Supplementary Table 1 Clinical features of 20 patients in current cohort

No.	Age（Y）/Sex	Period of N_2O abuse	Complaint	Motor	Sensory	Ataxia	Other symptoms	Vitamin B12 (pg/ml)	Hb (g/L)	MCV (fl)	HCY (μmol/L)	Spinal cord MRI	EMG
1	16/F	1M	Weakness and numbness of four limbs and unsteady walk for 4 days	Four limbs (4/5)	Decreased pinprick sensation	No	No	147	104	104.3	3.4	C2-C6（SCD）	Demyelination
2	18/F	1Y	Progressive weakness and numbness of four limbs and unsteady walk for 8 months	Distal parts of four limbs（5-/5）	Decreased pinprick sensation below the elbows,increased pinprick sensation of dorsum feet	Yes	No	↑	151	84.0	/	/	Demyelination
3	19/F	0.5M	Numbness of four limbs for half a month	Distal part of lower limbs (4/5),hyporeflexia	Decreased pinprick sensation below the ankles and wrists, decreased deep sensation of lower limbs	Yes	No	161	83	67.9	20.3	C3-C6 (SCD)	Axonal damage and demyelination
4	20/F	4M	Numbness of four limbs for 2 months, weakness of four limbs for 4 days	Four limbs （4/5),absent tendon reflexes	N	No	No	N	N	N	43	C2-C7（SCD）	Axonal damage and demyelination
5	22/F	4M	Weakness of lower limbs and unsteday walk for 1 week	Lower limbs (4/5)	Abnormal deep sensory	Yes	No	/	98	112.2	24.7	Abnormal signal in the whole spinal cord	/
6	22/F	3D	Numbness and weakness of upper limbs for 10 days	Distal parts of four limbs (5-/5),hypomyotonia, hyporeflexia, postural tremor of upper limbs	Decreased pinprick sensation below the elbows,decreased motor sensation of toes	Yes	Irritability, bad sleep quality	/	120	92.2	127.2	N	N
7	22/F	1M	Weakness and numbness of four limbs for 1 week	Distal parts of lower limbs(4/5),hyporeflexia	Decreased pinprick sensation below the elbows,decreased motor sensation of toes	Yes	No	136	118	98.8	16.8	C1-T2	Axonal damage and demyelination

No.	Age（Y）/Sex	Period	Complaint	Motor	Sensory	Ataxia	Other symptoms	Vitamin B12 (pg/ml)	Hb (g/L)	MCV (fl)	HCY (μmol/L)	Spinal cord MRI	EMG
8	24/F	2M	Weakness and numbness of four limbs and unsteady walk for 1 week	Four limbs(upper:5-/5,lower:3/5), hypomyotonia	Decreased pinprick sensation	No	No	319	140	98.1	20.6	C2-C6（SCD）	Axonal damage and demyelination
9	24/F	1Y	Weakness of lower limbs for half of year	Weakness of lower limbs(4/5),hyporeflexia	Paroxysmal nubmness of distal parts of all limbs, but sensation examation is normal	No	No	91	126	102.8	66.17	N	Axonal damage and demyelination
10	17/M	3M	Progressive weakness and numbness of four limbs	Weakness of four limbs(4/5), hypomyotonia, hyporeflexia	Decreased pinprick sensation below the elbows and knee joints	Yes	No	/	149	92.8	91.3	C2-C5 (SCD)	Demyelination
11	21/M	2Y	Weakness and numbness of lower limbs for 1 week	Decreased muscle strength of dorsal stretch of feet	Decreased deep sensation	Yes	No	92.31	157	90.2	102	C3-C6 (SCD)	/
12	22/M	6M	Numbness of four limbs for 1 week	Four limbs(5-/5),hypotonia, hyporeflexia of lower limbs	Decreased pinprick sensation of distal parts of four limbs,decreased deep sensation of lower limbs	Yes	Hallucination	/	138	102.7	35.72	C1-C7 (SCD)	Axonal damage
13	23/M	6M	Weakness of lower limbs for 10 days and numbness of four limbs for 2 days	Four limbs(5-/5),decreased muscle strength of dorsal stretch of feet,hyporeflexia	Decreased touch sensation and hyperalgesia of distal parts of four limbs,decreased deep sensation of lower extremities	No	No	>2000	134	103.6	7.92	C2-C6（SCD）	Axonal damage and demyelination
14	24/M	2M	Weakness of lower limbs for 2 months, worse for 2 days	Lower limbs(3/5), bilateral babinski signs (+)	N	No	No	224	133	94.6	24.4	C2-C7（SCD）	Demyelination
15	27/M	3M	Weakness and numbness of four limbs for 3 months	Hyperreflexia of lower limbs	Decreased pinprick sensation of distal parts of four limbs	No	Root pain,dyspnea,palpitation,impaired memory	975	154	97.2	64.65	N	Axonal damage and demyelination
16	28/M	1Y	Parosymal numbness of four limbs for 2 months	N	Decreased pinprick sensation	No	No	/	150	90.2	33.9	C2-C6（SCD）	Axonal damage and demyelination

No.	Age（Y）/Sex	Period	Complaint	Motor	Sensory	Ataxia	Other symptoms	Vitamin B12 (pg/ml)	Hb (g/L)	MCV (fl)	HCY (μmol/L)	Spinal cord MRI	EMG
17	29/M	6M	Numbness of four limbs for 1 months	Hyporeflexia of upper limbs,left hoffman(+)	Decreased pinprick sensation from C3-T6	No	No	978	148	91.8	/	C2-C5（SCD）	N
18	31/M	6M	Weakness and numbness of the whole body for 2 weeks	Four limbs (5-/5),unsteady walk,hyporeflexia	Decreased pinprick sensory	Yes	Bowel and bladder dysfunction	1191	139	95.8	/	Protrusion of cervical intervertebral disc	Axonal damage and demyelination
19	32/M	2M	Numbness of four limbs for 3 days	Lower limbs(4/5）	Decreased pain sensation below groin and below wrist joints	Yes	No	/	141	98.2	68.2	C2-C5 (SCD)	Axonal damage
20	35/M	1Y	Numbness of left leg for 2 days	Amyotrophy of dorsum of left foot	Decreased pinprick and deep sensation	Yes	Artery thrombosis in lower limbs,aorta abdominalis,pain	/	137	98.8	/	C2-Th7 (SCD)	Axonal damage and demyelination

Muscle strength assessments according to UK Medical Research Council (MRC);Motor: including MBC, muscle tone and tendon reflex;Hb:hemoglobin;MCV:Mean Corpuscular Volume;HCY:homocysteine;;EMG:Electromyography;/:unknown; N:normal; ↑:increase;Y:years;M;month;D:day;SCD:Subacute combined degeneration of spinal cord;IVIG:intravenous immunoglobulin;Normal range: vitamin B12:197–771 pg/mL; Hb: female >110 g/L; male >120 g/L; MCV:<100 fl; HCY:5–13.9 μmol/L.

Supplemenatary Table 2 Treatment and prognosis of 20 patients in current cohort

No.	In hospital treatment	Symptoms and physical signs when discharged	Post-discharge treatment	Time of complete remission after discharge	Remarks
1	Cobamamide 0.5mg/D*17D, glucocorticoid	Normal muscle strength, improved sensation	Mecobalamine 1.5mg/D*3M	3M	Relapse of N_2O
2	Mecobalamine 2mg/D*16D, IVIG	Improved muscle strength of lower limbs	Mecobalamine 1.5mg/D*3M	3M	
3	Cobamamide 0.5mg/D*17D，mecobalamine 0.5mg/D*9D	Improved sensation	Mecobalamine 1.5mg/D	Loss to follow-up	
4	Mecobalamine 0.5mg/D*10D, glucocorticoid	Improved muscle strength of four limbs	Mecobalamine 0.5mg/D	Loss to follow-up	
5	Vitamin B12 1.0mg/D*14D	Improved muscle strength of lower limbs	Cobamamide 2.25mg/D*1M	0.5M	
6	Mecobalamine 2mg/D*7D	Improved sensation of upper limbs, normal sleep	Mecobalamine 1.5mg/D*3M	3M	
7	Mecobalamine 0.5mg/D*16D	Improved muscle strength	Mecobalamine 1.5mg/D*1M	1M	
8	Cobamamide 0.5mg/D*14D, glucocorticoid	Improved muscle strength of four limbs	Mecobalamine 1.5mg/D*2M	2M	
9	Mecobalamine 2mg/D*7D, glucocorticoid	Improved muscle strength of four limbs	No vitamin	3M	
10	Mecobalamine 2mg/D*14D, mecobalamine 1mg/D*14D	Improved muscle strength of four limbs,normal EMG	Mecobalamine 1.5mg/D*3M	3M	
11	Vitamin B12 1.0mg/D*1M	Improved muscle strength of lower limbs	Vitamin B12 1mg/D*10D, cobamamide 2.25mg/D*2M	2M	
12	Mecobalamine 0.5mg/D*8D, hyperbaric oxygen	Improved sensation	Mecobalamine 1.5mg/D*2M，hyperbaric oxygen	0.5M	Relapse of N_2O
13	Mecobalamine 0.5mg/D*7D, cobamamide 1.5mg/D*7D，hyperbaric oxygen, IVIG	Improved muscle strength and sensation	Mecobalamine 1.5mg/D*3M	3M	
14	Cobamamide 0.5mg/D*8D	No obivous improvement	Mecobalamine 1.5mg/D*2M	2M	
15	Mecobalamine 1mg/D*8D, hyperbaric oxygen	Improved muscle strength and sensation	Mecobalamine 1.5mg/D*5M	5M	Relapse of N_2O
16	Cobamamide 0.5mg/D*4D	No improvement	Mecobalamine 1.5mg/D*1M	1M	
17	Cobamamide 0.5mg/D*15D，glucocorticoid	No obivous improvement	Mecobalamine 1.5mg/D*0.5M	0.5M	
18	Cobamamide 0.5mg/D*10D, hyperbaric oxygen	Improved muscle strength	Mecobalamine 1.5mg/D*3.5M	3.5M	
19	Cobamamide 0.5mg/D*6D, hyperbaric oxygen	Exacerbate numbness	Mecobalamine 1.5mg/D*6M	Walking slowly, numb toes,memory loss*	
20	Vitamin B12 1.0mg/D*3D, mecobalamine 0.5mg/D*13D	Improved sensation	Mecobalamine 1.5mg/D	Loss to follow-up	

Only the dosage of vitamin B12 is listed because vitamin B12 is the most importment treatment for the patients ;
M:month;D:day;IVIG:intravenous immunoglobulin; *: the patient still had some symptoms 16 months after discharge

Supplementary Table 3 Clinical data of 99 patients reported previously

No.	Age/ Sex	Clinical manifestation	Laboratory test	Spinal cord imaging	EMG	Treatment	Prognosis	Citation
1	28/M	Paresthesia,weakness,decreased deep senstaion	VitB12↓,HCY↑,Hb,MCV:N,MMA↑	C4-C6	A	VitB12, IVIG	Improvement	Algahtani et al.2020
2	22/M	Paresthesia,weakness,decreased deep senstaion,ataxia,bowel or bladder dysfunction	VitB12:N,HCY↑,Hb↓,MCV↑,MMA↑	C1-C6	/	VitB12	Improvement	Al-Sadawi et al.2018
3	24/M	Paresthesia,decreased deep senstaion,involuntary movement,impaired cognition,pain	VitB12,Hb,MCV:N,HCY↑,MMA↑	/	/	VitB12	Lost	Alt et al.2011
4	29/F	Paresthesia,weakness,decreased deep senstaion,ataxia	VitB12↓,Hb↓,MCV:N,MMA↑	Cervical and thoracic	/	VitB12	Lost	Anderson et al.2018
5	60/M	Ataxia,psychiatric symptoms	VitB12↓,HCY↑,MMA↑	C3-C5	/	VitB12	Improvement	Anderson et al.2015
6	25/M	Paresthesia,decreased deep senstaion,ataxia,lhermitte symptom	VitB12:N,HCY↑,MMA↑	C1-C6	/	VitB12	Improvement	Antezana et al.2015
7	20/M	Paresthesia,weakness,decreased deep senstaion	VitB12↓,MCV↑	C2-C4	/	VitB12	Improvement	Antonucci et al.2018
8	21/M	Paresthesia,decreased deep senstaion,ataxia	VitB12:N,HCY↑	C2-C7	/	VitB12	Improvement	Arshi et al.2014
9	27/F	Paresthesia,weakness,decreased deep senstaion,ataxia	VitB12:N,HCY↑	C2-C6	/	VitB12	Improvement	Brosset et al.2020
10	31/M	Paresthesia,weakness,decreased deep senstaion	VitB12:N,MMA↑	C1-C6	/	VitB12, steroid	Improvement	Buizert et al.2017
11	23/M	Decreased deep senstaion,ataxia	VitB12,Hb,MCV:N	C1-C6	N	VitB12, methionine	Improvement	Butzkueven et al.2000
12	42/F	Paresthesia,decreased deep senstaion,ataxia, impaired cognition,pain	VitB12↓,HCY↑,Hb,MCV:N,MMA↑	C4-C5	/	VitB12	Improvement	Campdesuner et al.2020
13	20/F	Weakness，decreased deep senstaion,psychiatric symptoms,thrombosis	VitB12↓,Hb↓,MCV:N	Abnormal	/	VitB12, methionine	Improvement	Cartner et al.2007
14	20/F	Paresthesia,decreased deep senstaion,involuntary movement	Hb:N,MCV:N	C1-C6	A & D	VitB12	Improvement	Chen et al.2016
15	Na/F	Paresthesia,weakness,decreased deep senstaion,ataxia	VitB12↓	C2-C5	/	VitB12	/	Cheng et al.2013
16	29/F	Paresthesia,weakness,decreased deep senstaion,ataxia,bowel or bladder dysfunction,hyperpigmentation	VitB12↓,HCY↑,Hb↓,MCV:N	/	/	VitB12	Improvement	Chiang et al.2013
17	24/M	Paresthesia,decreased deep senstaion,ataxia,bowel or bladder dysfunction	VitB12，Hb:N,HCY↑,MCV↑	C1-C7	D	VitB12	Improvement	Choi et al.2019
18	22/F	Paresthesia,weakness,decreased deep senstaion,ataxia,bowel or bladder dysfunction	VitB12↓,HCY↑,Hb,MCV:N	C3-C5	A	VitB12	Improvement	Choi et al.2019
19	37/M	Paresthesia,decreased deep senstaion,ataxia	VitB12,Hb:N,HCY↑,MCV↑,MMA↑	C3-C5	/	VitB12	Remain	Chomin et al.2018
20	24/M	Paresthesia,ataxia	VitB12,Hb,MCV:N,HCY↑	C2-C6	/	VitB12	Improvement	Demas et al.2020
21	31/M	Paresthesia,weakness,decreased deep senstaion,ataxia,involuntary movement	VitB12↓,HCY↑Hb,MCV:N	Cervical and thoracic	/	VitB12	Improvement	Diamond et al.2004
22	22/M	Paresthesia,weakness,decreased deep senstaion，bowel or bladder dysfunction	VitB12↓,HCY↑,Hb,MCV:N	C1-C6	A & D	VitB12	Improvement	Dong et al.2019
23	20/F	Paresthesia,weakness,decreased deep senstaion,pain	VitB12↓,Hb,MCV:N,MMA↑	Abnormal	D	VitB12, steroid, IVIG	Improvement	Duque et al.2015
24	27/F	Paresthesia,weakness,decreased deep senstaion,ataxia	VitB12↓,HCY↑,Hb↓,MCV↑,MMA↑	/	/	VitB12	Improvement	Edigin et al.2019

No.	Age/ Sex	Clinical manifestation	Laboratory test	Spinal cord imaging	EMG	Treatment	Prognosis	Citation
25	24/F	Ataxia,pain,hyperpigmentation	VitB12 ↓ ,HCY ↑ ,Hb:N,MCV ↑ ,MMA ↑	C2-C7	/	VitB12	/	Egan et al.2018
26	30/M	Paresthesia,weakness,decreased deep senstaion,ataxia	VitB12:N,MMA ↑	C1-C6	/	VitB12	Improvement	Ernst et al.2015
27	17/F	Paresthesia,weakness,decreased deep senstaion,hyperpigmentation	VitB12 ↓ ,HCY ↑ ,Hb ↓ ,MCV:N	C2-C5	A&D	VitB12	Improvement	Fang et al.2020
28	19/F	Paresthesia,weakness,decreased deep senstaion,hyperpigmentation	VitB12 ↓ ,HCY ↑ ,Hb ↓ ,MCV:N	C2-C5	A&D	VitB12	Improvement	Fang et al.2020
29	23/M	Paresthesia,weakness,decreased deep senstaion,hyperpigmentation	VitB12 ↓ ,HCY ↑ ,Hb ↓ ,MCV ↑	N	A	VitB12	Improvement	Fang et al.2020
30	20/F	Paresthesia,hyperpigmentation	VitB12 ↓ ,HCY ↑ Hb,MCV:N	N	D	VitB12	Improvement	Fang et al.2020
31	27/M	Paresthesia,weakness,decreased deep senstaion,ataxia,pain	VitB12 ↓ ,HCY ↑ ,Hb,MCV:N	Cervical and thoracic	/	VitB12	Improvement	Fernandez et al.2017
32	22/F	Paresthesia,decreased deep senstaion,ataxia	VitB12:N,HCY ↑	C2-C6	D	VitB12	Improvement	Fong et al.2016
33	38/M	Paresthesia,decreased deep senstaion,ataxia,psychiatric symptoms	VitB12 ↓ ,HCY ↑ ,Hb ↓ ,MCV ↑ ,MMA ↑	/	/	VitB12	Improvement	Forzani et al.2013
34	24/F	Paresthesia,weakness	VitB12,Hb,MCV:N,HCY ↑ ,MMA ↑	Abnormal	/	VitB12	/	Francis et al.2019
35	19/M	Paresthesia,weakness,decreased deep senstaion,ataxia,pain	VitB12:N	C2-C7	/	Steroid	Improvement	Ghobrial et al.2012
36	23/F	Paresthesia,weakness,decreased deep senstaion,thrombosis	VitB12 ↓ ,HCY ↑ ,Hb ↓ ,MCV:N,MMA ↑	N	A&D	VitB12	Improvement	Glijn et al.2017
37	45/M	Paresthesia,weakness,decreased deep senstaion,ataxia,psychiatric symptoms , impaired cognition,pain	VitB12 ↓ ,HCY ↑ ,Hb,MCV:N	/	A	VitB12	Improvement	Hew et al.2018
38	23/M	Paresthesia,weakness,decreased deep senstaion,ataxia	VitB12 ↓ ,HCY ↑	N	A&D	VitB12	Death	Hirvioja et al.2016
39	19/M	Paresthesia,weakness,ataxia,involuntary movement	VitB12 ↓ ,Hb:N,MCV ↑	C1-C5	D	VitB12	Improvement	Hsu et al.2012
40	16/F	Paresthesia,weakness,decreased deep senstaion,ataxia	VitB12,HCY,Hb,MCV:N	C1-C6,T7-T8	Abnormal	VitB12	Improvement	Hu et al.2014
41	19/F	Weakness,ataxia	/	Cervical and thoracic	D	/	/	Huang et al.2009
42	55/M	Decreased deep senstaion,psychiatric symptoms	VitB12 ↓ ,Hb:N,MCV ↑	Abnormal	/	/	Improvement	Iwata et al.2001
43	19/F	Paresthesia,weakness,decreased deep senstaion,ataxia	VitB12:N,HCY ↑ ,MCV ↑	C2-C6	A & D	VitB12, steroid	Improvement	Ji et al.2018
44	24/M	Paresthesia,weakness,decreased deep senstaion,ataxia,lhermitte symptom	VitB12 ↓ ,HCY ↑ ,Hb ↓	C2-C6	/	VitB12	Improvement	Jiang et al.2020
45	21/F	Weakness,decreased deep senstaion,ataxia,impaired cognition,hyperpigmentation	VitB12 ↓ ,Hb ↓	C2-C7	A & D	VitB12	Improvement	Johnson et al.2018
46	18/F	Paresthesia,weakness,ataxia	VitB12,MMA:N	Cervical and thoracic	/	VitB12	Improvement	Jones et al.2015
47	19/F	Paresthesia,decreased deep senstaion,ataxia	VitB12 ↓ ,HCY ↑ ,Hb ↓ ,MCV ↑ ,MMA ↑	C1-T4	/	VitB12	Improvement	Kanin et al.2020
48	27/M	Paresthesia,decreased deep senstaion	VitB12,Hb,MCV:N,HCY ↑ ,MMA ↑	N	A	VitB12	Improvement	Kaski et al.2017

No.	Age/ Sex	Clinical manifestation	Laboratory test	Spinal cord imaging	EMG	Treatment	Prognosis	Citation
49	22/F	Paresthesia,weakness,decreased deep senstaion,ataxia,thrombosis	VitB12 ↓ ,MCV ↑	C1-C5	A	VitB12	Improvement	Kwon et al.2019
50	33/M	Paresthesia,weakness,decreased deep senstaion,ataxia	VitB12 ↓ ,MCV ↑	C2-C6	A	VitB12	Improvement	Kwon et al.2019
51	32/F	Decreased deep senstaion,ataxia	VitB12 ↓ ,HCY ↑ ,Hb:N,MCV ↑	C1-2	/	VitB12	Improvement	Lee et al.2019
52	41/M	Paresthesia,weakness,decreased deep senstaion,ataxia,lhermitte symptom	VitB12 ↓ ,Hb:N,MCV ↑	C2-C7	A	/	/	Lin et al.2007
53	24/M	Paresthesia,decreased deep senstaion,ataxia,bowel or bladder dysfunction	VitB12 ↓ ,Hb:N,MCV ↑	C2-C6	A & D	VitB12	Improvement	Lin et al.2011
54	18/F	Paresthesia,weakness,decreased deep senstaion,ataxia,bowel or bladder dysfunction	VitB12,Hb:N,HCY ↑ ,MCV ↑	C2-C6	A & D	VitB12	Lost	Lin et al.2011
55	20/F	Paresthesia,weakness,decreased deep senstaion	VitB12,Hb:N,MCV ↑	C2-C7	D	VitB12	Lost	Lin et al.2011
56	21/F	Weakness,ataxia,psychiatric symptoms	VitB12 ↓ ,HCY ↑ ,Hb ↓ ,MCV:N,MMA ↑	N	/	VitB12	Improvement	Lundin et al.2019
57	35/M	Paresthesia,weakness,decreased deep senstaion,ataxia,psychiatric symptoms	VitB12 ↓ ,HCY ↑ ,MMA ↑	C2-C6	N	VitB12, methionine	Improvement	Mancke et al.2016
58	36/M	Paresthesia,decreased deep senstaion,ataxia, involuntary movement	VitB12 ↓ ,HCY ↑ ,MCV ↑	C1-Th11	A & D	VitB12	Improvement	Massey et al.2016
59	24/F	Paresthesia,weakness,decreased deep senstaion,ataxia	VitB12 ↓ ,HCY ↑ ,Hb,MCV:N	C1-C5	A	VitB12	/	McArdle et al.2020
60	19/F	Weakness,ataxia,impaired cognition	VitB12 ↓ ,Hb ↓ ,MCV:N	C3-C6	A	VitB12	/	McArdle et al.2020
61	19/F	Paresthesia,ataxia,psychiatric symptoms ,bowel or bladder dysfunction	VitB12 ↓ ,MCV ↑	C1-C5	A	VitB12	/	McArdle et al.2020
62	18/F	Paresthesia,weakness,ataxia	VitB12 ↓ ,Hb,MCV:N	C1-thoracic	A	VitB12	/	McArdle et al.2020
63	22/M	Paresthesia,weakness,thrombosis	VitB12:N	/	D	VitB12	Improvement	Middleton et al.2018
64	39/M	Decreased deep senstaion,ataxia	VitB12:N	/	/	VitB12	Improvement	Miller et al.2004
65	22/M	Paresthesia,weakness,decreased deep senstaion,ataxia,lhermitte symptom	VitB12 ↓ ,HCY ↑ ,Hb:N,MCV ↑	N	Abnormal	VitB12	Improvement	Morris et al.2015
66	24/M	Paresthesia,decreased deep senstaion,ataxia,involuntary movement	HCY ↑ ,MMA ↑	N	/	VitB12	Lost	Morrissey et al.2009
67	37/M	Paresthesia,weakness,ataxia,psychiatric symptoms ,bowel or bladder dysfunction	VitB12 ↓ ,Hb,MCV:N	C1-C7	/	VitB12	Improvement	Ng et al.2002
68	30/M	Paresthesia,decreased deep senstaion,ataxia,thrombosis	VitB12:N,HCY ↑ ,Hb ↓ ,MMA ↑	N	/	VitB12	Improvement	Olney et al.2019
69	30/F	Paresthesia,weakness,decreased deep senstaion,ataxia,lhermitte symptom	VitB12 ↓ ,HCY ↑ ,Hb,MCV:N,MMA ↑	C2-C7	/	VitB12	Improvement	Onrust et al.2019
70	Na/M	Weakness,decreased deep senstaion,ataxia	VitB12 ↓	Cervical	/	VitB12	/	Papathanasiou et al.2015
71	Na/M	Weakness,decreased deep senstaion,ataxia	VitB12:N	Cervical	/	VitB12	/	Papathanasiou et al.2015

No.	Age/ Sex	Clinical manifestation	Laboratory test	Spinal cord imaging	EMG	Treatment	Prognosis	Citation
72	31/M	Paresthesia,weakness,decreased deep senstaion,ataxia,Lhermitte symptom	VitB12 ↓ ,MCV ↑	C2-C5	/	VitB12	Improvement	Pema et al.1998
73	31/F	Paresthesia,weakness,decreased deep senstaion	/	C1-T8	/	VitB12	Lost	Prigge et al.2012
74	27/F	Paresthesia,weakness,decreased deep senstaion,ataxia,bowel or bladder dysfunction,pain	VitB12,HCY,MCV:N,Hb ↓ ,MMA ↑	C3/C4-T11/T12	/	VitB12	Lost	Pugliese et al.2015
75	35/M	Paresthesia,weakness,ataxia,impaired cognition,bowel or bladder dysfunction	VitB12,Hb,MCV:N	C2-C7	/	VitB12	Remain	Rheinboldt et al.2014
76	28/M	Paresthesia,decreased deep senstaion	VitB12,Hb,MCV:N,HCY ↑	/	/	VitB12	Remain	Richardson et al.2010
77	25/M	Paresthesia,ataxia	VitB12,Hb:N	Cervical and upper thoracic	/	VitB12, methionine	Improvement	Sadr et al.2010
78	22/M	Paresthesia,weakness,decreased deep senstaion,ataxia	VitB12,Hb,MCV:N, HCY ↑ ,MMA ↑	C2-C5	/	VitB12	Improvement	Seed et al.2020
79	45/M	Paresthesia,weakness,decreased deep senstaion,ataxia	VitB12 ↓ ,HCY ↑ ,Hb,MCV:N,MMA ↑	Cervical and thoracic	/	VitB12	Improvement	Shah et al.2019
80	22/F	Paresthesia,weakness,decreased deep senstaion,impaired cognition,bowel or bladder dysfunction	VitB12,MCV:N,HCY ↑	C1-T11	Abnormal	VitB12	Improvement	Shen et al.2019
81	23/F	Paresthesia,weakness,bowel or bladder dysfunction,thrombosis	Hb ↓ ,MCV:N	C1-T12	A	VitB12	Improvement	Shulman et al.2007
82	28/M	Paresthesia,decreased deep senstaion	VitB12 ↓	Cervical	/	VitB12,IVIG	Improvement	Simpson et al.2019
83	29/F	Paresthesia,weakness,decreased deep senstaion,bowel or bladder dysfunction	VitB12:N	C2-T5	/	VitB12	Improvement	Sleeman et al.2016
84	28/M	Paresthesia,decreased deep senstaion,bowel or bladder dysfunction, lhermitte symptom	VitB12,Hb:N	Caudal medulla to C7	/	VitB12	Improvement	Sotirchos et al.2012
85	25/F	Paresthesia,ataxia	VitB12:N,HCY ↑	N	Abnormal	VitB12, steroid	Improvement	Spickler et al.2019
86	22/M	Paresthesia,weakness,decreased deep senstaion,ataxia	VitB12,MCV:N,HCY ↑ ,Hb ↓ ,MMA ↑	C1-T5	/	VitB12	Improvement	Stockton et al.2017
87	46/F	Paresthesia,weakness,decreased deep senstaion,impaired cognition	VitB12:N,HCY ↑ ,Hb ↓ ,MCV ↑ ,MMA ↑	N	/	VitB12	Improvement	Sutaria et al0.2018
88	25/M	Paresthesia,weakness,decreased deep senstaion	VitB12:N	C2-C6	A & D	VitB12, steroid	Improvement	Tatum et al.2010
89	22/M	Paresthesia,weakness,decreased deep senstaion,ataxia	VitB12,Hb,MCV,MMA ↑	N	D	VitB12, IVIG	Improvement	Thompson et al.2015
90	27/M	Paresthesia,weakness	VitB12,HCY,Hb,MCV,MMA:N	N	A & D	VitB12,IVIG	Worse	Thompson et al.2015
91	23/F	Paresthesia,weakness,decreased deep senstaion,ataxia,bowel or bladder dysfunction, lhermitte symptom,pain	VitB12:N,HCY ↑	N	N	VitB12	Improvement	Thompson et al.2015
92	23/M	Paresthesia,decreased deep senstaion	VitB12 ↓ ,HCY ↑ ,Hb:N,MCV ↑ ,MMA ↑	/	/	VitB12	Improvement	Waclawik et al.2003

No.	Age/ Sex	Clinical manifestation	Laboratory test	Spinal cord imaging	EMG	Treatment	Prognosis	Citation
93	24/M	Paresthesia,decreased deep senstaion，ataxia,impaired cognition	VitB12↓,HCY↑,MCV:N,MMA↑	C2-C7	/	VitB12	Remain	Waters et al.2005
94	25/M	Paresthesia,weakness,bowel or bladder dysfunction	/	C2-T1	Abnormal	VitB12, steroid	Improvement	Weng et al.2017
95	17/M	Paresthesia,weakness,decreased deep senstaion,involuntary movement,bowel or bladder dysfunction	VitB12,Hb,MCV:N,HCY↑,MMA↑	C1-C6/7	/	VitB12, steroid	Improvement	Williamson et al.2019
96	26/F	Paresthesia,weakness,decreased deep senstaion	VitB12↓,Hb:N,MCV↑	C2-C7	D	VitB12, plasma exchange	Improvement	Wu et al.2007
97	20/F	Paresthesia,weakness,decreased deep senstaion,ataxia,impaired cognition	VitB12,HCY,Hb,MCV:N	C1-T2	D	VitB12	Improvement	Yuan et al.2017
98	21/M	Paresthesia,weakness,decreased deep senstaion,ataxia	VitB12,Hb,MCV:N，HCY↑	C2-C6	D	VitB12	Improvement	Zhao et al.2020
99	18/F	Paresthesia,weakness,decreased deep senstaion	VitB12,MCV:N，HCY↑,Hb↓	T3-T6	A&D	VitB12, high pressure oxygen	Improvement	Zhao et al.2020

Age: the unit is years old; Na: age which were not mentioned in literature; M: male; F: female; VitB12: Vitamin B12; HCY: homocysteine; Hb: hemoglobin; MCV: Mean corpuscular volume; MMA: methylmalonic acid; N: normal; ↑:increase; ↓： decrease; /:data which were not mentioned in literature; EMG: Electromyography; A: axonal; D: demyelination; IVIG: intravenous immunoglobulin

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