Movement Disorders in Systemic Diseases

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KEYWORDS

• Movement disorders • Systemic disease • Basal ganglia • Autoimmune disorders
• Metabolic disorders • Endocrine disorders • Paraneoplastic disorders
• Intoxications

KEY POINTS

- Movement disorders may be the harbinger of an underlying systemic disease.
- Careful neurologic examination, considering associated systemic features in combination with neuroimaging and laboratory tests, will help narrow down the differential diagnosis and may lead to the final diagnosis.
- Management will often involve a multidisciplinary team including neurologists and the primary care physician, but also allied health professionals, such as physical, occupational, and speech and language therapists.
- Unlike neurodegenerative movement disorders, those occurring in the setting of systemic diseases are frequently amenable to causal treatment of the underlying condition, thus making early correct diagnostic classification a key priority.

Videos of Parkinsonism in cerebral toxoplasmosis and typical orofacial dyskinesias accompany this article http://www.neurologic.theclinics.com/

INTRODUCTION

The term *movement disorders* includes a variety of different neurologic diseases that classically involve dysfunction of the basal ganglia. Prototypic movement disorders, such as parkinsonism, chorea, or dystonia, commonly result from a variety of neurodegenerative or structural brain diseases, but movement disorders also can be presenting signs of cerebral involvement in a broad spectrum of systemic diseases, such as infectious, metabolic, endocrine, paraneoplastic, and autoimmune disorders (**Table 1**). A comprehensive review of all systemic conditions that may cause symptomatic movement disorders is beyond the scope of this article, and we refer the

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Table 1
Overview of common causes of movement disorders in systemic diseases

Etiology	Movement Disorders
Infectious diseases	
Whipple disease	Oculo-masticatory myorhythmia
Neurosyphilis	Parkinsonism, chorea
CNS-tuberculosis	Tremor, chorea, myoclonus, dystonia, and parkinsonism
HIV	Hemichorea, tremor, parkinsonism, dystonia
Toxoplasmosis	Hemichorea-hemiballism
Neurocysticercosis	Generally rare: parkinsonism, hemichorea
Lyme disease	Parkinsonism
Streptococcus infection	Parkinsonism, Sydenham -chorea (children)
Autoimmune disorders	
Systemic lupus erythematosus	Chorea. Parkinsonism rare
Sjögren syndrome	Parkinsonism
Antiphospholipid antibody syndrome	Rare: Parkinsonism, chorea
Stiff person syndrome	Hyperlordosis, ataxia
Neuro- Behçet	Chorea, ataxia
Celiac disease	Ataxia, parkinsonism, chorea
Paraneoplastic disorders	
Anti-Yo/APCA	Ataxia, tremor
Anti-NMDAR encephalitis	Dystonia, orofacial dyskinesias, ballism, myorhythmia
Amphiphysin	Stiff person syndrome (hyperlordosis, rigidity, ataxia)
Anti-Hu/ANNA-1	Dystonia, chorea, tremor, parkinsonism
CV2/CRMP5	Chorea, dystonia, ataxia
Ma1/Ma2	Parkinsonism
Hu/ANNA-2/VGKC	Myoclonus
Tr	Ataxia
Ri/ANNA-2	Dystonia, parkinsonism (PSP-like), opsoclonus-myoclonus
VGCC	Ataxia
Metabolic	
Wilson disease	Dystonia, parkinsonism, "wing-beating" tremor
Acquired hepatocerebral degeneration	Orobuccolingual dyskinesias, parkinsonism
Hemochromatosis	Ataxia, tremor, parkinsonism
Renal failure	Asterixis, restless legs syndrome. Parkinsonism rare
Endocrine	
Nonketotic hyperglycemia	Hemichorea- hemiballism, asterixis
Hypoglycemia	Paroxysmal chorea
Hyperthyroidism	Tremor, chorea
Hypothyroidism	Parkinsonism
Hypoparathyroidism	Parkinsonism, ataxia, tremor
Hematological	
Polycythemia rubra vera	Chorea