

Acute Evaluation and Management Strategies in Suspected Transverse Myelitis (TM)

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Interrelated Issues

- **Presenting signs and symptoms**
- **Early diagnostic efforts**
- **Acute management strategies**
 - **therapy directed at the disease process**
 - **symptom management**
 - **prevention/treatment of complications**
- **Prognostic features**
- **Transition from acute to ongoing care**

Acute Myelopathies: Common Clinical Features

- **Absence of any preexisting neurologic disease**
- **Often heralded by some antecedent event (trauma, infection, immunization, etc.)**
- **Deficits that can progress rapidly over hours to a few days**
- **Bilateral involvement of motor, sensory, and autonomic pathways**
- **“Transverse”**: an upper anatomical limit above which spinal cord function is preserved

Acute Myelopathy: The Patient's History

- **Antecedent events**
- **Pre-existing medical conditions**
- **Interval from first symptom onset to nadir**
- **Type(s) of early symptoms**
 - **pain**
 - **bowel/bladder dysfunction**
 - **motor vs. sensory involvement**
- **Additional symptoms not referable to the cord**

Acute Myelopathy: The Patient's Examination

- Upper level of spinal cord involvement
(is there a risk of respiratory compromise?)
- Symmetry of motor and sensory deficits
- Partial vs. complete syndromes
(“spinal shock”)
- Sphincter disturbances
- Simultaneous brainstem, cerebellar, and/or cortical involvement?

Initial Diagnostic Efforts (Within 24-48 Hours)

Spinal imaging (MRI)

- rule out compressive (surgical) lesion
- assess upper level of involvement
- help in prognostication?

Cerebrospinal fluid (CSF) analysis

- confirm inflammatory changes
- (determine causation)
- help in prognostication

Acute Management (Within 24-48 Hours)

- **Surgical consultation for compressive lesions**
- **Corticosteroids**
 - IV methylprednisolone (1 gm/day x 5-7 days)
 - oral prednisone taper
- **Prophylaxis against potential complications**
(bowel/bladder, pulmonary, skin, venous thrombosis, musculoskeletal)
- **Treatment of acute symptoms (pain, bowel/bladder, spasticity)**

Subsequent Diagnostic Evaluation (>48 Hours)

- Brain MRI
- Serologic testing (connective tissue disorders, vitamin B12 deficiency, HIV/HTLV-1/Syphilis/Lyme infections, sarcoidosis)
- CSF analysis (Lyme/Syphilis/HTLV-1 serology, viral PCRs, IgG index and oligoclonal bands, angiotensin converting enzyme)

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- Other (spinal angiography, ophthalmological exam, evoked potentials, etc.)

Subsequent Management (>48 Hours)

- **Continue corticosteroids and assess response to therapy**
- **Early involvement of rehabilitation specialists**
- **Begin planning for bowel/bladder management needs**
- **Assess the potential role for more aggressive immunomodulatory therapy**
- **Optimize strategies for symptom management and prevention of complications**

Early Prognostic Features in TM

- Antecedent illnesses/events (etiology)
- Demographics (age, gender, etc.)
- Symptoms present at onset
- Type/rate of onset
- Level of spinal cord deficit
- MRI findings
- CSF data
- Acute treatments

Clinical and Outcome Data in 178 Patients from Four Series of Acute Transverse Myelopathy

Data and Outcome	Paine and Byers [15]	Altrocchi [2]	Lipton and Teasdall [11]	Ropper and Poskanzer [this series]	Total
Total patients	25	67	34	52	178
Preceding febrile illness	15	20	12	18	65
Initial symptoms					
Paresthesias	1	17	9	24	51
Back pain	6	17	12	18	53
Leg weakness	9	17	11	7	44
Sphincter disturbance	3	2	4	3	12
Time to maximal deficit					
<1 day	...	30	15	13	58
1 to 10 days	...	23	17	30	70
>10 days	...	16	2	9	27
Multiple sclerosis	...	4	1	7	12
Outcome					
Good	15	22	9	16	62
Fair	6	22	9	20	57
Poor	...	16	2	12	30

Clinical Characteristics of Patients With Acute TM Related to Eventual Outcome

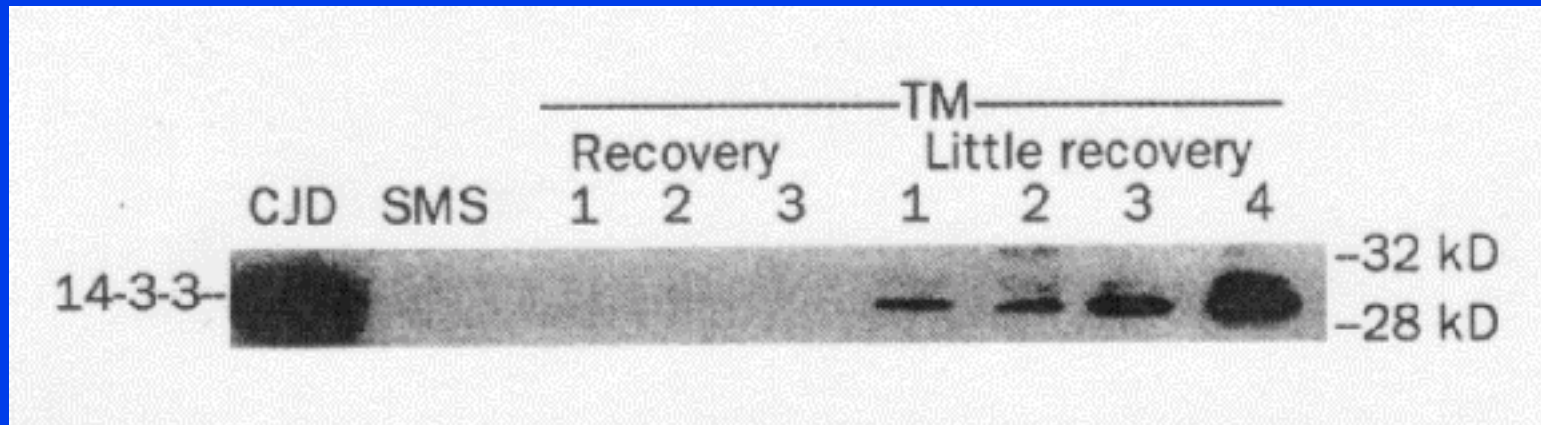
	Poor (n = 9)	Fair (n = 9)	Good (n = 9)
Age at onset (years)	median: 37 (range 15–74) mean: 40	35 (range 14–54) 33	22 (range 16–46) 30
Time from onset to maximum (days)	mean: 4.6 (range 0.3–17)	7.3 (range 0.8–19)	7.7 (range 1–7)
Duration of maximum phase (days)	mean: 10.1 (range 3.5–29) *	3.9 (range 2–9)	7.7 (range 1–7)
<i>No. of patients with:</i>			
Preceding viral-like infection	4	3	2
Back-pain	8 **	4	3
Paraesthesiae	3	5	6
Spinal shock	6 ***	1	1

Acute Features That May Herald a Poor Long-Term Prognosis in TM

- Catastrophic course (“spinal shock”)
 - Back pain at onset
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- Irreversible injury to axons in the spinal cord
 - hypointense lesions on T1-weighted MRI
 - neuronal injury via MRI spectroscopy
 - leakage of neuronal proteins into the CSF?*

14-3-3: A Neuronal Protein That When Detected in the CSF of Patients With Acute TM (<2 weeks of onset) Predicts a Poor Long-term Outcome



Conclusions

- **An accurate diagnosis of TM requires a careful history, examination, and the use of ancillary studies**
- **High-dose IV steroids can sometimes hasten a clinical recovery**
- **Aggressive management of acute symptoms and efforts to avoid complications should be pursued**
- **Clinical, radiographic, and CSF-based criteria can help clarify the long-term prognosis**