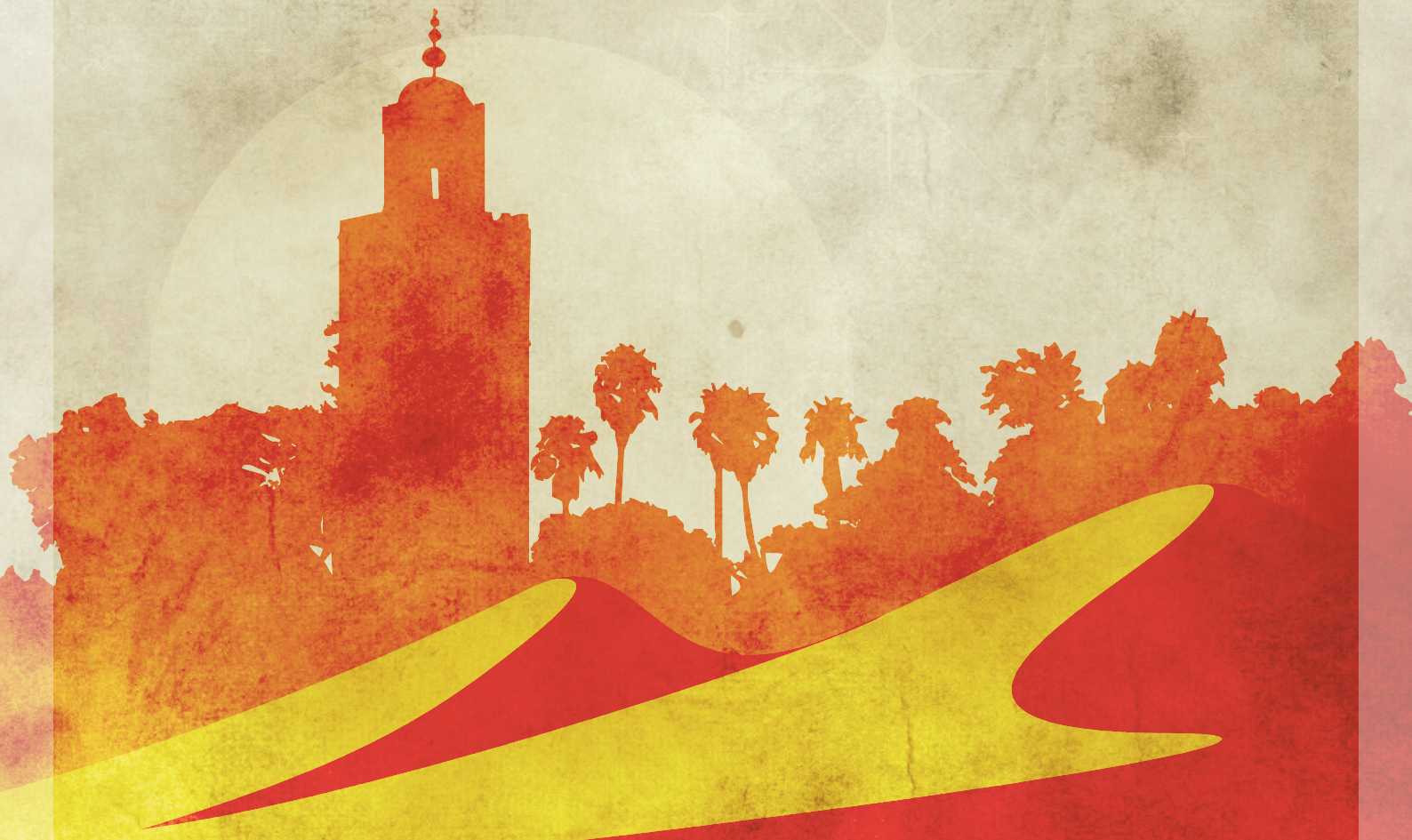
SYLLABUS

TC13: Neurology and Internal Medicine

Sunday, November 13, 2011 09:00 - 12:30 Hall J



Marrakesh, Morocco, November 12-17, 2011

XXth WORLD CONGRESS OF NEUROLOGY

XXth WCN 2011 MARRAKESH
World Congress of Neurology

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SMN
SOCIETE MAROCAINE DE NEUROLOGIE

NEUROLOGY AND INTERNAL MEDICINE

Chairperson: **Aksel Siva**, *Turkey*

THE NEUROLOGY OF TUBERCULOSIS AND SARCOIDOSIS

Zohair Kawi, *Saudi Arabia*

INVOLVEMENT OF THE CENTRAL NERVOUS SYSTEM IN SYSTEMİC VASCULITIDIES AND COLLAGEN-VASCULAR DİSEASES

Aksel Siva, *Turkey*

INVOLVEMENT OF THE PERIPHERAL NERVOUS SYSTEM AND NEUROMUSCULAR JUNCTION/MUSCLE IN SYSTEMIC VASCULITIDIES AND COLLAGEN-VASCULAR DISEASES

Robert Lisak, *USA*

10:30-11:00 *Coffee Break*

The Central Nervous System (CNS) in Primary Systemic Vasculitides (PSV) and Collagen-vascular Diseases (CVD)

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The nervous system in primary systemic vasculitides and connective tissue diseases

Primary systemic vasculitides & connective tissue diseases (PSV & CTD)

- may involve either the CNS or the PNS, or both
- involvement is the result of
- Direct effect (primary)
  - inflammation of the blood vessels – vasculitis!
  - thrombotic vasopathies
- Indirect effect (secondary)
  - secondary to extracranial vessel or other organ involvement
  - secondary to treatment
- (Coincidental!)

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The central nervous system in primary systemic vasculitides and connective tissue diseases

Direct (primary) neurological involvement of PSV & CTD*
the range of manifestations of CNS vasculitis is wide and several pathogenetic mechanisms are implicated

- vasculitis of the CNS vessels of any size
- thrombosis of dural sinuses
- stenosis or thrombosis of medium and large arteries
- aneurysm formation
- granulomatous meningeal involvement
- direct cytokine damage presenting with encephalopathy

*Modified from Rossi and Di Comite. J Neurol Sci 2009

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The central nervous system in primary systemic vasculitides and connective tissue diseases

Indirect (secondary) neurological involvement due to PSV & CTD

A1. Extracranial noninflammatory vascular disease

- carotid stenosis
- vena cava syndrome
- renovascular hypertension

A2. Extracranial organ involvement inducing CNS Sx

- Cardiac involvement – causing emboli or other (i.e. in SLE,)
- Pulmonary involvement (hypoxia)
- Other organ involvement with metabolic/toxic consequences

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The central nervous system in primary systemic vasculitides and connective tissue diseases

Indirect (secondary) neurological involvement due to PSV & CTD

B. Secondary to PSV & CTD treatments

- CNS demyelinating syndromes related to anti-TNF-alpha agents
- PML as a complication of treatment with monoclonal antibodies (rituximab) or immunosupressants
- Corticosteroid induced psychosis
- Corticosteroid induced progressive proximal myopathy
- D-penicillamine related myasthenic syndrome
- Colchisin and thalidomide associated polyneuropathies

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When to suspect primary systemic vasculitides and connective tissue diseases?

CNS disorders that should raise the probability of PSV & CTD in the differential diagnosis

- Subacute encephalopathy
- Optic neuritis / optic neuropathy
- Isolated sensory trigeminal neuropathy
- Multiple cranial neuropathies
- Longitudinally extensive myelopathy

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The nervous system in primary systemic vasculitides and connective tissue diseases

When to suspect PSV & CTD in a neuro-pt?

- When any two or more of the following systemic symptoms and signs are reported
- Fever, fatigue, weakness, dry eyes & dry mouth, myalgia, arthralgia/arthritis, oral ulcers, skin rash, abdominal pain, acute nephritic sx, pulmonary sx
- However these Sx are nonspecific and a diagnosis of PSV & CTD should be supported with both clinical and laboratory findings consistent with that disease

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Common MRI findings in systemic vasculitides and connective tissue diseases*

- multiple brain lesions, most are small & unequal
- mostly bilateral
- a predilection for subcortical regions
- additional involvement of both cortical and deep gray matter
- large lesions suggestive of a vascular nature possible - MCA most likely to be involved
- hemorrhagic lesions possible

* Modified from Pomper et al, Am J Neuroradiol 1999

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Common MRI findings in systemic vasculitides and connective tissue diseases*

- corpus callosum lesions unlikely
- posterior fossa lesions likely, but small and limited, and unlikely in the absence of supratentorial findings
- atrophy expected
- gadolinium enhancement may be seen, in acute onset cases may be multiple and punctate

* Modified from Pomper et al, Am J Neuroradiol 1999

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Antiphospholipid antibody syndrome (APS)

- Antiphospholipid antibody syndrome:
- A noninflammatory vasculopathy
- A clinical syndrome of recurrent arterial and venous thrombosis and/or recurrent spontaneous abortions, thrombocytopenia, and livedo reticularis
- associated with antiphospholipid antibodies (aPLA) [anticardiolipin antibodies (aCL), lupus anticoagulant, anti-b2 glycoprotein I antibodies (anti-b2 GPI)]
- neither considered as an autoimmune disorder (?), nor a true vasculitis, but may be associated with either one

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Antiphospholipid antibody syndrome (APS)

- Neurological manifestations
- CNS involvement includes migraineous headaches, stroke, seizures, cognitive dysfunction/dementia, ocular ischemia, chorea, transverse myelopathy
- Imaging findings
- WM hypodensities/hyperintensities more than expected for patient's age & cortical/subcortical infarcts
- prominent atrophy pattern in parietal lobes; frontal, temporal lobes relatively spared

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The neurology of SLE

- CNS involvement in approximately 40% of pts
- Clinical: can cause optic neuritis, myelopathy – NMO like presentation; focal/multifocal/diffuse CNS inv. Neuropsych manifestations (lupus psychosis)
- CSF: ↑ IgG and OCB (+) [in 50-70% of pts w CNS lupus]
- MRI: MS like ! / NMO like!
- MS-like CNS involvement mostly occurs in the setting of unmistakable systemic disease so that SLE is actually seldom confused with MS

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The neurology of SLE

- Not all neuropsychiatric manifestations and syndromes occurring in SLE patients are directly related (primary) to the disease
- Many develop as complications (secondary) of other organ - systemic involvement or as side effects of various therapies or are coincidental
- Therefore the prevalence of primary neurologic disorders occurring prior to the clinical diagnosis of SLE are likely to be less

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The neurology of SLE

Neuropsychiatric disorders associated with SLE

A. Diffuse central nervous system disorders

- headache
  - primary - migraine and tension type
  - due to intracranial hypertension
- neuro-behavioral presentations ("lupus cerebritis")
  - acute confusional states/delirium
  - psychosis
  - anxiety and depressive disorders
- cognitive abnormalities*
- aseptic menengitis

*more likely to be associated with antiphospholipid autoantibodies

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The neurology of SLE

Neuropsychiatric disorders associated with SLE

B. Focal/multifocal central nervous system disorders

- seizures
- cerebrovascular disease*
- chorea*
- optic neuritis
- myelopathy
- NMO-like syndrome (co-morbid?)
- other demyelinating-inflammatory syndromes*

*more likely to be associated with antiphospholipid autoantibodies

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The neurology of Sjögren

Sjögren's syndrome (SS)

- an autoimmune disease characterized by mononuclear infiltration and destruction of the salivary and lacrimal glands, resulting in dry mouth and dry eye
- systemic symptoms such as arthralgias, myalgias, fatigue are common, less common is weight loss & fever
- in many cases SS is associated with other rheumatologic disorders - i.e. RA, SLE or systemic sclerosis

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The neurology of Sjögren

Neurologic Manifestations of Primary SS

Focal/multifocal central nervous system disorders

- Stroke associated with CNS vasculitis
- Seizures
- Painful tonic or dystonic spasms
- Chorea or parkinsonism
- Multiple sclerosis-like relapsing-remitting syndromes
- Optic neuritis
- Brainstem syndromes (i.e. INO)
- Myelopathy
- NMO-like syndrome (co-morbid?)

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Sjögren Syndrome

Is it neuro-Sjögren; is it an isolated CNS disease, is it MS or NMO?

Not infrequently,

- CIS and MS-like RR syndromes (ON, brainstem syndromes or myelopathy) and
- MRI findings suggestive of inflam-demyelinating nature may occur in patients with known SS (or prior to Dx)
- An acute/subacute-onset or progressive myelopathy,
- with a longitudinally extensive spinal lesion on MRI
- ± anti-aquaporin-4 antibodies positivity may also occur! The NMO-spectrum disorders!

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The neurology of Giant-cell arteritis

Neurological complications of GCA*

Neuro-ophthalmological complications

- amaurosis fugax (30%)
- diplopia (6%)
- eye pain (8%)
- anterior ischemic optic neuropathy (6 -70%)
- posterior ischemic optic neuropathy (7%)

Neuro-vascular complications

- stroke (1–3%)

PNS involvement (rare)

- cranial neuropathies,
- cervical & brachial radiculopathies
- mononeuritis multiplex, polyneuropathies

*Hayreh et al. Am J Ophthalmol 1998
Salvarani et al N Engl J Med 2002
Pfadenhauer et al. J Neurol 2007
Cantini et al Drugs Aging 2008

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The neurology of Polyarteritis Nodosa

CNS manifestations of PAN (medium vessel dis)

- in 20 – 40% of cases
- commonly develops after 2–3 years - late
- CNS complications > in patients with abnormal renal or mesenteric angiograms
- Sx: diffuse encephalopathy with cognitive decline and seizures stroke-like episodes, spinal cord involvement, cranial nerve palsies

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The neurology of Wegener Granulomatosis

Wegener's granulomatosis (small vessel vasculitis)

CNS involvement (3–33%)

pathogenesis of the lesions

- vasculitis of the nervous system
- direct extension of granulomas
- development of granulomas

CNS manifestations

cranial neuropathy (6%) external ophthalmoplegia (5%) cerebrovascular events (4%) seizures (3%) cerebritis (2%) Pachymeningitis

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Neuro-Behçet Syndrome

The Neurological Spectrum of Behçet's Disease*

- Headache (non-structural)
- Subclinical NBS
- Cerebral venous sinus thrombosis (extra-axial NBS)
- Central Nervous System involvement (intra-axial NBS)
- Neuro-Psycho-Behçet Syndrome
- Peripheral nervous system involvement
- Neurological complications of BS treatments
- Secondary or coincidental neurological involvement

* Siva & Saip. J Neurol, 2009

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Neuro - Behçet Syndrome

Common neurological symptoms & signs

- Headache
- Pyramidal / motor Sx (hemiparesis!)
- Cerebellar (ataxia;dysarthria)
- Brainstem (cranial neuropathies)
- Behavioral & cognitive

Uncommon neurological symptoms & signs

- Optic neuritis
- Sensory symptoms
- Extrapyramidal Sx
- Aphasia
- Seizures
- Peripheral neuropathy

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The central nervous system in primary systemic vasculitides and connective tissue diseases

- brief summary -

- PSV & CTD are not common disorders
- Significant neurological problems involving the CNS and/or PNS occur in less than 50%
- Approximately 10 - 50% of the neuro-psychiatric manifestations in PSV & CTD develop before the onset of systemic disease, or at the time of dx
- Not all the neuropsychiatric manifestations occurring in PSV&CTD patients are primary/many are secondary to other organ - systemic involvement or side effects of therapies
- Diagnostic testing may include ESR, HsCRP; CBC; ANA, adsDNA, RF, A-CCP, ENA panel; aCL IgG&M, LA; ANCA
- MR is not specific in PSV & CTD with CNS involvement

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COLLAGEN VASCULAR/SYSTEMIC AUTOIMMUNE DISEASES AND VASCULITIDES: NEUROMUSCULAR INVOLVEMENT

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NEUROMUSCULAR DISEASES

- **Direct involvement of PNS**
- **Associated syndromes as part of systemic diseases**
- **Co-morbid neuromuscular diseases**
- **Complications of other organ involvement**
- **Direct complications of therapy**
- **Indirect complications of therapy**

PERIPHERAL NEUROPATHIES

- **CLASSIFICATION AND APPROACH TO DIAGNOSIS**
- **By disease or pathogenic mechanisms**
  - **Direct infection of vessels**
  - **As a result of immune mechanisms**
- **"Connective Tissue Diseases" (sometime vasculitic)**
- **By clinical presentation**
  - **Acute, subacute, chronic progressive**
  - **Symmetric length dependent**
  - **Mononeuropathy, mononeuropathy multiplex**
  - **Merged mononeuropathy multiplex**

Table 12–2. **Classification of the Vasculitides**

VASCULITIDES RESULTING FROM DIRECT INFECTION

A. Bacterial (e.g., syphilis, tuberculous, Lyme)
B. Fungal (e.g., cryptococcus, aspergillosis)
C. Rickettsial (e.g., Rocky Mountain spotted fever)
D. Viral (e.g., herpes zoster, CMV, HIV)

VASCULITIDES RESULTING FROM IMMUNOLOGIC MECHANISMS

A. Systemic necrotizing vasculitis
   1. Classic polyarteritis nodosa (PAN)
   2. Antineutrophil cytoplasmic antibody (ANCA)-associated
      a. Microscopic polyangiitis
      b. Churg-Strauss syndrome
      c. Wegener granulomatosis
   3. Polyangiitis overlap syndrome
   4. Vasculitis with connective tissue disease (CTD)
      a. Rheumatoid arthritis
      b. Sjögren syndrome
      c. Systemic lupus erythematosus
B. Hypersensitivity vasculitis*
   1. Henoch-Schönlein purpura
   2. Drug-induced vasculitis (e.g., amphetamines, cocaine)
   3. Vasculitis associated with malignancy
   4. Vasculitis associated with infections
   5. Essential mixed cryoglobulinemia
C. Giant cell arteritis
   1. Temporal arteritis
   2. Takayasu arteritis
D. Localized vasculitis†
   1. Nonsystemic vasculitic neuropathy (isolated peripheral nerve vasculitis)
   2. Isolated central nervous system vasculitis
   3. Localized vasculitis of other organs (e.g., GI tract, testicles, uterus, retina, skin, kidney)

†More rarely, each of these entities can also produce a systemic necrotizing vasculitis.
*Also called "cutaneous leukocytoclastic angiitis" if skin is the only organ involved.

Table 13–4. **Neuropathies Complicating the Major Connective Tissue Diseases**

	COMPLICATION				
Disease	**Sensorimotor**	**Dorsal root ganglionitis**	**Multiple mononeuropathy**	**CIDP**	**Trigeminal sensory**
SLE	+	–	+	+	+
Scleroderma	+	–	–	–	+
MCTD	+	–	–	–	+
Rheumatoid arthritis	+	–	+	–	+
Sjögren's syndrome	+	+	+	+	+

CIDP = chronic inflammatory demyelinating polyradiculoneuropathy; SLE = systemic lupus erythematosus; MCTD = mixed connective tissue disease.

Table 12–4. **Nerves Most Commonly Involved in Vasculitic Neuropathies**

Nerve	Frequency of Involvement*
Peroneal	90%
Posterior tibial	38%
Ulnar	35%
Median	26%
Radial	12%
Femoral	6%
Sciatic	3%

*Numbers represent percentage of reported cases with involvement of that nerve, based on review of series involving 272 patients at the Ohio State University Hospitals.

thetic pain in the distribution of involved vessels is a prominent symptom in 75% of cases, it is important to remember that pain may be absent, even in patients with florid vasculitis.

Table 12–6. **Differential Diagnosis of Multifocal Neuropathy Mimicking Vasculitic Neuropathy**

ISCHEMIC NEUROPATHIES

1. Peripheral nerve vasculitis
2. Diabetes mellitus
   a. Diabetic amyotrophy (proximal diabetic neuropathy)
   b. Mononeuropathy multiplex (cranial nerve, thoracic, limb)

INFLAMMATORY/IMMUNE-MEDIATED NEUROPATHIES

1. Sarcoidosis
2. Multifocal demyelinating neuropathy with persistent conduction block
3. Multifocal motor neuropathy
4. Multifocal variants of Guillain-Barré syndrome
5. Idiopathic brachial or lumbosacral plexopathy
6. Neuropathy with various eosinophilic syndromes

INFECTIOUS NEUROPATHIES*

1. Leprosy
2. Lyme disease
3. Viral (HIV, HTLV-I, herpes virus-zoster, cytomegalovirus)
4. Other (leptospirosis, hepatitis A, *M. pneumoniae*, ascaris, *Plasmodium falciparum*)

DRUG-INDUCED NEUROPATHIES*

1. Antiobiotics (penicillin, sulfonamides)
2. Cromolyn
3. Thiouracil
4. Allopurinol
5. Interferon-α
6. Drugs of abuse (amphetamines, cocaine, heroin)

GENETIC NEUROPATHIES

1. Hereditary neuropathy with liability to pressure palsies (HNPP)
2. Hereditary neuralgic amyotrophy (HNA)
3. Porphyria
4. Tangier disease

MECHANICAL NEUROPATHIES

1. Multiple peripheral nerve injuries
2. Multifocal entrapments not related to a genetic disorder

NEUROPATHIES RELATED TO MALIGNANCY

1. Direct infiltration of nerves by tumor
2. Mass lesion with external nerve compression

MISCELLANEOUS CONDITIONS

1. Sensory perineuritis
2. Cholesterol emboli syndrome
3. Idiopathic thrombocytic purpura

*Occasionally associated with vasculitis.

Table 12–5. **Laboratory Studies in Patients with Suspected Vasculitic Neuropathy**

Standard Tests Always Indicated	*Immunologic Tests Always Indicated*
Complete blood count	Antinuclear antigen (ANA)
Erythrocyte sedimentation rate	Rheumatoid factor (RF)
Chemistry panel	Serum complement levels (C3, C4, CH50)
Liver function tests	Serum immunofixation
Urinalysis	Serum quantitative immunoglobulins
Chest film	
Immunologic Tests Indicated Selectively	*Infectious Tests Indicated Selectively*
ANCA (antiproteinase 3 and myeloperoxidase)*	HIV serology
Eosinophil count	HTLV-I serology
Cryoglobulins	Lyme serology
Anti-dsDNA	Hepatitis B serologies
Anti-SSA(Ro) and -SSB(La)	Hepatitis C serology or RNA
Anti-Sm	
Anti-Scl 70 and -centromere	
Immune complex assays	
Other Miscellaneous Tests Useful in Selected Cases†	
Serum angiotensin converting enzyme (sarcoid neuropathy)	
Glycosylated hemoglobin (diabetic lumbosacral radiculoplexus neuropathy)	

*Antineutrophil cytoplasmic antibody.
†Conditions simulating vasculitis.

PNS and Vasculitis

- **Systemic vasculitis**
  - **Polyarteritis nodosa (PAN)**
    - Neuropathy in 60% of patients, may present first in PNS
    - Cranial nerves can be involved but less common
    - Usually presents as multiple mononeuropathies, may appear "merged"; detailed history and careful detailed exam important
    - Distal symmetric generally is "merged" or part of multiorgan involvement (renal in particular)
    - ~ 30% have circulating hepatitis B surface Ag
    - In addition to laboratory studies and biopsy of nerve, nerve and muscle, demonstration of aneurysms in renal, hepatic and visceral blood vessels helpful in Dx

PNS and Vasculitis

- **Systemic vasculitis**
  - **Microscopic polyangitis**
    - Arterioles, capillaries and venules in multiple organs
    - Non granulomatous
    - Rapidly progressive glomerulonephritis and pulmonary disease
    - Palpable purpura > PAN
    - PAN> Hep B circulating Ag and visceral aneurysms
    - p-ANCA common; myeloperoxidase (MPO) in 60%; proteinase 3 (PR3) in 30%
    - 20% develop peripheral neuropathy

PNS and Vasculitis

- **Systemic vasculitis**
  - **Churg-Strauss (Allergic Angiitis and granulomatosis)**
    - Vasculitis, eosinophilia, asthma
    - Other organs as well, smaller vessels than PAN
    - Neuropathy in ~60%
    - ANCA in ~50% as in polyangiitis
    - Bx often shows T cells, occasional eosinophiles, granulomas rare despite the name of the disease

PNS and Vasculitis

- Systemic vasculitis
  - Wegener's Granulomatosis
    - Granulomas in respiratory and necrotizing glomerulonephritis
    - Some overlap in vessel size with microscopic angiitis, usually larger than microscopic, but in general granulomas easier to identify on biopsy
    - >90% c-ANCA positive; ~30% may also have MPO-c-ANCA
    - PNS in ~15%
    - Cranial nerves (~10%) usually from meningeal involvement

PNS and vasculitis

- Systemic vasculitis
  - Polyangiitis overlap syndromes
  - Many instances of connective tissue disorders (but not necessarily CNS in those disorders)
  - Hypersensitivity vasculitis including Henoch-Schonlein purpura
  - Malignancies
  - Drug induced (vasculopathies vs vasculitis)
  - Cryoglobulinemias
    - Complex given role of Hep C, paraproteinemia and treatment with type I IFN and CIDP
  - Giant cell (extracranial) arteritis
    - PNS not common
    - Increased incidence of entrapment neuropathies

PNS and Vasculitis

- Localized vasculitis
  - Primary PNS vasculitis
    - Rare if you follow patient long enough, at least 75+% eventually show involvement of other organ systems

Clinical Presentation of vasculitic neuropathies

- **Pattern of preceding or concomitant systemic involvement can give hint as to which disease, labs and biopsy, angiography also of help and non-organ-specific symptoms (fever, weight loss, myalgias, arthralgias, anorexia, etc) alerts you that one of these disorders is involved**
- **PNS patterns relatively same in most of these diseases and syndromes**

PNS Presentations/Features

- **Classically a multiple mononeuropathy, may rapidly merge**
- **20-40% of patients may present with involvement of readily defined major nerves**
- **May be relatively acute, more often subacute and progresses in a step-like pattern, but may progress more gradually**
- **Even with step-like may be quiescent periods**
- **Often painful with burning and dysethesias (up to 75%), sensory loss and weakness**
- **20-40% with some of these present with more stocking-glove with steady progression**

PNS and SLE

- **Peripheral neuropathy occurs in ~ 10%; unusual as first presentation of SLE**
- **Sensory motor neuropathy is most common but may represent merged mononeuropathies. Even when not apparent merged mononeuropathies, vasculitis may be found on nerve Bx**
- **Clear cut multiple mononeuropathies may occur and Bx appears like necrotizing vascultis, similar to PAN; less common**
- **Chronic inflammatory demyelinating polyneuropathy (CIDP) has been reported (complication of SLE or co-existing autoimmune disease?) Treatment as for CIDP**

Table 13–7. **Neuropathies Complicating Systemic Sclerosis**

Onset ages 30–50 years

Affects women more often than men (15:1)

Trigeminal sensory neuropathy
- Most common neurological complication of the disease.
- Identical in all collagen vascular disorders

Sensorimotor neuropathy
- Rare condition; may be asymmetric in onset.
- Initial symptoms are distal pain and sensory loss.
- Muscle weakness develops with progression.
- Electrodiagnostics and nerve biopsy demonstrate axonal neuropathy.
- Responds poorly to treatment.

Entrapment neuropathy
- Sites of vulnerability are similar to other conditions.
- Median nerve is most common site.

Table 13–8. **Peripheral Neuropathies of Rheumatoid Arthritis**

Vasculitic neuropathy
- Usually occurs in the setting of long-standing rheumatoid disease
- Occasionally accompanies early or nonerosive disease
- The clinical picture of multiple mononeuropathy is similar to vasculitis accompanying other conditions; may be overlapping or confluent at times
- Treatment similar to other vasculitic neuropathies

Sensorimotor neuropathy
- A predominantly distal sensory neuropathy occurs with rheumatoid arthritis
- Distal pain and paresthesias are the major features
- Motor involvement is mild
- Some patients with this clinical picture can have a small-vessel vasculitis
- Other patients have an axonal neuropathy without demonstrable vasculitis
- Treatment is directed at vasculitis if identified by nerve biopsy or may be exclusively symptomatic requiring pain relief if no vasculitis is found

Entrapment neuropathies
- Nerve entrapment common in association with joint and synovial tissue involvement

PNS and Sjogren's Syndrome

- **Peripheral neuropathy as first manifestation is uncommon**
- **Sensory motor neuropathy: most common form, sensory> motor; autonomic seen, axonal neuropathy, small vessel perivasculitis or vasculitis on Bx**
- **Ataxic sensory neuronopathy: marked kinesthetic loss, dysesthesias seen (face, limbs, trunk); no weakness (but exam may be confusing with severe sensory loss); Bx loss of myelinated fibers, perivascular inflammation sometimes seen; infiltration of DRG**
- **CIDP rare**
- **Trigeminal neuropathy**

Table 13–11. **Differential Diagnosis of Sensory Neuronopathies**

Features	Paraneoplastic sensory neuronopathy	Idiopathic sensory neuronopathy	Sjögren's syndrome
Sex ratio (male/female)	1:3	0.5:1	1:5
Course	Subacute	Acute-chronic	Acute-chronic
Sensory loss	Global	Kinesthetic	Kinesthetic
Other	GI dysmotility, encephalomyelitis	None	Sicca syndrome
Autoantibodies	ANNA-type 1 (anti-Hu)	None	Extractable nuclear antigen (SS-A, SS-B)
Spinal fluid	Elevated protein	Normal	Normal
Schirmer test	>5 mm (normal)	> 5 mm (normal)	< 5 mm (reduced)
Rose bengal test	Normal	Normal	Corneal and conjunctival abnormalities
Systemic disease	Small-cell cancer of lung	None	Inflammation of salivary gland

CORTICOSTEROID TREATMENT

- **May be helpful in some entities particular CIDP but no really good series**
- **Now often initiated as IV pulse then oral maintenance therapy**
- **Multiple side effects**
- **Other agents used when fail to respond or for steroid sparing**

Table 12–8. **Immunosuppressive Medications Sometimes Used in Treating Vasculitis**

Agent	Route	Dose	Side Effects	Monitor
Methotrexate	p.o.	10–20 mg/m²/wk	Hepatotoxicity, leukopenia, alopecia, stomatitis, neoplasia	LFTs, CBC
	i.v.	1.0–3.0 mg	Same	LFTs, CBC
Cyclophosphamide	p.o.	1–2.0 mg/kg/day	Leukopenia, cystitis, alopecia, infections, neoplasia	CBC, UA
	i.v.	50–75 mg/m²	Same, nausea, vomiting	CBC, UA
Chlorambucil	p.o.	4.0 mg/day	Hepatotoxicity, leukopenia, nausea, vomiting	LFTs, CBC
Cyclosporine	p.o.	.5–7.5 mg/kg/day	Renal toxicity, hypertension, hepatotoxicity, hirsutism, infection, gum hyperplasia	BP, LFTs BUN,Cr, drug levels
IVIG	i.v.	2.0 gm/kg over 2 days	Fevers, chills, diaphoresis, aseptic meningitis, headache, hypotension, leukopenia	BP, pulse, BUN, Cr

i.v. = intravenous; IVIG = intravenous immunoglobulin; p.o. = orally; BUN = blood urea nitrogen; Cr = creatinine; LFTs = liver function tests; CBC = complete blood count; BP = blood pressure, UA = urinalysis.