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Neurological Involvement As The First Manifestation Of Systemic Diseases: A Descriptive Study Of 53 Patients

F. Akkaoui, Z. Ferjouchia, M. Jilla, R. Belfkih
Department Of Neurology, CHU Mohamed VI, Tanger, Morocco

Abstract:
Background: *Neurological manifestations may be the initial presentation of various systemic diseases, posing significant diagnostic challenges due to their heterogeneity and non-specific nature.*
Materials and Methods: *We conducted a retrospective descriptive study including 53 patients collected over a two-year period in the Neurology Department of the University Hospital of Tangier. We included patients presenting with inaugural neurological involvement that led to the diagnosis of a systemic disease. Data were collected from medical records and included demographic characteristics, clinical features, neuroimaging and electrophysiological findings, and final etiological diagnosis. The analysis was descriptive.*
Results: *The population was predominantly female (67.9%), with a mean age of 46 years. Neurological manifestations were heterogeneous, mainly dominated by motor deficits (45.3%), followed by headaches (18.9%) and sensory disturbances (11.3%). Central nervous system involvement was predominant (75.5%). Brain MRI showed abnormalities in 30.2% of patients, mainly T2/FLAIR white matter hyperintensities. Cerebral venous thrombosis (22.6%) and ischemic stroke (15.1%) were frequently observed. Electroneuromyography (ENMG) revealed various types of neuropathies. Behçet's disease was the most frequent etiology (37.7%), followed by systemic lupus erythematosus and Sjögren's syndrome (15.1% each).*
Conclusion: *This study highlights the heterogeneity of neurological presentations in systemic diseases and emphasizes the importance of a thorough etiological workup.*
Keyword: *Neurological manifestations; systemic diseases; Behçet disease; lupus; Sjögren syndrome; neuroimaging.*

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I. Introduction

Systemic diseases encompass a wide range of inflammatory, autoimmune, or vascular disorders that may affect multiple organs, including both the central and peripheral nervous systems. Neurological manifestations are common in these conditions and may, in some cases, represent the initial mode of presentation.

These clinical presentations are often polymorphic and non-specific, making diagnosis challenging and sometimes delayed. The neurologist therefore plays a crucial role in identifying these underlying etiologies when faced with atypical neurological syndromes.

The aim of this study is to describe the clinical, paraclinical, and etiological characteristics of inaugural neurological involvement in systemic diseases.

II. Material And Methods

This was a retrospective descriptive study conducted over a two-year period, from February 2024 to February 2026, in the Neurology Department of the University Hospital of Tangier.

We included 53 patients presenting with an inaugural neurological manifestation that led to the diagnosis of a systemic disease. Patients with previously known systemic diseases were excluded from the study.

Data were collected from medical records. The analyzed variables included demographic characteristics, clinical presentations, type of neurological involvement, radiological and electrophysiological findings, and etiological diagnosis.

Statistical analysis was purely descriptive.

III. Result

General characteristics :

Fifty-three patients were included, with a female predominance (67.9%). The mean age was 46 years (range: 20–60 years).

Clinical presentation :

Clinical manifestations were mainly dominated by motor deficits, observed in 45.3% of patients, including paraplegia in 15.1% (Table 1).

Headaches were reported in 18.9% of cases, including febrile headaches in 7.5%.

Seizures were noted in 9.4% of patients, while cranial nerve involvement was observed in 7.5% of cases.

Balance disorders and sensory disturbances were found in 7.5% and 11.3% of cases, respectively (Table 1, Figure 1).

Table 1. Clinical Manifestations :

Manifestation	N	%
Motor deficits	24	45.3
Headache	10	18.9
Seizures	5	9.4
Cranial nerve involvement	4	7.5
Balance disorders	4	7.5
Sensory disturbances	6	11.3

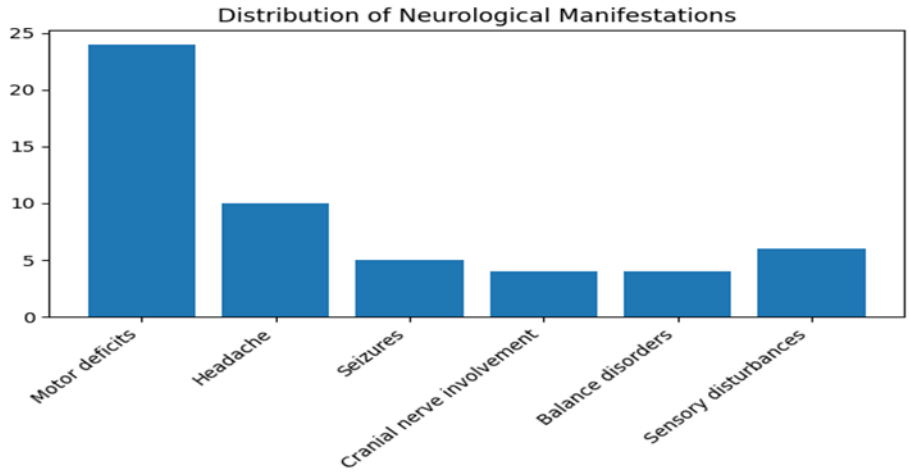

Figure 1. Distribution of neurological manifestations.

Type of neurological involvement

Central nervous system involvement was predominant, accounting for 75.5% of cases, compared with 24.5% for peripheral nervous system involvement (Table 2).

Table 2. Type of Neurological Involvement

Type	N	%
Central	40	75.5
Peripheral	13	24.5

Imaging findings

Brain MRI revealed abnormalities in several patients. T2/FLAIR white matter hyperintensities were observed in 16 patients (30.2%), with different patterns: pseudo-nodular lesions in 2 patients, diencephalo-mesencephalic involvement in 8 patients, and contrast enhancement in 4 patients.

Vascular lesions were also identified, including 8 cases of ischemic stroke (15.1%) and 12 cases of cerebral venous thrombosis (22.6%).

Electrophysiological findings

Electroneuromyography (ENMG) was performed in patients with peripheral nervous system involvement. It revealed length-dependent sensorimotor neuropathy in 6 patients, multiple mononeuropathy in 5 patients, and sensory neuronopathy in 3 patients.

Neurological diagnoses

Peripheral neuropathies were the most frequent diagnosis (24.5%), followed by cerebral venous thrombosis (22.6%). Ischemic strokes and myelitis each accounted for 15.1%, while meningitis represented 13.2% and epileptic seizures 9.4%.

Table.3 Neurological diagnosis :

Neurological diagnosis	n	%
Peripheral neuropathy	13	24.5
Cerebral venous thrombosis	12	22.6
Ischemic stroke	8	15.1
Myelitis	8	15.1
Meningitis	7	13.2
Epileptic seizures	5	9.4

Systemic etiologies

Behçet's disease was the most frequent etiology (37.7%). Systemic lupus erythematosus and Sjögren's syndrome each accounted for 15.1% of cases. Vasculitides, including eosinophilic granulomatosis with polyangiitis (Churg–Strauss syndrome), were observed in 9.4% of patients. Other etiologies included sarcoidosis (7.5%), Sneddon syndrome (5.7%), and antiphospholipid syndrome (3.8%), as well as isolated cases of giant cell arteritis, Takayasu arteritis, and granulomatosis with polyangiitis (Table 4, Figure 2).

Table 4. Systemic Etiologies :

Disease	N	%
Behçet	20	37.7
SLE	8	15.1
Sjögren	8	15.1
Churg-Strauss	5	9.4
Sarcoidosis	4	7.5
Sneddon	3	5.7
APS	2	3.8
GPA	1	1.9
Horton	1	1.9
Takayasu	1	1.9

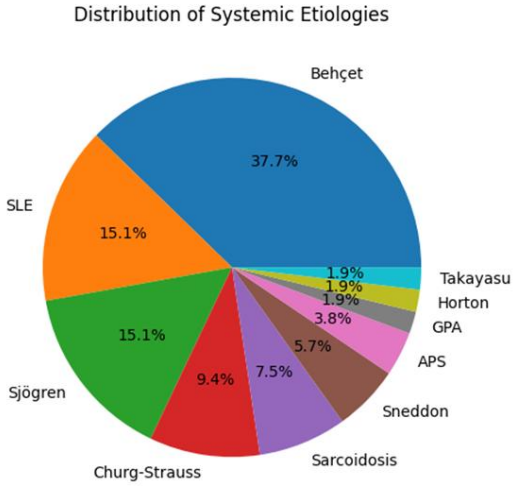

Figure 2. Distribution of systemic etiologies.

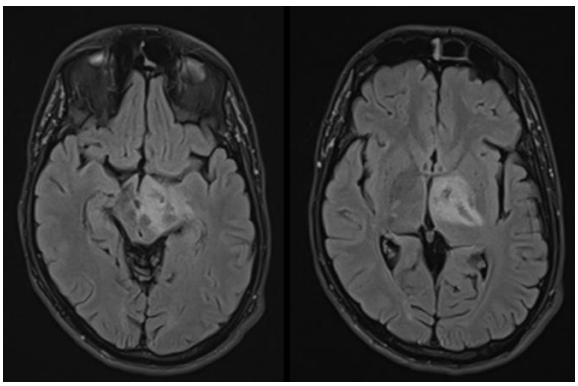

Figure 3. Axial brain MRI FLAIR sequence showing a hyperintense lesion involving the mesencephalic and diencephalic regions in a 34-year-old male patient diagnosed with Behçet's disease.

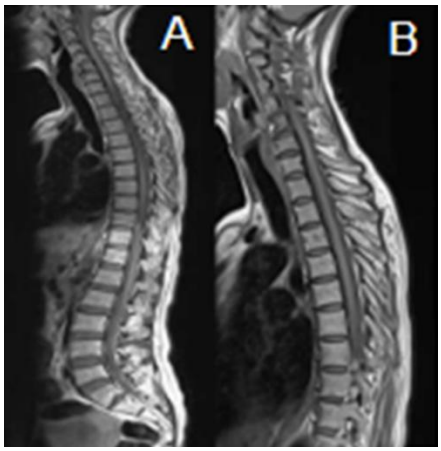

Figure 4. Sagittal T2-weighted spinal MRI demonstrating an extensive intramedullary hyperintense lesion extending from C3 to D10 in a 23-year-old female patient diagnosed with systemic lupus erythematosus.

IV. Discussion

The results of our study confirm that neurological manifestations can represent a major entry point for the diagnosis of systemic diseases, while also highlighting their wide clinical variability. This heterogeneity reflects the complexity of the underlying pathophysiological mechanisms, which involve inflammation, immune dysregulation, and vascular injury [1,2].

The female predominance observed in our cohort is consistent with the literature, particularly in systemic lupus erythematosus and Sjögren's syndrome, where an increased susceptibility in women is well established [2,3]. This distribution may also influence the spectrum of neurological involvement, with certain manifestations being more frequent in female patients.

The predominance of central nervous system involvement in our series is in agreement with several studies reporting frequent CNS involvement in systemic diseases [8]. The myelitis, ischemic strokes, and cerebral venous thrombosis observed in our cohort reflect diverse inflammatory and vascular mechanisms.

The high frequency of cerebral venous thrombosis in our study is particularly noteworthy. This finding may be explained by the high proportion of Behçet's disease and antiphospholipid syndrome, both of which are characterized by a prothrombotic state [6,7]. These results are consistent with previous studies reporting a strong association between these conditions and cerebral thromboembolic events.

The predominance of Behçet's disease in our cohort likely reflects a geographic factor, as this condition is more prevalent in Mediterranean regions [4,5]. Neurological involvement in Behçet's disease is well documented and may include both parenchymal and vascular forms, accounting for the wide spectrum of clinical presentations observed.

Brain MRI abnormalities, particularly T2/FLAIR white matter hyperintensities, are consistent with inflammatory or ischemic processes. However, these findings remain non-specific and must always be interpreted in the appropriate clinical context [4].

Peripheral nervous system involvement observed in our series, including sensorimotor neuropathies and multiple mononeuropathies, is classically described in systemic vasculitides and connective tissue diseases [9]. These manifestations often reflect nerve ischemia secondary to vascular involvement.

Moreover, less frequent etiologies such as sarcoidosis may also present with central or peripheral neurological involvement, emphasizing the broad differential diagnosis that must be considered [10,11].

One of the major strengths of our study lies in highlighting the key role of the neurologist in the diagnosis of systemic diseases. Indeed, neurological manifestations may precede systemic signs, making diagnosis challenging and requiring a multidisciplinary approach.

However, our study has some limitations, including its retrospective and single-center design, as well as the lack of analytical statistical evaluation. Despite these limitations, it highlights suggestive clinical profiles that may guide clinicians toward a systemic etiology.

Finally, our findings underscore the importance of early recognition of atypical neurological presentations, which may improve patient management and prognosis. Prospective multicenter studies are needed to better characterize these neurological manifestations.

V. Conclusion

Neurological manifestations may represent the initial presenting feature of systemic diseases. Their wide clinical variability requires a thorough and systematic diagnostic approach. Early recognition allows appropriate management and may improve patient outcomes and prognosis.

References

[1]. Bertsias GK, Ioannidis JP, Boletis J, Et Al. EULAR Recommendations For The Management Of Systemic Lupus Erythematosus. Ann Rheum Dis. 2012.
[2]. Systemic Lupus Erythematosus — Hanly JG. Neuropsychiatric Lupus. Curr Rheumatol Rep. 2014.
[3]. Sjögren's Syndrome — Delalande S, Et Al. Neurologic Manifestations In Primary Sjögren Syndrome. Medicine. 2004.
[4]. Behçet's Disease — Kalra S, Et Al. Diagnosis And Management Of Neuro-Behçet's Disease. Int J Rheum Dis. 2014.
[5]. Siva A, Saip S. The Spectrum Of Nervous System Involvement In Behçet Syndrome. J Neurol. 2009.
[6]. Ferro JM, Canhão P. Cerebral Venous Thrombosis: Update. Lancet Neurol. 2016.
[7]. Antiphospholipid Syndrome — Cervera R, Et Al. APS Clinical Features. Lancet. 2009.
[8]. Younger DS. Vasculitis Of The Nervous System. Curr Opin Neurol. 2004.
[9]. Birnbaum J. Peripheral Nervous System Manifestations Of Systemic Disease. Continuum. 2017.
[10]. Zajicek JP, Et Al. Central Nervous System Sarcoidosis. Brain. 1999.
[11]. Scolding NJ, Et Al. Neurosarcoidosis Clinical Review. Lancet Neurol. 2021.
[12]. D'Cruz DP, Et Al. Autoimmune Diseases And The Nervous System. J Neurol Neurosurg Psychiatry. 2007.