

What an Internist Shouldn't Miss: Autoimmune Neurology

Recognizing, Diagnosing & Managing Autoimmune Neurological Conditions

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Session Overview

Financial Disclosures

None

What We'll Cover Today

1	Why This Matters to You: The Internist's Role
2	CNS Autoimmune Encephalitis — Cases & Red Flags
3	Demyelinating Diseases: MS, NMOSD, MOGAD
4	Peripheral Nervous System: GBS, CIDP, MG, LEMS
5	Systemic Autoimmune Diseases with Neurologic Involvement
6	Diagnostic Algorithms & When to Call Neurology

Learning Objectives

By the end of this session, participants will be able to:

01

Recognize early clinical red flags of autoimmune neurological diseases in a general internal medicine setting

02

Distinguish key autoimmune syndromes by clinical presentation, antibody profile, and MRI findings

03

Interpret CSF, antibody panels, and neuroimaging to formulate a differential diagnosis

04

Initiate appropriate empiric immunotherapy while awaiting confirmatory testing

05

Identify when and how urgently to involve neurology

06

Understand how systemic autoimmune diseases (lupus, Sjögren, sarcoid) can present neurologically

Why This Matters: The Internist as First Responder

6–12

months

Average delay to autoimmune encephalitis diagnosis

30–40%

of GBS patients initially misdiagnosed at first visit

60%

of MG patients first evaluated by a non-neurologist

The Internist's Critical Role

- First to see the patient with 'psychiatric' symptoms or vague neurologic complaints
- Orders the initial labs, imaging, and lumbar puncture that unlock the diagnosis
- Initiates empiric immunotherapy when neurologic deterioration is rapid
- Identifies the underlying malignancy driving paraneoplastic syndromes
- Manages systemic autoimmune disease with neurologic manifestations

Spectrum of Autoimmune Neurological Disease

Central Nervous System	Peripheral Nervous System	Systemic Overlap
Autoimmune Encephalitis (NMDA-R, LGI1, CASPR2...)	GBS & Variants (AIDP, MFS, AMAN)	Neuropsychiatric Lupus
Paraneoplastic Syndromes (Hu, Yo, Ma2...)	CIDP	Neurosarcoidosis
Demyelinating Disease (MS, NMOSD, MOGAD)	Myasthenia Gravis	Sjögren CNS Disease
CNS Vasculitis (PACNS)	Lambert-Eaton Syndrome	Behçet Disease
Autoimmune Movement Disorders / Epilepsy	Vasculitic Neuropathy Autonomic Ganglionopathy	IgG4-Related Disease

P A R T 1

Autoimmune Encephalitis & Paraneoplastic Syndromes

Cases covered: Anti-NMDA Receptor Encephalitis | Paraneoplastic Limbic Encephalitis

22F • College Senior • No prior psychiatric history • OCP use • Mild asthma

1

Days -14 to -10

Viral Prodrome

Low-grade fever, fatigue, myalgias, headache. Partially improves. Continues classes.

2

Days -9 to -6

Neuropsychiatric Onset

Irritability, insomnia (2-3 hr/night), paranoid texts, auditory hallucinations, labile affect. Urgent care: told it's 'stress.'

3

Days -5 to -3

First Seizure / ED

Confused, pacing, agitated in triage. GTC seizure 90 sec in ED → lorazepam + levetiracetam load.

ED LABS & IMAGING

- Na 131 (hyponatremia)
- CK mildly ↑ (post-seizure)
- Urine tox: negative
- Pregnancy test: negative
- CT head: no mass / no bleed
- Blood cultures: drawn (febrile)

HOSPITAL COURSE



MRI Brain

Nondiagnostic (often normal early)



Empiric Tx

IV methylprednisolone + IVIG initiated



CSF

Lymphocytic pleocytosis; HSV PCR negative



Pelvic Imaging

Right ovarian teratoma → surgical resection



EEG

Diffuse slowing + focal seizures



Confirmed

CSF anti-NMDA receptor antibodies positive

OUTCOME: Tumor resection + immunotherapy → seizure control → gradual improvement → prolonged neurorehabilitation

Anti-NMDA Receptor Encephalitis

Key Points

Young patient + acute psychosis + new seizure + abnormal movement

→ Think autoimmune encephalitis FIRST

Primary psychiatric illness does NOT cause:

Focal seizures • CSF pleocytosis • Autonomic instability • Orofacial dyskinesias

Normal MRI does NOT rule it out

MRI is often normal early in the disease course

Don't wait for antibody confirmation

If clinical suspicion is high → start steroids ± IVIG empirically

Always look for ovarian teratoma

Pelvic ultrasound or MRI in all women with suspected anti-NMDA encephalitis

52F • 35-pack-year smoker • COPD • Unintentional 10 lb weight loss • Chronic cough

PRESENTATION

- Progressive memory loss × 3 weeks
- Personality change & irritability
- Repeatedly asks same questions
- Insomnia & anxiety
- 2 episodes of confusion / disorientation
- Denied fever, headache, or focal weakness

DIAGNOSTIC FINDINGS



MRI

Bilateral MTL T2/FLAIR
hyperintensity



Antibody

Anti-Hu (ANNA-1) positive



CSF

Pleocytosis, protein 68, HSV neg



CT Chest

3.2 cm hilar mass + LAD



EEG

Temporal epileptiform discharges



Biopsy

Small cell lung carcinoma confirmed

⚠ Smoking history + subacute neurologic syndrome = paraneoplastic until proven otherwise. Check CT chest FIRST.

Autoimmune Encephalitis: Quick Reference

Antibody	Key Features	Demographics	Tumor Association
Anti-NMDA-R	Psychiatric → seizures → dyskinesias → autonomic storm	Young women	Ovarian teratoma (50%)
Anti-LGI1	Faciobrachial dystonic seizures, hyponatremia	Older adults	Rare (thymoma)
Anti-CASPR2	Limbic encephalitis + neuromyotonia + insomnia	Middle-aged men	Thymoma
Anti-GABA-B	Severe seizures, limbic features	Adults	Small cell lung cancer
Anti-Hu (ANNA-1)	Sensory neuronopathy + limbic encephalitis	Older smokers	SCLC (>80%)
Anti-Yo	Cerebellar degeneration, rapid progression	Older women	Breast / GYN cancer

Additional Antibody-Mediated Encephalitides

Antibody	Key Features	Demographics	Tumor Association
Anti-AMPA-R	Limbic encephalitis: confusion, memory loss, psychiatric sx	Middle-aged women	Lung / breast cancer (~70%)
Anti-GABAa-R	Rapidly progressive encephalopathy, refractory seizures, status epilepticus	Variable; any age	Rare (thymoma)
Anti-GABAb-R	Prominent early seizures; limbic features: memory loss, hallucinations	Older adults (median age 67)	SCLC / neuroendocrine tumors
Anti-DPPX	Agitation, myoclonus, seizures; prodromal diarrhea + weight loss; exaggerated startle	Middle-aged adults	None (rarely associated)
Anti-GAD65	Stiff-person syndrome, late-onset cerebellar degeneration, limbic encephalitis, refractory epilepsy	Adults; assoc. with type 1 DM, thyroid disease	Rare (thymoma)
Hashimoto Encephalopathy	Delirium, rapid dementia, psychiatric features; elevated antithyroid Ab; steroid-responsive	Adults; women > men	None (autoimmune)

PART 2

Demyelinating Diseases

MS | NMOSD | MOGAD

Cases covered: Multiple Sclerosis | Neuromyelitis Optica Spectrum Disorder

28F • No prior medical history • Blurred vision right eye × 4 days • Pain with eye movement • Colors 'washed out'

⚠ 6 months earlier: numbness & tingling left leg × 2 weeks → resolved spontaneously. Patient did not seek care.

EXAM FINDINGS

- ↓ Visual acuity — right eye
- Afferent pupillary defect (APD) right eye
- ↓ Color perception affected eye
- Pain on extraocular movement
- Strength & reflexes normal

KEY INVESTIGATIONS

MRI Brain + Orbits

Right optic nerve enhancement
Dawson's fingers (periventricular lesions)

MRI Spine

No cord lesion

CSF

↑ IgG index
Oligoclonal bands (CSF only)

Dx Criteria met

Dissemination in space AND time → MS confirmed

Demyelinating Diseases: Critical Distinctions

Multiple Sclerosis	NMO Spectrum Disorder	MOGAD
Relapsing-remitting or progressive	Anti-AQP4 IgG positive	Anti-MOG antibody positive
Periventricular lesions, Dawson's fingers	Severe optic neuritis (often bilateral)	Optic neuritis: often bilateral, disc edema
Oligoclonal bands in CSF	Longitudinally extensive cord lesion (≥ 3 segments)	Relapsing or monophasic
Short cord lesions (< 3 vertebral segments)	Area postrema involvement \rightarrow intractable N/V	ADEM pattern in children
Responds to DMTs	MS treatments can worsen NMOSD!	Steroid-responsive (often well)

⚠ CRITICAL: Standard MS DMTs (natalizumab, fingolimod) can cause severe NMOSD attacks. AQP4 antibody testing is essential before starting therapy.

P A R T 3

Peripheral Nervous System

AIDP | CIDP | Myasthenia Gravis | Lambert-Eaton

Cases covered: AIDP • Miller Fisher • CIDP • MG • LEMS

Guillain-Barré Syndrome (AIDP)

26M • No PMH • Diarrheal illness 1 week ago • Progressive leg weakness × 4 days • Tingling toes and fingertips

CLINICAL PROGRESSION

- Day 0: Tingling toes + fingertips
- Day 1: Legs feel 'heavy'
- Day 2: Difficulty climbing stairs
- Day 4: Unstable gait, needs handrail
- Lower back pain. No bowel/bladder sx

EXAM FINDINGS

- Symmetric ↓ strength LE (4/5)
- Mild hand weakness (4+/5)
- ↓ DTRs knees, absent ankle reflexes
- Distal sensory loss (vibration, PP)
- Wide-based, cautious gait

CSF & NERVE STUDIES

- Protein: 120 mg/dL ↑↑
- WBC: 1 cell/mm³ (NORMAL)
- Albuminocytologic dissociation
- NCS: demyelinating pattern
- Campylobacter in stool culture



ADMIT ALL GBS PATIENTS: 25–30% require ventilatory support. Monitor FVC, NIF, and bulbar function closely.

Treatment: IVIG 2 g/kg over 5 days OR Plasma exchange (5 sessions) — equally effective

GBS Spectrum & Miller Fisher Variant

CASE 5 — Miller Fisher Variant: 28M, post-URI, diplopia + ataxia × 3 days. Bilateral ophthalmoplegia, absent DTRs, gait ataxia. Anti-GQ1b positive.

Variant	Key Features	Antibody	Important Note
AIDP (classic)	Ascending weakness, sensory loss, areflexia	None specific	Most common in Western countries
AMAN	Pure motor axonal, often severe	Anti-GM1, GD1a	Post-Campylobacter, common in Asia
AMSAN	Motor + sensory axonal, severe	Anti-GM1, GD1b	Slower recovery
Miller Fisher	Ophthalmoplegia + Ataxia + Areflexia	Anti-GQ1b (>90%)	Normal strength; still needs monitoring
Pharyngeal-cervical	Dysphagia, facial weakness	Anti-GT1a	Can progress to classic GBS

All GBS variants share: Post-infectious trigger • Monophasic course • Albuminocytologic dissociation • Respond to IVIG or PE

CIDP: Chronic Inflammatory Demyelinating Polyneuropathy

CASE: 54M, progressive leg weakness + sensory loss × 4 months, worsening over time. Areflexia, no recent infection. Prior GBS workup 6 months ago was negative. Nerve conduction: demyelinating pattern in multiple nerves.

Feature	Clinical Detail	Key Testing	Management
Presentation	Proximal + distal weakness, numbness; relapsing-remitting or slowly progressive; no nadir within 4 weeks	NCS: demyelinating in ≥ 2 nerves; CSF: elevated protein, normal cells	IVIG or PLEX (acute); prednisone for long-term; distinguishes from GBS by chronicity
GBS vs CIDP	GBS: acute (≤ 4 weeks), monophasic. CIDP: subacute (> 8 weeks), relapsing or progressive. Plateau < 4 wks \rightarrow GBS	EMG/NCS pattern: demyelinating vs axonal helps distinguish variants	Anti-CNTN1, anti-NF155 in some atypical CIDP with poor response to IVIG
CIDP Variants	DADS (distal acquired demyelinating symmetric), MMN (multifocal motor), focal CIDP, pure sensory CIDP	MMN: anti-GM1 IgM (50%); responds to IVIG, NOT steroids	MMN mimics ALS — critical not to miss. Conduction block on NCS is the key finding
Treatment	IVIG 2 g/kg over 2–5 days OR PLEX (5 sessions) — equally effective for acute treatment	Long-term: prednisone \pm azathioprine, mycophenolate, rituximab (refractory)	50% of CIDP patients require long-term immunosuppression; monitor for steroid complications
Pharyngeal-cervical	Dysphagia, facial weakness	Anti-GT1a	Can progress to classic GBS

⚠ CIDP requires ≥ 8 weeks of progression or 3+ relapses to distinguish from GBS. Refer to neurology for NCS confirmation and long-term immunosuppression planning.

Case 6 — 29F: Seronegative MG

- Ptosis right eye, worse at end of day
- Diplopia on sustained lateral gaze
- Fatigue chewing by end of meals
- Mild speech slurring late evening
- **AChR and MuSK antibodies: NEGATIVE**
- → Seronegative; SFEMG diagnostic

Case 7 — 71M: AChR+ Generalized MG

- Progressive ptosis × 3 months
- Diplopia while reading, worse PM
- Shoulder fatigue with overhead activity
- **AChR antibody: POSITIVE**
- CT chest: thymic enlargement (no thymoma)
- → Late-onset generalized MG

MG Pearls

Hallmark: fatigable weakness — worsens with use, improves with rest • AChR Ab in ~85% generalized MG • 10–15% seronegative (SFEMG most sensitive) • ALL patients need chest CT for thymoma • Avoid: aminoglycosides, fluoroquinolones, Mg, beta-blockers in unstable MG

Myasthenia Gravis vs Lambert-Eaton: Distinguishing Features

CASE 8 — LEMS: 66M, 40-pack-year smoker, proximal leg weakness × 3 months. Improves briefly with activity. Dry mouth, constipation, weight loss. Absent DTRs.

Feature	Myasthenia Gravis	Lambert-Eaton (LEMS)
Weakness pattern	Ocular/bulbar → limbs	Proximal legs → arms (rarely ocular)
Fatigability	Worsens with sustained use	Improves with brief repetitive use
Reflexes	Normal	↓ or absent (may transiently improve post-exercise)
Autonomic symptoms	Absent	Present: dry mouth, constipation, ED
Antibody	AChR (85%), MuSK (10%)	P/Q-type VGCC antibodies
Cancer association	Thymoma (10–15%)	SCLC (60%) — screen aggressively
EMG pattern	Decremental at 3 Hz	Incremental at high-frequency stimulation

Myasthenia Gravis: Antibody Subtypes & Clinical Patterns

Prevalence: 150–200 per million. Bimodal: early-onset (young women, 3rd decade) and late-onset (men >50). Prototype autoimmune NMJ disorder. Heterogeneous antibody profiles drive different phenotypes.

Subtype	Clinical Features	Key Pearls
AChR+ MG (85%)	Ocular (ptosis, diplopia) → generalized. Fatigable. Diurnal variation (worse PM)	AChR IgG activates complement → MAC → post-synaptic membrane destruction. Thymic hyperplasia common in early-onset
MuSK+ MG (7-10%)	Bulbar-predominant: tongue atrophy, neck + respiratory involvement. Limb weakness uncommon. 85% female, often young African-American women	Does NOT fix complement. Less responsive to pyridostigmine. Prefer rituximab for refractory disease. IVIG less effective in MuSK
Seronegative MG (10-15%)	AChR, MuSK, LRP4 all negative; SFEMG (most sensitive) or LRP4/agrin Ab testing	True seronegative: LRP4 or agrin Ab (2-10%). SFEMG sensitivity 95%+ for generalized. Ocular MG SFEMG: 85%
Ocular MG (15-20%)	Ptosis + diplopia only; 80% convert to generalized within 2 years; fewer convert if ocular only for >2 years	SFEMG of orbicularis oculi. Consider 3,4-DAP or pyridostigmine for ocular symptoms refractory to standard therapy
Thymoma MG	10–15% of MG patients; thymectomy indicated for all thymoma. Typically AChR+, more severe disease, titin/RyR Ab positive	CT chest MANDATORY in all MG patients. Late-onset men (50+) have lower rate of thymic pathology but must still screen
Treatment Pyramid	Symptomatic: pyridostigmine 60 mg q6h. Immunosuppression: prednisone ± azathioprine (steroid-sparing). Crisis: PLEX = IVIG	Avoid: aminoglycosides, fluoroquinolones, Mg, beta-blockers, neuromuscular blockers (succinylcholine relative CI; 1.5 mg/kg if needed)
Repetitive Nerve Stim	MG: decremental response at 3 Hz (>10%). LEMS: incremental at 50 Hz. RNS most useful in generalized; SFEMG more sensitive	If RNS normal, proceed to SFEMG. Send both serum and CSF antibody panels when clinical suspicion is high

Myasthenic Crisis: Recognition & Management

MG crisis mortality: 5-12% (was >40% in 1960s). Infection triggers 49% of crises. Mean ventilator time: 12 days. Mean ICU LOS: 16 days. 84.7% with AChR Ab; 19% MuSK Ab. Intubation strategy matters: AVOID routine NMB agents in MG patients.

Crisis Phase	Recognition & Action	Clinical Pearls
Warning Signs	Dysphagia ('bedside swallow' test), dysarthria, neck flexion weakness, dyspnea with exertion, single breath count <15	Rapid deterioration from bulbar to respiratory failure can occur in hours. Low threshold for ICU monitoring in known MG
Respiratory Monitoring	Rule of 20s: FVC <20 mL/kg, MIP <20 cmH ₂ O, MEP <20 cmH ₂ O → intubate. Serial bedside spirometry q4-6h in deteriorating patient	NIV trial acceptable if not contraindicated; shorter ICU LOS if PLEX first-line. NIV failure does not prolong total ventilation time
PLEX vs IVIG	Both equally effective (RCT data). Onset: PLEX 3-5 days; IVIG 5-7 days. PLEX preferred in MuSK-MG (IVIG less effective). Duration: 4-6 weeks	PLEX: 5 sessions over 10-14d; requires central access. IVIG: 2 g/kg over 2-5d; check IgA first. Both can be bridge to long-term IS
Intubation Strategy	Avoid NMB if possible. If succinylcholine needed: use 1.5 mg/kg (resistance due to reduced AChRs). Sensitive to non-depolarizing agents (rocuronium: use 1/5 normal dose)	PLEX removes pseudocholinesterase → prolongs succinylcholine effect. Prefer RSI with propofol/ketamine without NMB when feasible
Cholinergic Crisis	Distinguish from myasthenic crisis! Both cause weakness + respiratory failure. Cholinergic: SLUDGE (secretions, lacrimation, urination, defecation, GI, emesis) + miosis	Caused by excess pyridostigmine. Hold pyridostigmine in crisis. Atropine for secretions. Edrophonium test rarely used (risky in crisis)
Steroid Caution	Starting prednisone in MG can cause transient worsening (myasthenic exacerbation) in 1st 2-3 weeks. Always use PLEX or IVIG as bridge when starting steroids in generalized MG	Start prednisone LOW (0.5 mg/kg/day) and titrate up slowly. Never abruptly start 1 mg/kg in unstable patient. Involve neurology before initiating
Crisis Triggers	Infection (49%) — most common trigger. Undertreatment. Medications: aminoglycosides, fluoroquinolones, Mg, beta-blockers, checkpoint inhibitors. Surgery. Emotional stress	Unknown trigger in 21.5%. Annual respiratory review for all MG patients. Teach patient/family when to call and when to go directly to ED

P A R T 4

Systemic Autoimmune Disease

with Neurologic Manifestations

Lupus • Sarcoidosis • Sjögren • Behçet • IgG4-RD

Systemic Autoimmune Diseases: Neurologic Involvement

Neuropsychiatric Lupus

Manifestations: Seizures • Psychosis • Cognitive dysfunction • Stroke / TIA • Transverse myelitis • Peripheral neuropathy

Clues: *Anti-dsDNA, anti-Sm, antiphospholipid Ab; MRI: FLAIR hyperintensities, watershed infarcts*

⚠ **Trap: Psychosis in SLE → rule out CNS lupus before blaming psychiatric disease**

Neurosarcoidosis

Manifestations: Cranial neuropathies (VII most common) • Aseptic meningitis • Hypothalamic involvement • Myelopathy • Seizures

Clues: *↑ ACE (insensitive), chest CT (hilar LAD), elevated CSF protein/cells, meningeal enhancement on MRI*

⚠ **Trap: Bilateral VII palsy in young adult = neurosarcoidosis until proven otherwise**

Sjögren CNS Disease

Manifestations: MS-like lesions • Myelopathy (can mimic NMOSD) • Peripheral sensory neuropathy • Small fiber neuropathy

Clues: *Anti-Ro/SSA, anti-La/SSB; lip biopsy; AQP4 Ab overlap possible*

⚠ **Trap: AQP4+ NMOSD can co-occur with Sjögren's — check both antibodies**

Behçet Disease

Manifestations: Brainstem encephalitis • Dural sinus thrombosis • Meningitis • Intraparenchymal lesions

Clues: *Oral + genital ulcers + uveitis + neuro = classic tetrad; HLA-B51; cerebral venography for CVT*

⚠ **Trap: Young man with recurrent aphthous ulcers + headache/focal deficits**

P A R T 5

Diagnostic Algorithms

& When to Call Neurology

Putting it all together for the busy internist

Approach to Suspected Autoimmune Encephalitis

STEP 1: RECOGNIZE

Subacute (<3 months) psychiatric sx + seizure + movement disorder + confusion
In young patient or smoker/known cancer

STEP 2: STABILIZE & INITIATE WORKUP

CBC, CMP, TFTs, tox screen, ANA panel, blood cultures
CT Head (rule out mass/bleed) → LP when safe
CSF: cell count, protein, glucose, cultures, HSV PCR, cytology

STEP 3: MRI BRAIN (with/without contrast)

Temporal lobe FLAIR (limbic encephalitis)
Flair normal early in NMDA-R → don't stop workup!
Send antibody panel: serum AND CSF

STEP 4: EEG (if available)

Rule out non-convulsive status epilepticus
Extreme delta brush = NMDA-R specific pattern

STEP 5: EMPIRIC IMMUNOTHERAPY

If high suspicion: Don't wait for antibody results
IV methylprednisolone 1 g/day × 3–5 days ± IVIG 2 g/kg
Search for tumor (CT chest/abdomen/pelvis ± PET)

When to Call Neurology — Urgency Tiers

EMERGENCY

Call neurology immediately

- Rapid neurologic deterioration (GCS drop, respiratory compromise)
- Status epilepticus or suspected non-convulsive SE
- GBS with ascending weakness (FVC monitoring mandatory)
- Autonomic crisis in anti-NMDA encephalitis
- Acute cord compression or LETM in suspected NMOSD

URGENT

Same-day or next-morning neurology call

- New encephalopathy with CSF pleocytosis (after HSV covered)
- Subacute progressive weakness with areflexia
- Suspected MG with bulbar symptoms or respiratory concerns
- First episode suspected optic neuritis
- Multifocal strokes in young patient without clear vascular risk

SEMI-URGENT

Outpatient referral within 1–2 weeks

- Stable subacute memory decline with known autoimmune disease
- Worsening neuropathy in known CIDP without respiratory compromise
- Fatigable ocular symptoms consistent with mild MG
- CNS manifestations of known systemic autoimmune disease
- Abnormal MRI incidentally noted with clinical correlation needed

Red Flags That Should Never Be Missed

When you see these, think autoimmune neurology first

Acute psychosis in a young person with NO prior psychiatric history

→ **Anti-NMDA-R encephalitis**

Ptosis/diplopia that fluctuates, worsens at end of day

→ **Myasthenia gravis**

Subacute memory loss + personality change over weeks in a smoker

→ **Paraneoplastic limbic encephalitis (SCLC)**

Proximal weakness + absent reflexes + dry mouth in older smoker

→ **Lambert-Eaton (SCLC)**

Optic neuritis + prior unexplained sensory episode

→ **Multiple sclerosis**

Bilateral facial palsy in young adult

→ **Neurosarcoidosis until proven otherwise**

Bilateral optic neuritis OR severe optic neuritis + myelitis

→ **NMOSD (AQP4 antibody)**

Stiffness + painful spasms triggered by startle in autoimmune patient

→ **Stiff-Person Syndrome (anti-GAD65)**

Progressive ascending weakness + areflexia after GI/URI illness

→ **Guillain-Barré syndrome (admit immediately)**

Multifocal strokes in young patient without vascular risk factors

→ **CNS vasculitis or antiphospholipid syndrome**

Essential Workup

Serum Labs

- CBC, CMP, LFTs, ESR, CRP
- ANA, anti-dsDNA, ANCA, RF, SSA/SSB
- TSH, B12, Vitamin D
- Serum protein electrophoresis
- Anti-AQP4, anti-MOG (if demyelinating)
- Autoimmune encephalitis panel (serum + CSF)

CSF Analysis

- Cell count + differential
- Protein, glucose
- Bacterial/fungal cultures
- HSV/VZV/enterovirus PCR
- Cytology
- Oligoclonal bands + IgG index

Imaging

- CT Head (first: rule out mass/bleed)
- MRI Brain with/without contrast + FLAIR
- MRI Spine (if myelopathy suspected)
- CT Chest/Abdomen/Pelvis (tumor)
- PET scan (if initial CT negative, paraneoplastic)

Neurophysiology

- EEG (encephalopathy, seizure)
- Nerve conduction studies (neuropathy)
- EMG (myopathy vs neuropathy)
- Repetitive nerve stimulation (MG vs LEMS)
- Single-fiber EMG (seroneg MG)

Empiric Immunotherapy

Principle: In suspected autoimmune encephalitis with rapid deterioration, start empiric immunotherapy AFTER LP and cultures — don't wait for antibody confirmation.

IV Methylprednisolone

1,000 mg/day × 3–5 days

Used for:

Autoimmune encephalitis, MS relapse, NMOSD attack, neurosarcoidosis

Cover HSV with acyclovir until PCR negative

IVIg

2 g/kg over 2–5 days

Used for:

GBS (equally effective as PE), autoimmune encephalitis (add-on), MG crisis

Check IgA level before giving (anaphylaxis risk if IgA-deficient)

Plasma Exchange (PE)

5 sessions over 10–14 days

Used for:

GBS, MG crisis, NMOSD attack, CIDP

Requires vascular access; typically done in ICU or inpatient setting

Steroids for MG Caution

Prednisone: start LOW

Used for:

Generalized MG — initiated by neurologist

⚠ Starting steroids in MG can cause transient worsening (myasthenic crisis) — involve neurology first

Stiff-Person Syndrome & Autoimmune Movement Disorders

34M • Autoimmune thyroiditis • Progressive lower back & leg stiffness × 8 months • 'Robotic' gait • Spasms triggered by loud noise or startle

EXAM & WORKUP

- Lumbar paraspinal rigidity + hyperlordosis
- ↑ tone proximal lower extremities
- Normal strength, sensation, reflexes
- MRI brain + spine: **NORMAL**
- EMG: **continuous motor unit activity at rest**
- Anti-GAD65 antibodies: **POSITIVE** (serum)

SPS Treatment: Diazepam or clonazepam (first-line) • Baclofen • IVIG (moderate-severe) • Rituximab (refractory)

AUTOIMMUNE MOVEMENT DISORDERS

Stiff-Person Syndrome

Ab: Anti-GAD65

Axial rigidity, startle-triggered spasms, autoimmune comorbidities

Opsoclonus-Myoclonus

Ab: Anti-Ri (paraneoplastic) or post-viral

Chaotic eye movements + myoclonus; children → neuroblastoma

Autoimmune Epilepsy

Ab: LGI1, GAD65, GABA-B

Refractory seizures, faciobrachial dystonic seizures = LGI1

Drugs That Can Trigger or Mimic Autoimmune Neurology

Immune Checkpoint Inhibitors (ICIs)

- PD-1 / PD-L1 / CTLA-4 inhibitors (nivolumab, pembrolizumab, ipilimumab)
- Can cause: Myasthenia gravis, encephalitis, CIDP-like, myositis, uveitis
- Onset: weeks to months after starting
- Action: HOLD ICI, give high-dose steroids, involve neurology

Drugs Worsening Myasthenia Gravis

- Aminoglycosides, fluoroquinolones, azithromycin
- Neuromuscular blocking agents (prolonged effect)
- Magnesium (blocks NMJ), beta-blockers
- Checkpoint inhibitors (can worsen OR cause de novo MG)

MS Treatment Cautions

- Standard DMTs can WORSEN NMO/D (verify AQP4 before starting)
- Natalizumab/alemtuzumab: risk of PML/infection mimicking relapse
- TNF inhibitors (for RA/IBD) can unmask MS-like demyelination

Drug-Induced Lupus (CNS)

- Hydralazine, procainamide, isoniazid, minocycline, TNF inhibitors
- Anti-histone antibodies (often positive)
- Usually resolves after drug discontinuation

Take-Home Messages

What to remember about autoimmune neurology

1 Autoimmune encephalitis can mimic psychiatric illness — psychosis + seizure in young patients requires autoimmune workup.

2 A normal MRI does NOT exclude autoimmune encephalitis. Send antibody panels from both serum AND CSF.

3 Don't wait for antibody results to start empiric immunotherapy when clinical suspicion is high and the patient is deteriorating.

4 GBS requires hospital admission — 25–30% need mechanical ventilation. Monitor FVC and NIF closely.

5 MS DMTs can worsen NMOSD. Always check AQP4 antibody before initiating disease-modifying therapy.

6 Lambert-Eaton in an older smoker = lung cancer until proven otherwise. CT chest immediately.

7 Immune checkpoint inhibitors can cause any autoimmune neurological syndrome — always take an immunotherapy history.

8 Know your urgency tiers: rapid deterioration = emergency neurology; new stable findings = urgent or semi-urgent referral.

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Questions & Discussion

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THANK YOU!