

Supplementary Table 1. Subhazard ratios and 95% confidence intervals of ischemic stroke associated with acupuncture treatment and covariates among rheumatoid arthritis patients using the competing-risks regression models.

Variable	No. of event (n = 946)	Crude*			Adjusted†		
		SHR	(95% CI)	p-value	SHR	(95% CI)	p-value
Acupuncture treatment							
No	605	1.00	reference		1.00	reference	
Yes	341	0.52	(0.46, 0.60)	<0.001	0.57	(0.49, 0.65)	<0.001
Sex							
Women	714	1.00	reference		1.00	reference	
Men	231	1.44	(1.24, 1.67)	<0.001	1.32	(1.14, 1.54)	<0.001
Age group							
18-39	13	1.00	reference		1.00	reference	
40-59	372	7.17	(4.14, 12.4)	<0.001	5.99	(3.44, 10.4)	<0.001
≥ 60	561	28.1	(16.3, 48.6)	<0.001	14.7	(8.38, 25.7)	<0.001
Baseline Comorbidity (ref = no comorbidity)							
Diabetes mellitus	334	2.64	(2.31, 3.01)	<0.001	1.58	(1.36, 1.82)	<0.001
Hypertension	654	3.96	(3.45, 4.54)	<0.001	2.10	(1.79, 2.47)	<0.001
Hyperlipidemia	371	1.94	(1.70, 2.21)	<0.001	1.08	(0.93, 1.25)	0.30
Congestive heart failure	148	3.18	(2.67, 3.79)	<0.001	1.31	(1.08, 1.59)	0.006

Depression	120	1.46	(1.21, 1.77)	<0.001	1.12	(0.91, 1.37)	0.28
Anxiety	256	1.40	(1.21, 1.61)	<0.001	0.99	(0.85, 1.16)	0.94
Alcoholism	20	1.48	(0.95, 2.29)	0.08	1.46	(0.88, 2.43)	0.14
Tobacco use	2	0.55	(0.14, 2.20)	0.40	0.32	(0.07, 1.40)	0.13
Obesity	10	1.16	(0.62, 2.17)	0.65	1.10	(0.58, 2.08)	0.77
Atrial fibrillation	50	1.02	(0.77, 1.35)	0.90	0.89	(0.66, 1.19)	0.43
Drugs used							
Oral steroid	1621	0.57	(0.47-0.69)	< 0.0001	0.51	(0.42-0.62)	< 0.0001
NSAID	1726	0.22	(0.11-0.46)	< 0.0001	0.24	(0.11-0.51)	0.0002
Statin	329	1.04	(0.92-1.17)	0.5575	0.65	(0.58-0.74)	< 0.0001
Conventional DMARDS							
Hydroxychloroquine	333	0.47	(0.41, 0.54)	<0.001	0.70	(0.60, 0.81)	<0.001
Sulfasalazine	235	0.47	(0.41, 0.54)	<0.001	0.80	(0.68, 0.94)	0.007
Methotrexate	2	1.88	(0.50, 7.04)	0.35	3.15	(0.84, 11.9)	0.08
Leflunomide	18	0.22	(0.14, 0.35)	<0.001	0.34	(0.22, 0.54)	<0.001
D-penicillamine	11	0.85	(0.46, 1.53)	0.53	1.07	(0.61, 1.88)	0.05
Azathioprine	9	0.39	(0.20, 0.75)	0.004	0.77	(0.40, 1.49)	0.44
Mycophenolate	0	-	-		-	-	
Cyclosporine	35	0.62	(0.44, 0.87)	0.005	1.40	(0.99, 1.98)	0.06
Biological DMARDs							
Etanercept	16	0.27	(0.16, 0.44)	<0.001	0.51	(0.31, 0.83)	0.007
Adalimumab	3	0.18	(0.06, 0.57)	0.003	0.43	(0.14, 1.34)	0.15

Crude SHR^{*} represents the relative subhazard ratio;

Adjusted SHR[†] represents the adjusted subhazard ratio: mutually adjusted for accepted acupuncture, age, sex, comorbidities, and drugs used in competing-risks regression models.

Abbreviation: Nonsteroidal anti-inflammatory drugs (NSAIDs), DMARD (disease-modifying antirheumatic drugs).

Supplementary Table 2. Incidence rates, subhazard ratios and confidence intervals of ischemic stroke in rheumatoid arthritis patients who received and did not receive acupuncture in the stratification of sex, age, comorbidities, and drug used using the competing-risks regression models.

Variables	Rheumatoid arthritis						Compared with no-acupuncture users	
	No			Yes			Crude SHR	Adjusted SHR
	(n = 11613)			(n = 11613)				
	Event	Person years	IR [†]	Event	Person years	IR [†]	(95% CI)	(95% CI)
Total	605	48836	12.4	341	57273	5.95	0.52(0.46, 0.60)***	0.57(0.50, 0.65)***
Sex								
Women	460	40274	11.4	254	46907	5.41	0.51(0.44, 0.60)***	0.58(0.49, 0.67)***
Men	145	8562	16.9	87	10366	8.39	0.54(0.42, 0.71)***	0.54(0.41, 0.70)***
Age group								
18-39	5	8734	0.57	8	8576	0.93	1.47(0.49, 4.45)	1.45(0.44, 4.76)
40-59	226	29529	7.65	146	37225	3.92	0.53(0.43, 0.66)***	0.54(0.44, 0.66)***
≥ 60	374	10573	35.4	187	11472	16.3	0.55(0.46, 0.65)***	0.58(0.48, 0.69)***
Baseline Comorbidity								
Diabetes mellitus								
No	383	41083	9.32	229	48060	4.76	0.55(0.47, 0.65)***	0.60(0.51, 0.71)***
Yes	222	7753	28.6	112	9213	12.2	0.47(0.38, 0.59)***	0.52(0.41, 0.65)***
Hypertension								

No	184	32174	5.72	108	37634	2.87	0.52(0.41, 0.66)***	0.57(0.45, 0.72)***
Yes	421	16661	25.3	233	19639	11.9	0.53(0.45, 0.62)***	0.57(0.49, 0.67)***
Hyperlipidemia								
No	366	36970	9.90	209	43496	4.81	0.53(0.45, 0.62)***	0.61(0.51, 0.72)***
Yes	239	11866	20.1	132	13777	9.58	0.51(0.41, 0.63)***	0.51(0.41, 0.63)***
Congestive heart failure								
No	513	46595	11.0	285	54590	5.22	0.51(0.44, 0.59)***	0.55(0.47, 0.64)***
Yes	92	2241	41.1	56	2683	20.9	0.61(0.44, 0.85)***	0.65(0.47, 0.92)***
Depression								
No	523	44638	11.7	303	52396	5.78	0.54(0.47, 0.62)***	0.59(0.51, 0.67)***
Yes	82	4198	19.5	38	4877	7.79	0.43(0.30, 0.64)***	0.48(0.32, 0.72)***
Anxiety								
No	442	38718	11.4	248	46073	5.38	0.51(0.44, 0.60)***	0.56(0.48, 0.66)***
Yes	163	10117	16.1	93	11200	8.30	0.55(0.43, 0.71)***	0.57(0.44, 0.74)***
Alcoholism								
No	596	48177	12.4	330	56529	5.84	0.51(0.45, 0.59)***	0.56(0.49, 0.64)***
Yes	9	659	13.7	11	744	14.8	1.12(0.47, 2.67)	1.25(0.50, 3.09)
Tobacco use								
No	603	48655	12.4	341	57090	5.97	0.52(0.46, 0.60)***	0.57(0.50, 0.65)***
Yes	2	181	11.1	0	182	0.00		
Obesity								
No	598	48412	12.4	338	56737	5.96	0.52(0.46, 0.60)***	0.57(0.50, 0.65)***

Yes	7	424	16.5	3	536	5.60	0.38(0.10, 1.49)	0.40(0.14, 1.19)
Atrial fibrillation								
No	576	46291	12.4	320	54553	5.87	0.51(0.45, 0.59)***	0.56(0.49, 0.64)***
Yes	29	2545	11.4	21	2720	7.72	0.72(0.41, 1.26)	0.70(0.38, 1.30)
Drugs used								
Oral steroid								
No	318	17828	17.8	166	21844	7.60	0.48(0.40, 0.58)***	0.53(0.44, 0.64)***
Yes	287	31008	9.26	175	35429	4.94	0.56(0.46, 0.68)***	0.59(0.49, 0.72)***
NSAID								
No	216	7329	29.5	105	9509	11.0	0.46(0.37, 0.58)***	0.54(0.43, 0.69)***
Yes	389	41506	9.37	236	47764	4.94	0.55(0.47, 0.64)***	0.56(0.48, 0.66)***
Statin								
No	586	45820	12.8	322	54040	5.96	0.51(0.44, 0.58)***	0.56(0.49, 0.64)***
Yes	19	3016	6.30	19	3233	5.88	0.94(0.50, 1.79)	0.97(0.49, 1.95)
Conventional DMARDS								
No	347	14099	24.6	181	18431	9.82	0.48(0.40, 0.57)***	0.54(0.45, 0.65)***
Yes	258	34736	7.43	160	38842	4.12	0.56(0.46, 0.68)***	0.58(0.47, 0.71)***
Biological DMARDs								
No	591	44821	13.2	336	52599	6.39	0.53(0.46, 0.60)***	0.58(0.50, 0.66)***
Yes	14	4014	3.49	5	4674	1.07	0.28(0.10, 0.79)*	0.26(0.09, 0.80)**

Abbreviation: IR, incidence rate per 1,000 person-years; SHR, subhazard ratio; CI, confidence interval

Adjusted SHR: adjusted for accepted acupuncture, age, sex, comorbidities, and drugs used in the competing-risks regression models.

*: $p < 0.05$; **: $p < 0.01$; *** $p < 0.001$

Abbreviation: Nonsteroidal anti-inflammatory drugs (NSAIDs), DMARD (disease-modifying antirheumatic drugs).

Supplementary Table 3. Characteristics of rheumatoid arthritis patients according to accept acupuncture in un-matching. .

Variable	Rheumatoid Arthritis				Standardized mean difference
	Acupuncture treatment				
	No (n = 22218)		Yes (n = 12266)		
	n	%	n	%	
Sex					
Women	16702	75.2	10109	82.4	0.01
Men	5516	24.8	2157	17.6	0.18
Age group					
18-39	2994	13.5	1767	14.4	0.03
40-59	12351	55.6	7762	63.3	0.16
≥ 60	6873	30.9	2737	22.3	0.20
Mean ± SD (years)	56.7±14.7		54.3±13.3		0.17
Baseline Comorbidity					
Diabetes mellitus	4117	18.5	2260	18.4	0.003
Hypertension	8857	39.9	4632	37.8	0.04
Hyperlipidemia	5610	25.3	3593	29.3	0.09
Congestive heart failure	1698	7.64	736	6.00	0.07
Depression	1901	8.56	1394	11.4	0.09
Anxiety	4591	20.7	3118	25.4	0.11
Alcoholism	422	1.90	244	1.99	0.01
Tobacco use	146	0.66	84	0.68	0.003
Obesity	188	0.85	163	1.33	0.05
Atrial fibrillation	1102	4.96	845	6.89	0.08
Drugs used					
Oral steroid	6489	55.6	6495	55.9	0.001
NSAID	8823	76.0	8882	76.5	0.012
Statin	5592	5.10	593	5.11	0.000
Conventional DMARDS					
Hydroxychloroquine	9299	41.9	6059	49.4	0.15
Sulfasalazine	7210	32.5	4606	37.6	0.11
Methotrexate	14	0.06	11	0.09	0.01
Leflunomide	1309	5.89	973	7.93	0.08
D-penicillamine	196	0.88	138	1.13	0.02
Azathioprine	385	1.73	229	1.87	0.01
Mycophenolate	10	0.05	7	0.06	0.01
Cyclosporine	816	3.67	594	4.84	0.06

Biological DMARDs					
Etanercept	625	5.38	629	5.42	0.002
Adalimumab	198	1.70	193	1.66	0.003
Types of acupuncture					
Manual acupuncture	-	-	10604	86.45	
Electroacupuncture	-	-	407	3.32	
Combination of both types	-	-	1255	10.23	
Duration from rheumatoid arthritis diagnosis and index, days (mean, median)					
Acupuncture visits (mean, median)		(981.29, 6680)	(1047.36, 688.5)		0.32
		-	(10.43, 3.00)		

The mean (median) follow-up period was 4.96 (4.39) and 4.01 (3.17) years in the acupuncture cohort and the compared cohort, respectively.

Abbreviation: Nonsteroidal anti-inflammatory drugs (NSAIDs), DMARD (disease-modifying antirheumatic drugs).

Supplementary Table 4. Subhazard ratios and 95% confidence intervals of ischemic stroke associated with accepted acupuncture and covariates among rheumatoid arthritis patients using the competing-risks regression models in un-matching.

Variable	No. of event (n = 1441)	Crude [*]			Adjusted [†]		
		SHR	(95% CI)	p-value	SHR	(95% CI)	p-value
Accepted Acupuncture							
No	1080	1.00	reference		1.00	reference	
Yes	361	0.48	(0.42, 0.53)	<0.001	0.65	(0.58, 0.74)	<0.001

Crude SHR^{*} represented relative subhazard ratio;
Adjusted SHR[†] represented adjusted subhazard ratio: mutually adjusted for accepted acupuncture, age, gender, comorbidities, and drugs used in competing-risks regression models.