

SUPPLEMENT

Table S1 Number and percentage of sarcoidosis patients dispensed specific corticosteroids as first corticosteroid treatment.

Agent name	ATC Code	No.	(%)
Betamethasone	H02AB01	179	(7.8)
Dexamethasone	H02AB02	1	(0)
Fluocortolone	H02AB03	0	(0)
Methylprednisolone	H02AB04	33	(1.4)
Paramethasone	H02AB05	0	(0)
Prednisolone	H02AB06	2039	(88.4)
Prednisone	H02AB07	37	(1.6)
Triamcinolone	H02AB08	2	(0.1)
Hydrocortisone	H02AB09	15	(0.7)
Cortisone	H02AB10	0	(0)
Prednylidene	H02AB11	0	(0)
Rimexolone	H02AB12	0	(0)
Deflazacort	H02AB13	0	(0)
Cloprednol	H02AB14	0	(0)
Meprednisone	H02AB15	0	(0)
Cortivazol	H02AB17	0	(0)

Table S2 Assumptions for the probabilistic sensitivity analysis of the unmeasured confounding effect of BMI on the association of between sarcoidosis and T2D.

	Estimate	95% CI	SD	Distribution	Source
Prevalence of overweight					
Sweden	0.36	0.35	0.37	0.005	Normal [1]
Sarcoidosis patients	0.37	0.32	0.42	0.023	Normal [2]
Prevalence of obesity					
Sweden	0.14	0.13	0.15	0.005	Normal [1]
Sarcoidosis patients	0.21	0.17	0.25	0.020	Normal [2]
HR of T2D by BMI					
18.5 < BMI < 25	1				
25 < BMI < 30	2.92	2.42	3.71	0.403	Normal [3]
30 < BMI	7.24	6.38	8.23	0.505	Normal [3]
HR of T2D in sarcoidosis					
General population comparators	1				[Table 3]
Sarcoidosis untreated	1.44	1.17	1.77	0.168	Normal [Table 3]
Sarcoidosis corticosteroid-treated	2.44	2.00	2.99	0.281	Normal [Table 3]

SD: standard deviation, HR: Hazard ratio.

- 1 Statistiska Centralbyrån. Undersökningar av levnadsförhållanden (ULF/SILC) 2018. 2018. <https://www.scb.se/contentassets/9608d268fa9c40178e30131f03776b76/halsa-2018.xlsx>
- 2 Cremers JP, Drent M, Elfferich MD, *et al.* Body composition profiling in a Dutch sarcoidosis population. *Sarcoidosis Vasculitis Diffuse Lung Dis* 2013; 30: 289–388.
- 3 Abdullah A, Peeters A, de Courten M, *et al.* The magnitude of association between overweight and obesity and the risk of diabetes: a meta-analysis of prospective cohort studies. *Diabetes Res Clin Pract* 2010; 89: 309–319.

Table S3 Diseases and ICD codes considered for the exclusion of sarcoidosis patients with disease that require a long-term corticosteroid treatment other than sarcoidosis.

Disease	ICD-10 codes	ICD-9 codes	ICD-8 codes
Inflammatory bowel disease	K50, K51	555, 556	563.00, 563.10, 569.02
Ankylosing spondylitis	M45	720A	712.40, 726.99
Juvenile arthritis	M08-M09	714D	712.00
Systemic lupus erythematosus	M32.1, M32.8-M32.9	710A	734.10
Arthropathic psoriasis	L40.5, M07.0, M07.1, M07.3	696A, 713D	696.00
Psoriasis	L40	696	696
Rheumatoid arthritis	M05-M05.9, M06.0, M06.2, M06.3, M06.8, M06.9, M12.3	714A-714C, 714W, 719D	712.10, 712.20, 712.38, 712.39
Spinal enthesopathy	M46.0, M46.1, M46.8, M46.9	720C, 720W, 720X	713.13, 726.99
Sjögren's syndrome	M35.0	710C	734.90
Myositis	M60.8, M60.9, M33.0-M33.2, G72.4	710C, 710D, 710E	734.90, 732.00-732.90
Drug-induced interstitial lung disorder	J70.2-J70.4	508W-508X	
Hypersensitivity pneumonitis	J67	495	
Idiopathic thrombocytopenic purpura	D69.3	287C	
Interstitial pulmonary fibrosis	J84.1	515	
Systemic sclerosis	M34	710B	
Vasculopathies	M31	446-447	446-447

Table S4 Crude incidence rates, hazard ratios (HR), and adjusted hazard ratios for T2D comparing matched general population comparators, untreated sarcoidosis patient and sarcoidosis patient treated with corticosteroids overall and stratified by sex after exclusion of patients with a history of disease that requires long-term corticosteroid treatment.

	No. Events	Survival time, yrs.	Incidence Rate†	Hazard Ratio 95%CI	Adjusted HR‡ 95% CI
Overall					
Gen. pop. comparators	1181	216557	5.5	1 (Reference)	1 (Reference)
Sarcoidosis untreated	90	11754	7.7	1.4 (1.13-1.74)	1.43 (1.15-1.77)
Sarcoidosis corticosteroid-treated	93	7488	12.4	2.28 (1.85-2.82)	2.46 (1.99-3.04)
Males					
Gen. pop. comparators	469	96916	4.8	1 (Reference)	1 (Reference)
Sarcoidosis untreated	38	5267	7.2	1.49 (1.07-2.07)	1.46 (1.05-2.04)
Sarcoidosis corticosteroid-treated	42	2933	14.3	2.97 (2.16-4.07)	3.15 (2.30-4.33)
Females					
Gen. pop. comparators	712	119641	6.0	1 (Reference)	1 (Reference)
Sarcoidosis untreated	52	6487	8.0	1.34 (1.01-1.78)	1.39 (1.05-1.84)
Sarcoidosis corticosteroid-treated	51	4555	11.2	1.88 (1.41-2.50)	2.01 (1.51-2.68)

HR are presented as point estimate with 95% confidence intervals.

†: Incident rate per 1,000 person-years.

‡: Model is adjusted for mean centered age, education, family history of diabetes, birth country and county of residence.

Table S5 Results from the probabilistic sensitivity analysis of the unmeasured confounding effect of BMI on the association between sarcoidosis and T2D.

	<u>Exposure groups</u>			
	Sarcoidosis untreated			Sarcoidosis corticosteroid-treated
HR not adj. for BMI	1.44	(1.17-1.77)	2.44	(2.00-2.99)
HR adj. for BMI	1.22	(0.97-1.48)	2.07	(1.66-2.51)

The hazard rate ratios not adjusted for BMI are obtained from the cox model presented in Table 3. The hazard ratio (HR) obtained from the sensitivity analysis are presented as median hazard ratio and 5th and 95th quantile of the bootstrapped (n = 10,000) hazard rate ratios adjusted for the effect of BMI.

Table S6 ATC codes used to identify patients dispensing second line treatment drugs for sarcoidosis.

Agent name	ATC code
Methotrexate	L01BA01, L04AX03
Azathioprine	L04AX01
Leflunomide	L04AA13
Mycophenolate mofetil	L04AA06
Hydroxychloroquine	P01BA02