%)	2 (100%)	0.392
Glucocorticoids	18 (10.5%)	2 (8.7%)	0 (0.0%)	1.000
Non-HCQ DMARDs	19 (11.1%)	3 (13.0%)	0 (0.0%)	0.730
No. of ESSDAI domains ever affected ≥3[c]	29 (17.0%)	3 (13.0%)	0 (0.0%)	0.772

Data are presented as number (%) or median [interquartile ranges].
*Calculated when comparing between euthyroid and subclinical hypothyroidism states; **The highest quartile of $F_{fatigue}$; [c]Among 11 domains excluding biological domain.
TSH: thyroid-stimulating hormone; fT4: free T4; Anti-TPO: anti-thyroid peroxidase; anti-TG: anti-thyroglobulin; TRAb: anti-TSH receptor antibody; ANA: antinuclear antibody; RF: rheumatoid factor; ACA: anticentromere antibody; ESSDAI: EULAR SS Disease Activity Index; ClinESSDAI: clinical ESSDAI; ESSPRI: EULAR SS Patient Reported Index; VAS: visual analogue scale; $F_{fatigue}$: the fraction of fatigue in ESSPRI; EQ-5D: EuroQoL-5D; HCQ: hydroxychloroquine.

Supplementary Table S6. Comparisons of patients' characteristics based on the highest quartile of the fraction of fatigue ($F_{fatigue}$).

	Top quartile of $F_{fatigue}$		
	(-; n=146)	(+; n=50)	*p*-value
Age at enrolment (year)	60.4 [48.4-68.1]	52.9 [42.2-65.1]	**0.018**
Age at diagnosis (year)	51.5 [41.5-59.3]	43.4 [35.9-57.0]	**0.018**
Age > 60	75 (51.4)	17 (34.0)	**0.034**
Dry eye at diagnosis	115 (79.9)	32 (65.3)	**0.039**
ESSPRI	5.33 [3.67-6.67]	3.67 [2.25-4.75]	**<0.001**
Dryness VAS	6.0 [5.0-7.0]	3.0 [2.0-5.0]	**<0.001**
Pain VAS	5.0 [2.0-6.3]	1.0 [0.0-3.0]	**<0.001**
Fatigue VAS	5.0 [3.0-7.0]	6.0 [4.8-7.0]	0.412
ESSPRI ≥ 5	87 (59.6)	12 (24.0)	**<0.001**
$F_{fatigue}$	1.00 [0.86-1.17]	1.50 [1.42-1.67]	**<0.001**
EQ-5D index	0.925 [0.880-0.958]	0.963 [0.925-1.000]	**0.003**
ESSDAI ≥ 5	26 (17.8)	8 (16.0)	0.771
ClinESSDAI ≥ 5	25 (17.1)	8 (16.0)	0.855
Biological domain level > 0	96 (65.8)	38 (76.0)	0.179
No. of domains ever affected ≥ 3*	29 (19.9)	3 (6.0)	**0.025**
IgG (g/dL)	1.74 [1.44-2.04]	1.80 [1.48-2.16]	0.507
IgG ≥ 2.0 g/dL	40 (27.4)	16 (32.0)	0.534
β2-microglobulin > 2.4 mg/dL	62 (42.8)	19 (38.0)	0.556
Absolute lymphocyte count (/mm³)	1,649 [1,261-1,924]	1,408 [1,142-1,689]	**0.015**
S-Hypo	13 (8.9)	10 (20.0)	**0.035**
TPO-S-Hypo	2 (1.4)	4 (8.0)	**0.038**

Data are presented as number (%) or median [interquartile ranges]. The other variables had a *p*-value >0.1.
*Among 11 ESSDAI domains excluding the biological domain.
ESSPRI: EULAR SS Patient Reported Index; VAS: visual analogue scale; $F_{fatigue}$: the fraction of fatigue in ESSPRI; EQ-5D: EuroQoL-5D; ESSDAI: EULAR SS disease activity index; ClinESSDAI: clinical ESSDAI; TSH: thyroid-stimulating hormone; VAS: visual analogue scale; S-Hypo: subclinical hypothyroidism; TPO-S-Hypo: anti-TPO positive subclinical hypothyroidism with.

Supplementary Table S7. Age- and sex-adjusted logistic regression analysis to determine factors related to subclinical hypothyroidism.

Variables	Univariate		Multivariate	
	OR [95% CI]	*p* value	OR [95% CI]	*p*-value
Disease duration (years)	1.112 [1.029-1.202]	**0.007**	1.105 [1.014-1.204]	**0.023**
Renal domain ever affected*	4.175 [0.968-18.003]	0.055	-	-
Anti-TPO positivity	3.167 [1.167-8.595]	**0.024**	3.846 [1.309-11.304]	**0.014**
ACA positivity	3.656 [1.254-10.660]	**0.018**	-	**-**
Fatigue-dominant group**	2.558 [1.043-6.272]	**0.040**	3.482 [1.298-9.342]	**0.013**
Protein (mg/dL)	0.582 [0.317-1.068]	0.080	-	-

*Based on the definition of ESSDAI domain. **The highest quartile of the fraction of fatigue ($F_{fatigue}$).
Anti-TPO: anti-thyroid peroxidase; ACA: anticentromere antibody.