Systemic Lupus Erythematosus Presenting as Acute Sensory Axonal Neuropathy (ASAN)

Sir,

Guillian-Barre syndrome (GBS) as first manifestation of Systemic lupus erythematosus (SLE) is rare with very few cases described in literature. Pure sensory GBS (axonal variant) is an even rarer form of GBS with just one case reported in India. SLE presenting as pure sensory GBS (ASAN variant) is an extremely rare phenomenon with no previous case reports. A 22-year-old female with no previous illness presented to us with one and a half month history of acute onset rapidly progressive painful paraesthesias of all four limbs. She had been fine when she developed fever with chills, high grade, intermittent, without any localizing features for 3 days. She remained asymptomatic for around a week and then developed painful paraesthesias in form of burning and pins and needle sensation starting from her feet going on to involve both her leg and thighs, and then hands and forearm and arms in a matter of 10 days. However, there was no history of sensory diminution, nor any motor weakness, but because of the extreme burning sensation she was not able to place her feet on the ground nor could she carry out her activities of daily living without assistance. Bowel bladder or cranial nerve involvement was not there. Within 15 days of onset of symptoms she developed multiple joint pains and swelling, involving both large and small joints and along with alopecia. There was no history of associated Raynaud's phenomenon, rash, photosensitivity or oral ulcers. She had become increasingly irritable and depressed with negative ideation and episodes of crying on her own.

On examination at the time of admission, her vitals were stable. Joint tenderness (wrist, PIP, knee, ankle) was present. There was no joint swelling.Neurological examination revealed MMSE of 30/30, cranial nerve examination was normal, and motor system examination revealed normal bulk and tone in all four limbs with power of 5/5 MRC grade at all joints. Deep tendon reflexes (bicep, triceps, supinator) were diminished and knee and ankle jerks were unelicitable bilaterally. Other than loss of vibration at big toe, sensory examination was unremarkable.

Hemogram revealed anemia. Kidney and hepatic function tests and serum sodium and potassium were normal. ESR was 32 mm, CRP negative. There was no albuminuria. IgM for Chikungunia and dengue serology were negative. ANA (Hep2) profile was positive and showed a homogenous pattern. RA Factor, anti-dsDNA were also positive. RA Factor titer was 16.60, Anti ds DNA titer was 48.43. Scl-70 Ab-borderline positive, SSB, SSA-, Anti-Sm, U1-RNP Ab, centromere antibody, ANTI-Jo-1-, Anti-CCP were negative. Complements level were normal. HIV, HbsAg and anti-HCV were non-reactive. Antibody markers for GB variants were not done.

CSF analysis showed an albumin-cytological disproportion with no cells and raised protein. Gram stain, AFB stain, India ink preparation were all negative.

2D echocardiography, USG Abdomen, MRI Cervical spine with screening of whole spine (without contrast) were all normal. Nerve conduction studies revealed normal motor nerve conductions in both upper and lower limbs [Supplement Figure 1] and a predominantly sensory axonal neuropathy with lower limb involvement more than upper limbs [Supplement Figure 2].

A diagnosis of acute sensory GBS with SLE was made. Diagnosis of GBS (ASAN) was based on clinical presentation, Cerebrospinal fluid (CSF) analysis and nerve conduction studies (NCS). Diagnosis of SLE was based on Systemic lupus international collaborating clinic criteria for classification of systemic lupus erythematosus. IV pulse steroids Methylprednisolone was given for 5 days followed by maintenance therapy with prednisolone 1mg/kg and. Hydrochloroquinine was also started as advised by rheumatologist.

Within 10 days of starting treatment, her painful paraesthesias and joint pains resolved to the extent that she became ambulatory. Anti-depressants were initially started but at a follow up of one month these were withdrawn, and at 2 months, the oral steroids were shifted to alternate day therapy. Hydrochloroquinine was continued.

Repeat NCS was done which did not show major changes however patient has improved and deep tendon reflexes in both upper limbs are now well elicitible.

Concept of sensory equivalent to ascending paralysis of GBS was first described in1958 by Wartenberg.[1] Asbury provided diagnostic criteria for sensory loss and areflexia variant of GBS in 1981.[2] The Brighton Collaboration in 2010 developed case definitions of GBS with differing levels of diagnostic certainty.[3] The presence of bilateral and relative symmetric flaccid paralysis of limbs was essential for incorporating cases into various levels of diagnostic certainty.

Acute axonal forms of GBS first described by Feasby,[4] following that an axonal motor variant of GBS termed acute motor axonal neuropathy (AMAN) was reported from northern China in 1993.[5] Reports of acute motor and sensory axonal neuropathy (AMSAN) were published.[6]

Most of the pure sensory forms of GBS described have demyelinating neuropathy.[7] Very few cases have been reported as acute sensory axonal neuropathy (ASAN) variant of GBS.[8]

Association of GBS with SLE is very rare.

GBS as a presenting feature of SLE remains uncommon, with only a few cases reported till now; the first case was reported in 1964[9] Most of these reported cases are AIDP.[9]

The pathogenesis of GBS as a manifestation of SLE is not clear, but both cell-mediated and humoral processes may play a significant role. There are currently anti-neuronal antibodies: antilymphocytic antibodies, anti-phospholipid antibodies (including cardiolipin antibodies and lupus anticoagulants) and anti-ribosomal *P* protein antibodies. These antibodies are present in the plasma and cerebrospinal fluid, and they cause more extensive neurological damage. Other cytokines such as α-interferon and interleukin-6 levels are also considered to play a role in the pathogenesis.[9]

Corticosteroids, cyclophosphamide, plasmapheresis, and immunoglobulin have been used in AIDP or GBS with SLE according to previous literature. The combination of corticosteroids and cyclophosphamide is even considered the first line treatment option in a review of the literature.[9]

Reports from literature document that some have had response to IVIG or steroids only.[10] Varying responses have been noted with each patient encountered and no universal treatment guidelines have yet been established.[10]

Pure sensory GBS, which itself is a rare entity, has not been reported till date as manifestation of SLE. We report a case of pure sensory (axonal variant) GBS as first manifestation of SLE.

In conclusion, it is important to diagnose autoimmune disorders associated with GBS as GBS without SLE responds only to IVIg or plasmapheresis whereas GBS associated with SLE responds to IVIg, plasmapheresis, steroids or cyclophosphamide.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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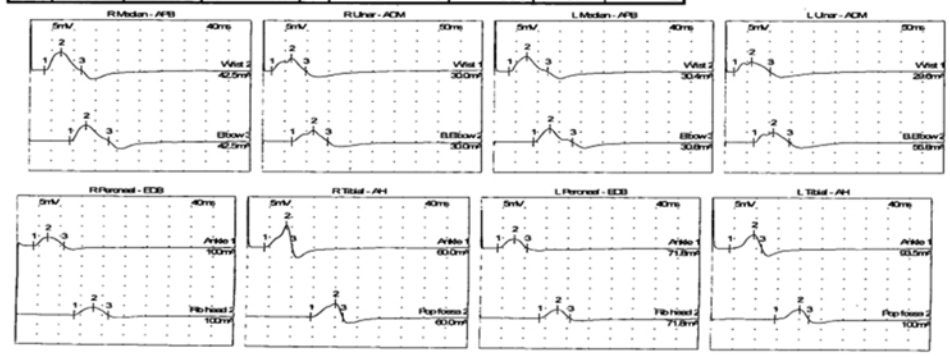
Full Name: **Age:**
Patient ID: **Gender:**

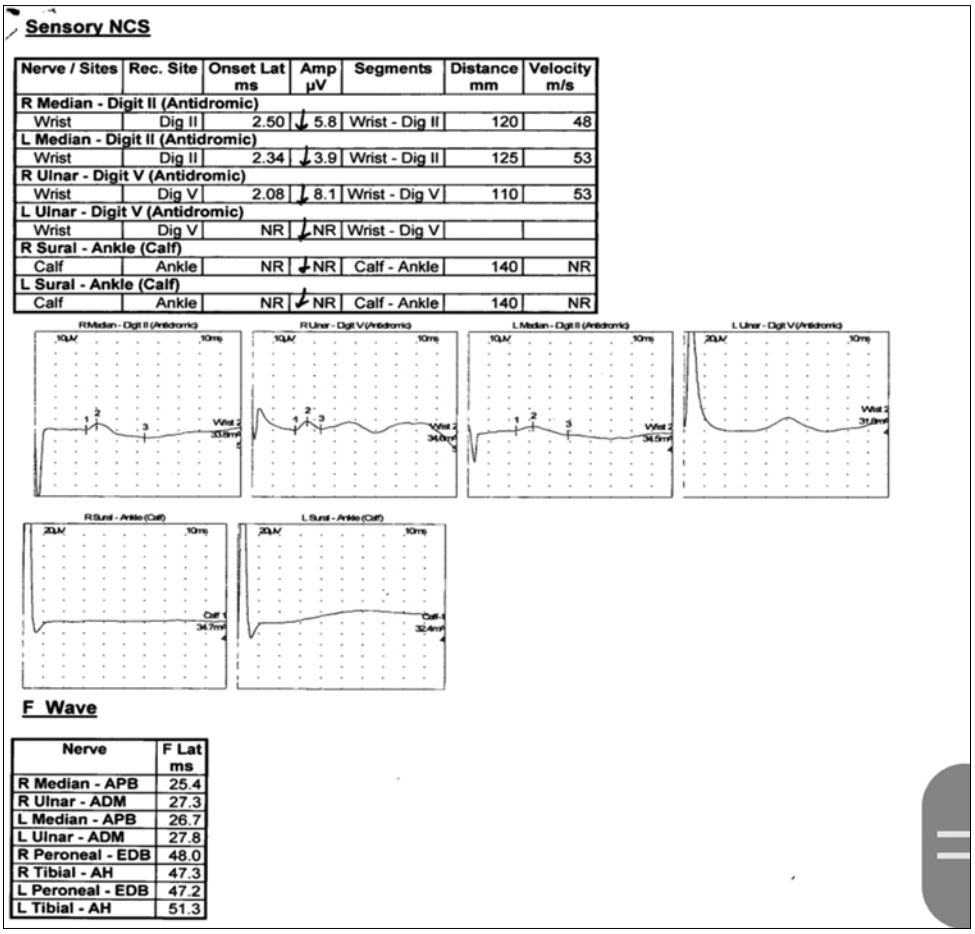
Visit Date:

Motor NCS

Nerve / Sites	Latency ms	Amplitude mV	Segments	Distance mm	Lat Diff ms	Velocity m/s
R Median - APB						
Wrist	2.60	9.0	Wrist - APB			
Elbow	7.34	7.6	Elbow - Wrist	220	4.74	46
L Median - APB						
Wrist	2.71	7.4	Wrist - APB			
Elbow	7.29	6.6	Elbow - Wrist	220	4.58	48
R Ulnar - ADM						
Wrist	1.93	6.4	Wrist - ADM			
B.Elbow	6.67	5.4	B.Elbow - Wrist	220	4.74	46
L Ulnar - ADM						
Wrist	1.98	4.9	Wrist - ADM			
B.Elbow	6.56	4.9	B.Elbow - Wrist	220	4.58	48
R Peroneal - EDB						
Ankle	3.02	4.3	Ankle - EDB			
Fib head	10.83	3.8	Fib head - Ankle	350	7.81	45
L Peroneal - EDB						
Ankle	3.07	4.4	Ankle - EDB			
Fib head	10.89	4.2	Fib head - Ankle	340	7.81	44
R Tibial - AH						
Ankle	3.07	10.8	Ankle - AH			
Pop fossa	11.61	6.8	Pop fossa - Ankle	355	8.54	42
L Tibial - AH						
Ankle	3.18	7.0	Ankle - AH			
Pop fossa	11.61	4.8	Pop fossa - Ankle	355	8.44	42



Supplement Figure 1: Motor nerve conductions revealing normal conductions in both upper and lower limbs



Sensory NCS

Nerve / Sites	Rec. Site	Onset Lat ms	Amp µV	Segments	Distance mm	Velocity m/s
R Median - Digit II (Antidromic)						
Wrist	Dig II	2.50	↓ 5.8	Wrist - Dig II	120	48
L Median - Digit II (Antidromic)						
Wrist	Dig II	2.34	↓ 3.9	Wrist - Dig II	125	53
R Ulnar - Digit V (Antidromic)						
Wrist	Dig V	2.08	↓ 8.1	Wrist - Dig V	110	53
L Ulnar - Digit V (Antidromic)						
Wrist	Dig V	NR	↓ NR	Wrist - Dig V		
R Sural - Ankle (Calf)						
Calf	Ankle	NR	↓ NR	Calf - Ankle	140	NR
L Sural - Ankle (Calf)						
Calf	Ankle	NR	↓ NR	Calf - Ankle	140	NR

F Wave

Nerve	F Lat ms
R Median - APB	25.4
R Ulnar - ADM	27.3
L Median - APB	26.7
L Ulnar - ADM	27.8
R Peroneal - EDB	48.0
R Tibial - AH	47.3
L Peroneal - EDB	47.2
L Tibial - AH	51.3

Supplement Figure 2: Sensory nerve conductions revealing reduced amplitudes in bilateral median and right ulnar nerve. Left ulnar and bilateral sural conductions are not recordable