Longitudinally Extensive Transverse Myelitis in Seronegative Adults: Insights from a Case Report and a Systematic Review

Francesco Garramone[1]; R. Ricciardi[1]; L. Fulignati[2]; L. Fionda[1]; L. Leonardi[1]; M. Salvetti[1]

[1] Department of Neuroscience, Mental Health and Sensory Organs (NESMOS), Sapienza University of Rome, Rome, Italy.
[2] Department of Neurology, Policlinico Umberto I , Sapienza University of Rome – Rome, Italy.

Objectives

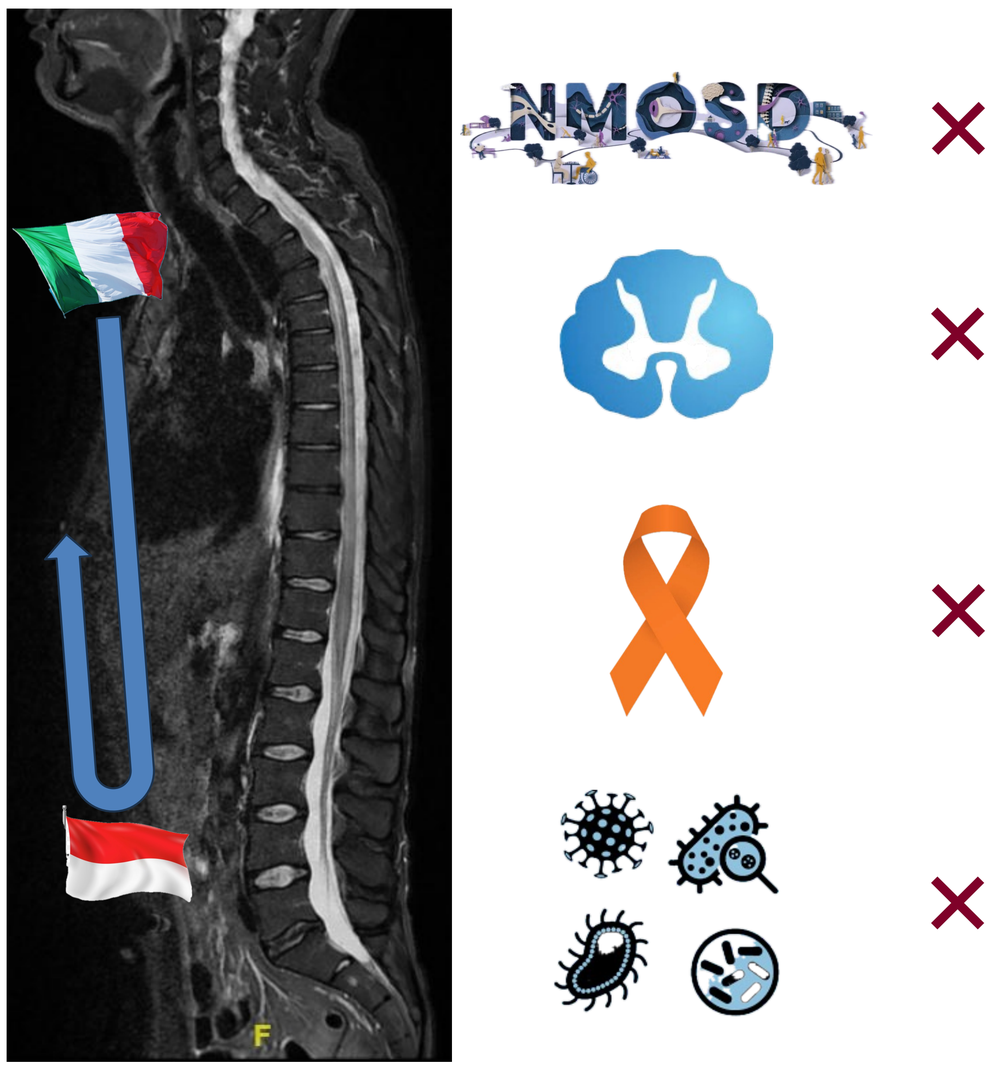
Longitudinally extensive transverse myelitis (LETM) is a distinct radiological pattern of spinal cord inflammation, commonly linked to neuromyelitis optica spectrum disorder (NMOSD), myelin oligodendrocyte glycoprotein antibody-associated disease (MOGAD), or rarely multiple sclerosis (MS) [1]. However, a substantial number of adult cases remain seronegative. We present a representative case of acute flaccid myelitis (AFM) with LETM and contextualize it within a systematic review focusing on rare, non-NMOSD, non-AQP4, and non-MOG etiologies in seronegative adults [2];[3].

Methods

We conducted a systematic PubMed review using the terms “LETM,” “myelitis,” and “MRI.” Of 99 articles retrieved, 49 met inclusion criteria: age ≥18 years, exclusion of MS, AQP4+, and MOG+ cases, and full-text availability in English. After further assessment, 41 studies were included, totaling 256 patients. Extracted variables included etiology, MRI patterns, treatments, and clinical outcomes.

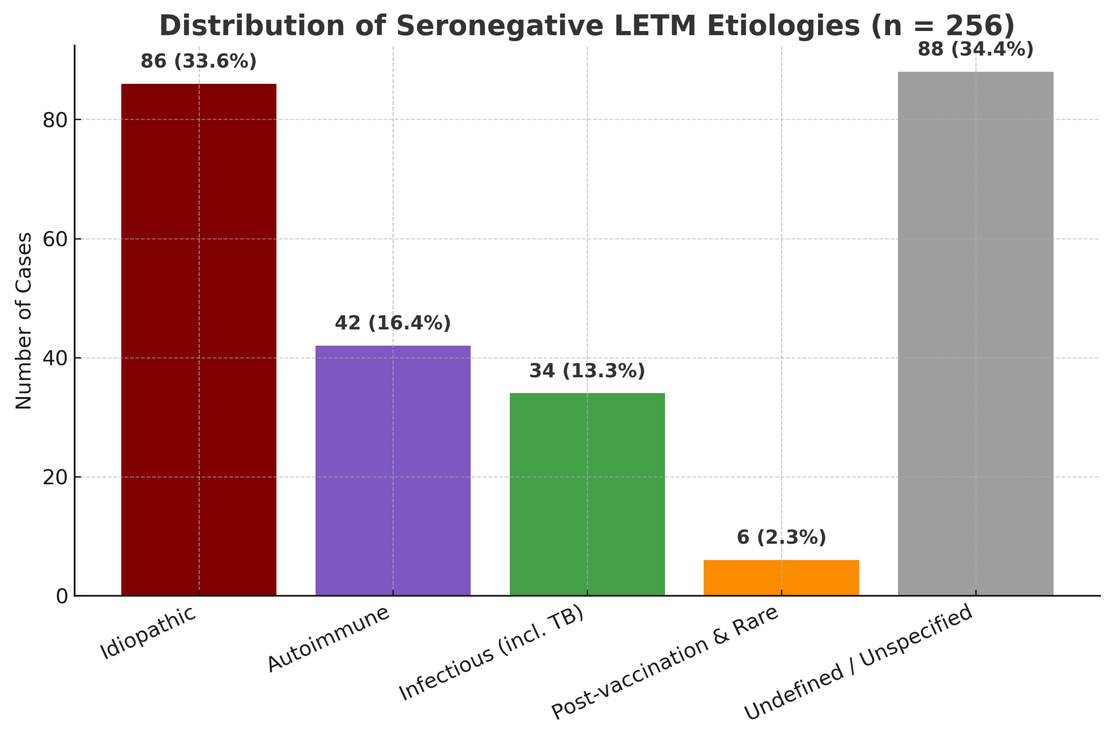
Materials

A 35-year-old man developed urinary retention, asymmetric tetraparesis, and bulbar symptoms following a gastrointestinal illness after traveling to Indonesia. Brain MRI was unremarkable. Spine MRI showed longitudinally extensive T2-hyperintense lesions from the cervical to upper thoracic cord, with mild pial enhancement and cord swelling. Cerebrospinal fluid (CSF) analysis revealed lymphocytic pleocytosis (49/mm³), elevated protein (123 mg/dL), and normal glucose. Infectious workup, including PCR for viral and bacterial agents, was negative. Somatosensory evoked potentials demonstrated prolonged latencies and low amplitudes. Treatment with intravenous acyclovir, high-dose corticosteroids, and broad-spectrum antibiotics led to gradual clinical improvement.



Results

Idiopathic LETM was most frequent (n=86), followed by cases linked to systemic autoimmune diseases (n=42), and infections (n=34), with tuberculosis being the most represented (n=24). Other rare causes included Chikungunya, West Nile virus, HTLV-1/2, VZV, and post-vaccination events (n=6). MRI commonly showed central cord involvement, and contrast enhancement was present in about one-third of cases. Corticosteroids were the cornerstone of therapy, often combined with immunomodulatory agents. The presented case fits the postinfectious-inflammatory category and underscores MRI’s diagnostic role.



Conclusion

Seronegative LETM in adults includes a broad spectrum of rare conditions beyond NMOSD, MOGAD, and MS. High-resolution spinal MRI is critical for early identification and differential diagnosis. Integration of clinical features, CSF analysis, and imaging findings is essential for effective, timely treatment.

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2. Murphy OC et al. Acute flaccid myelitis: cause, diagnosis, and management. Lancet. 2021;397(10271):334-346.
3. Kitley JL, Leite MI, George JS, Palace JA. The differential diagnosis of longitudinally extensive transverse myelitis. Mult Scler. 2012;18(3):271-285. doi:10.1177/1352458511406165