

Construction of an Assisted Model Based on Natural Language Processing for Automatic Early Diagnosis of Autoimmune Encephalitis

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Table S1 The ICD-10 codes of the diagnosis of CNS infectious or inflammatory diseases

ID	Primary code	Additional code	Diseases
1	A17.0+	G01*	Tuberculous meningitis
2	A32.1+		Listerial meningitis and meningoencephalitis
3	A39.0+	G01*	Meningococcal meningitis
4	A81.1		Subacute sclerosing panencephalitis
5	A83.0		Japanese encephalitis
6	A83.1		Western equine encephalitis
7	A83.2		Eastern equine encephalitis
8	A83.3		St Louis encephalitis
9	A83.4		Australian encephalitis
10	A83.5		La Crosse encephalitis
11	A83.8		Other mosquito-borne viral encephalitis
12	A83.9		Mosquito-borne viral encephalitis, unspecified
13	A84.0		Far Eastern tick-borne encephalitis
14	A84.1		Central European tick-borne encephalitis
15	A84.8		Other tick-borne viral encephalitis
16	A84.9		Tick-borne viral encephalitis, unspecified
17	A85.0+	G05.1*	Enteroviral encephalitis
18	A85.1+	G05.1*	Adenoviral encephalitis
19	A85.2		Arthropod-borne viral encephalitis, unspecified
20	A85.8		Other specified viral encephalitis
21	A87.0+	G02.0*	Enteroviral meningitis
22	A87.1+	G02.0*	Adenoviral meningitis
23	A87.2		Lymphocytic choriomeningitis / Lymphocytic meningoencephalitis
24	A87.8		Other viral meningitis
25	A87.9		Viral meningitis, unspecified
26	B00.3+	G02.0*	Herpesviral meningitis
27	B00.4+	G05.1*	Herpesviral encephalitis
28	B01.0+	G02.0*	Varicella meningitis
29	B01.1+	G05.1*	Varicella encephalitis
30	B02.0+	G05.1*	Zoster encephalitis
31	B02.1+	G02.0*	Zoster meningitis
32	B05.0+	G05.2*	Toxoplasma meningoencephalitis
33	B05.1+	G02.0*	Measles complicated by meningitis
34	B26.1+	G02.0*	Mumps meningitis
35	B26.2+	G05.1*	Mumps encephalitis
36	B37.5+	G02.1*	Candidal meningitis
37	B38.4+	G02.1*	Coccidioidomycosis meningitis
38	B05.0+	G05.2*	Toxoplasma meningoencephalitis
39	G00.0		Haemophilus meningitis
40	G00.1		Pneumococcal meningitis

ID	Primary code	Additional code	Diseases
41	G00.2		Streptococcal meningitis
42	G00.3		Staphylococcal meningitis
43	G00.8		Other bacterial meningitis
44	G00.9		Bacterial meningitis, unspecified
45	G02.0*		Meningitis in viral diseases classified elsewhere
46	G02.1*		Meningitis in mycoses
47	G02.8*		Meningitis in other specified infectious classified elsewhere
48	G03.0		Nonpyogenic meningitis / Nonbacterial meningitis
49	G03.1		Chronic meningitis
50	G03.2		Benign recurrent meningitis [Mollaret]
51	G03.8		Meningitis due to other specified causes
52	G03.9		Meningitis, unspecified
53	G04.0		Acute disseminated encephalitis / Encephalitis-postimmunization
54	G04.2		Bacterial meningoencephalitis and meningomyelitis, not elsewhere classified
55	G04.8		Other encephalitis, myelitis and encephalomyelitis
56	G04.8	G04.801	Autoimmune encephalitis
57	G04.8	G04.802	Postinfectious encephalitis
58	G04.8	G04.803	Postinfectious encephalomyelitis
59	G04.8	G04.804	Allergic encephalitis
60	G04.8	G04.805	Purulent encephalitis
61	G04.8	G04.806	Demyelinating myelitis
62	G04.8	G04.807	Purulent meningoencephalitis
63	G04.8	G04.808	Transverse myelitis
64	G04.9		Encephalitis, myelitis and encephalomyelitis, unspecified
65	G05.0*		Encephalitis, myelitis and encephalomyelitis in bacterial diseases classified elsewhere
66	G05.1*		Encephalitis, myelitis and encephalomyelitis in viral diseases classified elsewhere
67	G05.2*		Encephalitis, myelitis and encephalomyelitis in other infectious and parasitic diseases classified elsewhere
68	G05.8*		Encephalitis, myelitis and encephalomyelitis in other diseases classified elsewhere

ICD-10 international classification of diseases-tenth revision, *CNS* central nervous system

Table S2 Summary statistics of annotated training subset of the HPI in EMRs

Training subset	Words	Entity (Symptoms)	B	M	E	S	O
Fold 1	2,987	126	121	70	121	5	2,670
Fold 2	3,005	108	103	42	103	5	2,752
Fold 3	2,413	91	89	40	89	2	2,193
Fold 4	2,627	91	87	27	87	4	2,422
Fold 5	2,326	85	82	34	82	3	2,125
Fold 6	2,600	122	115	64	115	7	2,299
Fold 7	2,383	96	89	50	89	7	2,148
Fold 8	2,967	109	102	39	102	7	2,717
Fold 9	2,988	127	121	51	121	6	2,689
Fold 10	2,359	100	97	62	97	3	2,100
Total	26,655	1,055	1,006	479	1,006	49	24,115

HPI history of present illness, *EMRs* electronic medical records

Table S3 The example of some annotated sequences

Sequences	Translations	Annotations
患者	Patients	O
于	In	O
年	Year	O
月	Month	O
日	Day	O
无	Do not have	O
明确	Clear	O
诱因	Commonest causes	O
感	Feel	B
头晕	Dizziness	E
,	,	O
呈持续性	Persistent (Dizziness)	O
,	,	O
当时	At that time	O
无	Without	B
头痛	Headache	E
、	,	O
恶心	Nausea	S
、	,	O
呕吐	Vomiting	S
,	,	O

Sequences	Translations	Annotations
无视	Without	B
物	Visual	M
旋转	Discomfort	E
、	,	O
视	Diplopia	B
物	—	M
成	—	M
双	—	E
,	,	O
无	Without	B
饮水	Cough	M
呛咳	When swallowing	E
、	,	O
吞咽困难	Swallowing problem	S
。	.	O
先后	—	O
就诊	Outpatient service	O
于	In	O
当地	Local	O
医院	Hospital	O
门诊	Clinic	O
,	,	O
完善	Do	O
颈椎	Cervical spine	O
影像	Medical imaging screening	O
提示	Indicate	O
未	Do not	O
见	Have	O
明显	Any	O
异常	Abnormal results	O
,	,	O
具体	Detailed	O
诊疗	Clinical Guidance	O
不详	Unknown	O
,	,	O
头晕	Dizziness	S
症状	Symptomatic	O
无	Without	O
改善	Improvement	O
。	.	O
月	Month	O
日	Year	O
就诊	Outpatient service	O

Sequences	Translations	Annotations
于	In	O
社区	Community	O
诊所	Hospital	O
,	,	O
西安市	Xi'an	O
第一	The first	O
医院	Hospital	O
行	Do	O
颈椎	Cervical spine	O
MRI	MRI	O
检查	Screening	O
未	Do not	O
见	Have	O
明显	Any	O
异常	Abnormal results	O
,		O
给予	Treated with	O
天麻	Gastrodin	O
素	—	O
等	And other	O
对症	Symptomatic	O
治疗	Treatment	O
,	,	O
头晕	Dizziness	S
症状	Symptomatic	O
无	Do not	O
明显改善	Significant improvement	O
。	.	O
约	About	O
月	Month	O
日	Day	O
出现	Appear	O
视	Diplopia	B
物	—	M
成	—	M
双	—	E
,	,	O
伴	When	B
行走	Walking	M
不	Unsteady	M
稳	—	E
。	.	O

Table S4 The hyper-parameters of models in this study

ID	Models	Hyper-parameters	Values
1	CBOW model	embedding_dim	128
		batch_size	128
		window_size	5
		optimizer	Adam
		learning_rate	0.001
		other hyper-parameters	default
2	BiLSTM-CRF model	epoches	40
		batch_size	2
		embedding_dim	128
		dropout	0.2
		learning_rate	0.001
		hidden_dim	128
		optimizer	Adam
		max length of BiLSTM (max_seq_length)	311
		other hyper-parameters	default
3	NBC with BoW model	alpha	0.1
		other hyper-parameters	default
4	NBC with TF-IDF model	alpha	0.1
		other hyper-parameters	default
5	SVM with BoW model	kernel	rbf
		C	50
		gamma	0.01
		other hyper-parameters	default
6	SVM with TF-IDF model	kernel	rbf
		C	450
		gamma	0.01
		other hyper-parameters	default

CBOW continuous bag of words, *BiLSTM-CRF* bidirectional long short-term memory conditional random field, *NBC* naïve Bayesian classifier, *SVM* support vector machine, *BoW* bag of words, *TF-IDF* term frequency–inverse document frequency

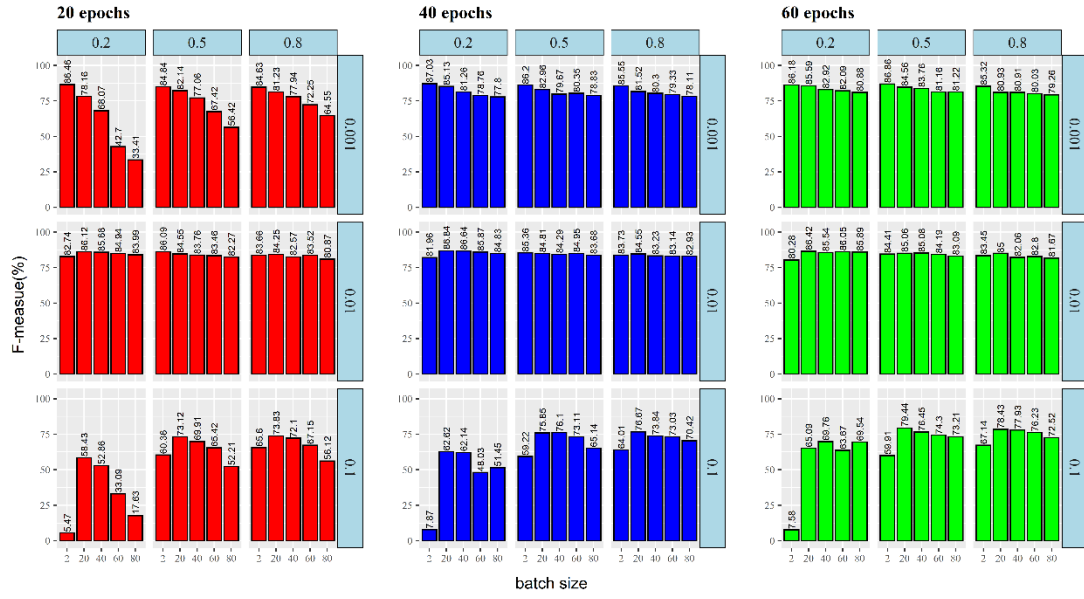


Fig. S1 Results for each configuration of the parameters of BiLSTM-CRF model in the hyper-parameter fine-tuning stage. The values used for the batch size were 2, 20, 40, 60 and 80; for the number of epochs were 20, 40 and 60, applying early stopping; for the dropout were 0.2, 0.5 and 0.8; and for the learning rate were 0.1, 0.01 and 0.001, with the Adam algorithm. *BiLSTM-CRF* bidirectional long short-term memory conditional random field

Table S5 Performance of two sets of measures of the BiLSTM-CRF model using independent testing subset

Independent testing subset	Words	Entity (Symptoms)	Precision (%)	Recall (%)	<i>F</i> measure (%)
exact match	6,425	296	81.7	82.8	82.2
inexact match	6,425	296	91.7	92.9	92.3

BiLSTM-CRF bidirectional long short-term memory conditional random field

Table S6 219 normalized symptom terminologies obtained in this study and comparison of clinical characteristics between AE and IE groups (*n* = 199)

ID	Normalized symptom terminologies	MeSH	SNOMED-CT	SCTID	AE (<i>n</i> = 83)	IE (<i>n</i> = 116)	<i>P</i> value ^a
1	精神行为异常	Mental Disorders	Psychiatric symptom (finding)	75864003	62(74.7)	37(31.9)	0.000**
2	意识障碍	Consciousness Disorders	Decreased level of consciousness	443371007	57(68.7)	44(37.9)	0.000**
3	癫痫发作	—	Seizure	91175000	50(60.2)	15(12.9)	0.000**
4	不自主运动	—	Involuntary movement	267078001	49(59.0)	23(19.8)	0.000**
5	抽搐	Tics	Tic	386783003	43(51.8)	18(15.5)	0.000**
6	发热	Fever	Fever	386661006	37(44.6)	85(73.3)	0.000**
7	意识不清	—	Drowsy	271782001	34(41.0)	16(13.8)	0.000**
8	胡言乱语	—	Swearing	48285002	32(38.6)	17(14.7)	0.000**
9	头痛	Headache	Headache	25064002	28(33.7)	95(81.9)	0.000**
10	呼之不应	—	No response to sound	300210001	25(30.1)	9(7.8)	0.000**
11	记忆力下降	Memory Disorders	Memory impairment	386807006	22(26.5)	7(6.0)	0.000**
12	肢体强直	Muscle Rigidity	Stiff limbs	225610004	22(26.5)	6(5.2)	0.000**
13	失眠	Insomnia	Insomnia	193462001	22(26.5)	5(4.3)	0.000**
14	呕吐	Vomiting	Vomiting symptom (finding)	249497008	21(25.3)	62(53.4)	0.000**
15	幻觉	Hallucinations	Hallucinations	7011001	20(24.1)	5(4.3)	0.000**
16	口吐白沫	—	Frothy sputum	68423001	18(21.7)	5(4.3)	0.000**
17	牙关紧闭	Trismus	Trismus	87866006	14(16.9)	3(2.6)	0.000**
18	夜休差	Sleep Initiation and Maintenance Disorders	Disorders of initiating and maintaining sleep	194437008	14(16.9)	0(0)	0.000**

ID	Normalized symptom terminologies	MeSH	SNOMED-CT	SCTID	AE (<i>n</i> = 83)	IE (<i>n</i> = 116)	<i>P</i> value ^a
19	眼凝视	—	Conjugate gaze	103255006	13(15.7)	1(0.9)	0.000**
20	狂躁	—	Feeling irritable	55929007	12(14.5)	1(0.9)	0.000**
21	兴奋	—	Excitement	58901008	11(13.3)	0(0)	0.000**
22	自言自语	—	Involuntary vocalization	38603001	11(13.3)	1(0.9)	0.000**
23	言语障碍	Speech Disorders	Disturbance in speech	29164008	23(27.7)	18(15.5)	0.036*
24	反应迟钝	—	Unresponsive	422768004	22(26.5)	17(14.7)	0.038*
25	恶心	Nausea	Nausea	422587007	22(26.5)	53(45.7)	0.006*
26	烦躁不安	—	Dysphoric mood	30819006	19(22.9)	13(11.2)	0.027*
27	眼上翻	—	Upward conjugate gaze	103261009	19(22.9)	7(6.0)	0.001*
28	遗忘	Amnesia	Amnesia	48167000	12(14.5)	3(2.6)	0.002*
29	答非所问	—	Impairment of speech form	228145007	10(12.0)	4(3.4)	0.019*
30	晕厥	Syncope	Syncope symptom	272030005	9(10.8)	4(3.4)	0.037*
31	大喊大叫	—	Finding of shouting	366004006	8(9.6)	2(1.7)	0.028*
32	体力差	—	Malaise and fatigue	271795006	8(9.6)	0(0)	0.001*
33	情绪异常	—	Mood disorder	46206005	8(9.6)	0(0)	0.001*
34	肢体屈曲	spasm	Local spasm	34714000	8(9.6)	2(1.7)	0.028*
35	精神症状	—	Psychological symptom	25618008	7(8.4)	1(0.9)	0.021*
36	攻击行为	Aggression	Aggressive behavior	61372001	6(7.2)	1(0.9)	0.044*
37	言语混乱	—	Paraphasia	53096005	6(7.2)	1(0.9)	0.044*
38	头颈后仰	—	Does raise head	301902000	6(7.2)	0(0)	0.005*
39	情绪低落	Depression	Symptoms of depression	394924000	4(4.8)	0(0)	0.029*
40	呆滞	—	Lack of emotional response	225652009	4(4.8)	0(0)	0.029*

ID	Normalized symptom terminologies	MeSH	SNOMED-CT	SCTID	AE (<i>n</i> = 83)	IE (<i>n</i> = 116)	<i>P</i> value ^a
41	高热	Hyperthermia	hyperpyrexia	164304001	0(0)	8(6.9)	0.022*
42	腹泻	Diarrhea	Diarrhea	2315008	0(0)	6(5.2)	0.042*
43	运动障碍	Motor Disorders	Movement disorder	60342002	13(15.7)	16(13.8)	0.712
44	认知障碍	Cognition Disorders	Impaired cognition	386806002	7(8.4)	3(2.6)	0.125
45	低热	Low Fever	low grade pyrexia	304213008	3(3.6)	6(5.2)	0.861
46	头晕	Dizziness	Dizziness	404640003	11(13.3)	19(16.4)	0.543
47	头昏	—	Dizziness and giddiness	271789005	9(10.8)	7(6.0)	0.219
48	头闷	—	Head pressing	427586006	2(2.4)	4(3.4)	0.998
49	头沉	—	Heavy head	162311003	2(2.4)	0(0)	0.173
50	头胀	—	Swelling of head	445385004	2(2.4)	3(2.6)	1
51	发冷	—	Intolerant of cold	80585000	0(0)	3(2.6)	0.267
52	寒战	Shivering	Chill	43724002	1(1.2)	10(8.6)	0.052
53	畏寒	Chills	Chill	43724002	0(0)	4(3.4)	0.142
54	鼻塞	Nasal Obstruction	Nasal obstruction present	267100006	1(1.2)	5(4.3)	0.399
55	打喷嚏	Sneezing	Sneezing	76067001	0(0)	4(3.4)	0.142
56	流涕	Nasal Discharge	Nasal discharge	64531003	0(0)	4(3.4)	0.142
57	干咳	—	Dry cough	11833005	0(0)	3(2.6)	0.267
58	咳嗽	Cough	Cough	49727002	1(1.2)	7(6.0)	0.179
59	咳痰	Sputum	Productive cough	28743005	0(0)	4(3.4)	0.142
60	胸闷	Chest Lumpy Stiffness	Chest discomfort	279084009	1(1.2)	2(1.7)	1
61	气短	Shortness of Breath	Dyspnea	267036007	2(2.4)	2(1.7)	1

ID	Normalized symptom terminologies	MeSH	SNOMED-CT	SCTID	AE (<i>n</i> = 83)	IE (<i>n</i> = 116)	<i>P</i> value ^a
62	乏力	Asthenia	Asthenia	13791008	5(6.0)	14(12.1)	0.152
63	酸困	—	Complaining of debility and malaise	272036004	1(1.2)	1(0.9)	1
64	乏困	—	Heavy feeling	161874006	0(0)	4(3.4)	0.142
65	出汗	Sweating	Sweating	415690000	5(6.0)	7(6.0)	0.998
66	盗汗	Night Sweating	Night sweats	42984000	1(1.2)	6(5.2)	0.268
67	畏声	—	Phonophobia	313387002	0(0)	1(0.9)	1
68	畏光	Photophobia	Photophobia	409668002	1(1.2)	1(0.9)	1
69	流泪	—	Finding of lacrimation	301973009	0(0)	2(1.7)	0.511
70	颈项强直	—	Stiff neck symptom	161880003	3(3.6)	5(4.3)	1
71	皮疹	Exanthema	Eruption	1806006	1(1.2)	2(1.7)	1
72	视物旋转	—	Visual discomfort	7751009	2(2.4)	4(3.4)	0.998
73	天旋地转	—	Dizzy spells	315018008	1(1.2)	2(1.7)	1
74	站立不稳	—	Unsteady when standing	249990003	2(2.4)	3(2.6)	1
75	不能站立	—	Does not stand	282973006	1(1.2)	1(0.9)	1
76	行走不稳	—	Unsteady when walking	22631008	2(2.4)	3(2.6)	1
77	倾倒	—	Falls	161898004	1(1.2)	1(0.9)	1
78	行走偏斜	—	Unable to walk on a narrow line	282223002	1(1.2)	1(0.9)	1
79	不能行走	—	Unable to walk	282145008	5(6.0)	8(6.9)	0.806
80	行走异常	—	Walking disability	228158008	1(1.2)	1(0.9)	1
81	意识丧失	Unconsciousness	Unconscious	418107008	10(12.0)	6(5.2)	0.079
82	搐搦	Tetany	Tetany	10629009	1(1.2)	0(0)	0.417
83	口唇紫绀	—	Local cyanosis	84906002	5(6.0)	2(1.7)	0.217

ID	Normalized symptom terminologies	MeSH	SNOMED-CT	SCTID	AE (<i>n</i> = 83)	IE (<i>n</i> = 116)	<i>P</i> value ^a
84	双手握拳	—	Does make a fist	284253005	1(1.2)	1(0.9)	1
85	头位异常	—	Head tilt / Does turn head	370532003 / 282992008	3(3.6)	2(1.7)	0.703
86	麻木	Numbness	Numbness	44077006	5(6.0)	7(6.0)	0.998
87	头部紧束感	—	Head structure + Tightness sensation	69536005 + 299954009	0(0)	1(0.9)	1
88	咽部疼痛	—	Pain in throat	162397003	1(1.2)	5(4.3)	0.399
89	颈部疼痛	neck pain	Neck pain	81680005	0(0)	4(3.4)	0.142
90	眼部疼痛	—	Pain in eye	41652007	1(1.2)	3(2.6)	0.863
91	耳部疼痛	—	Otalgia	16001004	1(1.2)	3(2.6)	0.863
92	牙痛	toothache	Toothache	27355003	0(0)	2(1.7)	0.511
93	背部疼痛	back pain	Backache	161891005	0(0)	2(1.7)	0.511
94	肢体疼痛	—	Pain in limb	90834002	1(1.2)	4(3.4)	0.591
95	腰部疼痛	low back pain	Low back pain	279039007	0(0)	1(0.9)	1
96	腹部疼痛	abdominal pain	Abdominal pain	21522001	0(0)	2(1.7)	0.511
97	瘫痪	Paralysis	Paralysis	44695005	0(0)	1(0.9)	1
98	活动不灵	—	Clumsiness	7006003	6(7.2)	7(6.0)	0.737
99	肌力减弱	—	Muscle weakness	26544005	10(12.0)	10(8.6)	0.428
100	震颤	Tremor	Tremor	26079004	1(1.2)	1(0.9)	1
101	摸索	—	Athetoid movement	58593005	3(3.6)	0(0)	0.071
102	舞蹈样运动	Chorea	Chorea	271700006	3(3.6)	0(0)	0.071
103	嗜睡	Lethargy	Lethargy	214264003	3(3.6)	6(5.2)	0.861
104	昏睡	—	Semiconscious	271783006	2(2.4)	2(1.7)	1
105	昏迷	Coma	Coma	371632003	3(3.6)	4(3.4)	1

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106	意识模糊	Confusion	Clouded consciousness	40917007	8(9.6)	5(4.3)	0.134
107	谵妄	Delirium	Delirium	2776000	0(0)	1(0.9)	1
108	破坏行为	Problem Behavior	Problem behavior	277843001	1(1.2)	0(0)	0.417
109	记忆错误	—	Paramnesia	32541007	1(1.2)	0(0)	0.417
110	言语不流利	—	Does not speak fluently	286403003	2(2.4)	1(0.9)	0.769
111	言语含糊不清	—	Slurred speech	289195008	4(4.8)	3(2.6)	0.651
112	舌活动不灵	—	Tongue protrusion	63864004	1(1.2)	1(0.9)	1
			disorder of twelfth cranial nerve				
113	口语理解障碍	—	Unintelligible articulation	289194007	0(0)	1(0.9)	1
114	失语	Aphasia	Aphasia	87486003	1(1.2)	2(1.7)	1
115	交流障碍	—	Difficulty communicating	288579009	0(0)	1(0.9)	1
116	语无伦次	—	Paraphrasia	15880005	2(2.4)	1(0.9)	0.769
117	面容失认	Prosopagnosia	Prosopagnosia	18358003	9(10.8)	6(5.2)	0.135
118	智能障碍	—	Below average intellect	247575000	1(1.2)	0(0)	0.417
119	行为异常	—	Abnormal behavior	25786006	0(0)	5(4.3)	0.077
120	不自主发笑	Laughter	Laughs spontaneously	304255004	5(6.0)	2(1.7)	0.217
121	淡漠	Apathy	Indifference	20602000	5(6.0)	4(3.4)	0.606
122	言语减少	—	Poverty of speech	72123004	5(6.0)	3(2.6)	0.395
123	言语增多	—	Volubility	75722007	3(3.6)	1(0.9)	0.394
124	精神恍惚	—	Absent minded	46991000	1(1.2)	1(0.9)	1
125	重复言语	—	Verbal repetition	25107009	3(3.6)	1(0.9)	0.394
126	焦虑	Catatonia	Catatonia	247917007	4(4.8)	1(0.9)	0.194
127	恐惧	Fear	Fear	1402001	3(3.6)	0(0)	0.071

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128	妄想	Delusions	Delusions	2073000	2(2.4)	0(0)	0.173
129	复视	Diplopia	Diplopia	24982008	2(2.4)	7(6.0)	0.386
130	视力下降	Vision, Low	Blind or low vision - both eyes	267727004	1(1.2)	2(1.7)	1
131	视物模糊	—	Visual obscuration	404666000	1(1.2)	10(8.6)	0.052
132	嗅觉下降	—	Sense of smell impaired	83156004	1(1.2)	0(0)	0.417
133	味觉下降	Ageusia	Loss of taste	36955009	1(1.2)	0(0)	0.417
134	耳鸣	Tinnitus	Tinnitus	60862001	2(2.4)	2(1.7)	1
135	听力下降	Hearing loss	Decreased hearing	103276001	0(0)	2(1.7)	0.511
136	便秘	Constipation	Constipation	14760008	16(19.3)	16(13.8)	0.299
137	大便失禁	Fecal Incontinence	Incontinence of feces	72042002	3(3.6)	0(0)	0.071
138	小便失禁	Urinary Incontinence	Urinary incontinence	165232002	15(18.1)	13(11.2)	0.17
139	二便失禁	—	Incontinence of feces + Urinary incontinence	72042002 + 165232002	5(6.0)	8(6.9)	0.806
140	体重下降	Weight Loss	Weight loss	89362005	4(4.8)	10(8.6)	0.301
141	体重增加	Weight Gain	Weight gain	8943002	1(1.2)	0(0)	0.417
142	睡眠过多	Hypersomnia	Hypersomnia	77692006	4(4.8)	12(10.3)	0.158
143	面色苍白	Pale Complexion	Pale complexion	398979000	2(2.4)	0(0)	0.173
144	饮水呛咳	—	Cough when swallowing	248593001	1(1.2)	2(1.7)	1
145	吞咽困难	—	Swallowing problem	399122003	1(1.2)	1(0.9)	1
146	不能进食	—	Does not feed self	289003008	0(0)	2(1.7)	0.511
147	眼睑下垂	Blepharoptosis	Ptosis of eyelid	11934000	1(1.2)	0(0)	0.417
148	眼睑闭合不全	—	Lagophthalmos	60735000	0(0)	3(2.6)	0.267

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149	口角歪斜	—	Lower facial weakness	249932008	1(1.2)	4(3.4)	0.591
150	思维混乱	—	Disturbance in thinking	26628009	1(1.2)	2(1.7)	1
151	口舌咬伤	—	Bite wound of mouth + Bite to own tongue	312655004 + 135874008	3(3.6)	0(0)	0.071
152	不能持物	—	Weakness of hand	299042006	1(1.2)	1(0.9)	1
153	语速减慢	—	Bradylalia	37001003	0(0)	1(0.9)	1
154	不能写字	Agraphia	Agraphia	27206009	1(1.2)	0(0)	0.417
155	全身不适	—	Malaise	367391008	1(1.2)	2(1.7)	1
156	胃部不适	—	Stomach ache	271681002	1(1.2)	0(0)	0.417
157	头部不适	—	Complaining of a head symptom	272035000	4(4.8)	2(1.7)	0.402
158	呼吸困难	Dyspnea	Dyspnea	267036007	1(1.2)	0(0)	0.417
159	异常的头部运动	—	Head movements abnormal	271799000	1(1.2)	0(0)	0.417
160	活动减少	—	Behavior showing reduced motor activity	43994002	0(0)	2(1.7)	0.511
161	眼干涩	Xerophthalmia	Conjunctival xerosis	64718006	0(0)	1(0.9)	1
162	潮热	Tidal Fever	—	—	0(0)	0(0)	—
163	头脑不清	—	Muzzy headed	248224004	0(0)	0(0)	—
164	咯血	Hemoptysis	Hemoptysis	66857006	0(0)	0(0)	—
165	心慌 (心悸)	Palpitation	Palpitations	80313002	0(0)	0(0)	—
166	眩晕	Vertigo	Vertigo	399153001	0(0)	0(0)	—
167	步态异常	—	Abnormal gait	22325002	0(0)	0(0)	—
168	步基异常	—	Double step gait	11172006	0(0)	0(0)	—

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169	癫痫发作 (原始)	Epilepsy	Epileptic seizure	313307000	0(0)	0(0)	—
170	惊厥	Convulsions	Dissociative convulsions	191714002	0(0)	0(0)	—
171	失神发作	Epilepsy	Atypical absence epilepsy	187931000119106	0(0)	0(0)	—
172	感觉障碍	Paresthesia	Paresthesia	91019004	0(0)	0(0)	—
173	感觉减退	Hypesthesia	Hypesthesia	397974008	0(0)	0(0)	—
174	踩棉花感	—	Does walk down a slope	282163008	0(0)	0(0)	—
175	刮痕感	—	Scratches self	248071002	0(0)	0(0)	—
176	晕车感	Motion Sickness	Motion sickness	37031009	0(0)	0(0)	—
177	醉酒感觉	Alcoholic Intoxication	Acute alcoholic intoxication in alcoholism	191802004	0(0)	0(0)	—
178	全身疼痛	—	Total body pain syndrome	279044000	0(0)	0(0)	—
179	眼眶疼痛	—	Structure of orbit proper + Pain	363654007 + 22253000	0(0)	0(0)	—
180	面部疼痛	facial pain	Pain in face	95668009	0(0)	0(0)	—
181	关节疼痛	Arthralgia	Joint pain	57676002	0(0)	0(0)	—
182	不自主运动 (原始)	—	Involuntary movement	267078001	0(0)	0(0)	—
183	意识障碍 (原始)	Consciousness Disorders	Disturbance of consciousness	3006004	0(0)	0(0)	—
184	注意涣散	—	Scattered attention	425248002	0(0)	0(0)	—
185	意识内容下降	—	Drugged state	34951003	0(0)	0(0)	—
186	言语障碍 (原始)	—	Speech dysfunction	23168003	0(0)	0(0)	—
187	构音障碍	Dysarthria	Dysarthria	8011004	0(0)	0(0)	—
188	不能计算	Dyscalculia	Dyscalculia	55640002	0(0)	0(0)	—
189	认知障碍 (原始)	Cognition	Impaired cognition	386806002	0(0)	0(0)	—

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		Disorders					
190	精神萎靡	—	Impaired psychomotor performance	416909000	0(0)	0(0)	—
191	性格改变	—	Personality change	102943000	0(0)	0(0)	—
192	视物变形	—	Visual distortion of perception of shape	446617001	0(0)	0(0)	—
193	偏盲	Hemianopsia	Hemianopia	77674003	0(0)	0(0)	—
194	小便潴留	Uroschisis	Retention of urine	267064002	0(0)	0(0)	—
195	二便障碍	—	Altered bladder function + Altered bowel function	442548000 + 88111009	0(0)	0(0)	—
196	食欲下降	—	Decrease in appetite	64379006	0(0)	0(0)	—
197	食欲亢进	Bulimia	Increased appetite	72405004	0(0)	0(0)	—
198	声音嘶哑	Hoarseness	Hoarse	50219008	0(0)	0(0)	—
199	跛行	—	Limping	16973004	0(0)	0(0)	—
200	精神状态差	—	Mental health impairment	228150001	0(0)	0(0)	—
201	视物遥远	Hyperopia	Hypermetropia	38101003	0(0)	0(0)	—
202	耳道流脓	—	Purulent drainage from external ear canal	95804005	0(0)	0(0)	—
203	眼球活动受限	Ocular Motility Disorders	Limited eye movement	419326002	0(0)	0(0)	—
204	说话无力	—	Vocal fatigue	8614008	0(0)	0(0)	—
205	咳嗽无力	—	No cough strength	769211009	0(0)	0(0)	—
206	血尿	Hematuria	Hematuria syndrome	53298000	0(0)	0(0)	—
207	煤烟接触史	—	History of risk factor + Soft	161632004 +	0(0)	0(0)	—

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208	毒物接触史	—	coal History of toxic inhalation exposure	55895006 109211000119102	0(0)	0(0)	—
209	尿频	Frequent Micturition	Increased frequency of urination	162116003	0(0)	0(0)	—
210	思维力减退	—	Diminished judgement	423124001	0(0)	0(0)	—
211	定向力减退	—	Disorientated	62476001	0(0)	0(0)	—
212	眼球发胀	—	Swelling of structure of eye	45177002	0(0)	0(0)	—
213	自杀	Suicide	At risk for suicide	225444004	0(0)	0(0)	—
214	呃逆	Hiccup	Hiccoughs	65958008	0(0)	0(0)	—
215	睡眠节律紊乱	—	Disorder of sleep-wake cycle	271794005	0(0)	0(0)	—
216	睑裂变小	Blepharophimosis	Acquired blepharophimosis	21480008	0(0)	0(0)	—
217	无目的走动	—	Aimless movement	247913006	0(0)	0(0)	—
218	结膜充血	—	Passive conjunctival congestion	246677007	0(0)	0(0)	—
219	腹胀	Flatulence	Flatulence symptom	308698004	0(0)	0(0)	—

Data are presented as *n* (%)

^aSignificant difference at **P* < 0.05 and ***P* < 0.001

MeSH Medical Subject Headings, *SNOMED-CT* Systematized Nomenclature of Medicine-Clinical Terms, *SCTID* SNOMED-CT ID, *AE* autoimmune encephalitis, *IE* infectious encephalitis