

Guillain-Barré Syndrome

October 17, 2005

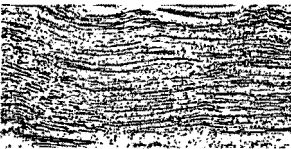
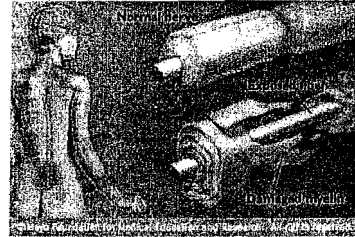
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Guillain Barre Syndrome (GBS)

- Acute Inflammatory Demyelinating Polyneuropathy (AIDP)
 - Acute Motor Axonal Polyneuropathy (AMAN)
 - Acute Motor and Sensory Axonal Neuropathy (AMSAN)
 - Miller-Fisher Syndrome

Pathology

- Autoimmune response
- Demyelination of peripheral nerves
 - Macrophages attack Schwann cells
 - Inflammation and segmental demyelination
 - Slowed conduction velocity
- Axonal Degeneration
- Affects mixed peripheral nerves
- May affect cranial nerves



http://missinglink.ucsf.edu/lm/ids_104_Demyelination/Didactic/Gbs.htm

Etiology

- Unknown etiology
- Autoimmune Disorder
 - 60% of cases follow a respiratory or GI illness
 - Campylobacter jejuni
 - Vaccinations, hepatitis and influenza
 - Post surgical
- No predisposing factors identified

Epidemiology

- 1 in 100,000 people are affected in the US
- Affects men and women equally of any age
- No predisposing factors

*M > W
older >*

Epidemiology

- Most common cause of acute neuromuscular paralysis in the world
- More common in Japan and China than in North America or Europe

Diagnosis - GBS

Clinical Presentation

- Rapidly progressive muscle weakness and sensory changes
- Can progress over hours, days or weeks.
- Bilateral/Symmetric
- Distal to proximal progression
- Respiratory complications

Signs

- Motor
 - Weakness
 - Areflexia/absence of DTR's
 - Decreased vital capacity, tidal volume, oxygen saturation
 - Cranial nerve signs
- Sensory
 - Impaired light touch, proprioception, vibratory sense
 - "stocking glove" presentation

Signs

- Autonomic
 - Tachycardia
 - Arrhythmias
 - Decreased cardiac output
 - Blood pressure fluctuations
 - Poor venous return
 - Urinary retention
 - Sweating
 - Facial flushing

*2/3 cases
autonomic
signs*

*Chronic
Inflammatory
Poly neuropathy
&
recurrent*

Symptoms

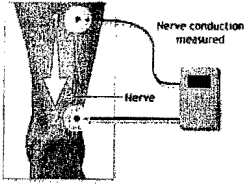
- ◆ Fatigue
- ◆ Sensory
 - Pain
 - Numbness
 - Tingling
 - Burning
 - Hypersensitivity

Progression of Signs and Symptoms

- ◆ Rapid progression
- ◆ Can progress in hours, days, or weeks
- ◆ 90% of those affected are at the weakest by the 3rd week.

Diagnostic Tests

- ◆ Electrodiagnosis
 - Nerve Conduction Velocity

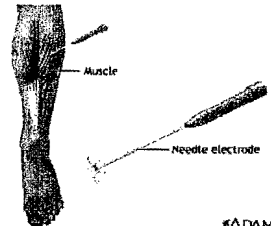


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<http://www.nlm.nih.gov/medlineplus/ency/imagepages/9743.htm>

Diagnostic Tests

- ◆ Electrodiagnosis
 - Electromyography
 - ◆ Intramuscular electrode inserted into the muscle
 - ◆ Size and shape of waveform of action potentials are recorded
 - ◆ Looking at muscle response to nerve stimulation

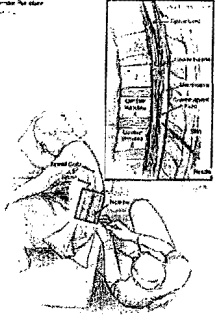


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<http://www.nlm.nih.gov/medlineplus/ency/imagepages/9741.htm>

Diagnostic Tests

- ◆ Laboratory Tests
 - Elevated cerebrospinal fluid protein (although can be normal in the 1st week of onset)



<http://www.medem.com>

Differential Diagnosis

- ◆ Botulism
- ◆ Peripheral neuropathy
- ◆ Spinal cord compression or lesions
- ◆ Myasthenia Gravis
- ◆ Poliomyelitis
- ◆ Transverse Myelitis
- ◆ West Nile Virus
- ◆ Tick Paralysis

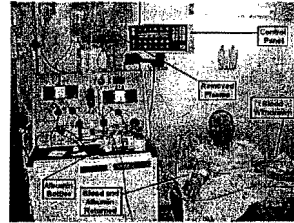
Medical Management

Medical Management

- Ventilator dependency in cases with respiratory paralysis 25%
- Prevention of secondary infection
- Bowel and bladder
- Skin
- Prevention of DVT's
- Pain

Medical Management

- Plasmapheresis/Plasma Exchange (PE)
 - Blood removed from individual and rbc's and wbc's are separated.
 - Blood is returned to the individual without the plasma
 - Body replaces plasma
- Intravenous Immunoglobulin (IVIg)
 - Suppresses inflammatory agents
 - Modifies various aspects of immune response, i.e. blocks receptors on macrophages



<http://www.mgla-mgnet.org/html/plasm.htm>

Medical Management

- RCT's have shown that IVIg and Plasmapheresis are equally effective in treating GBS.
 - IVIg
 - + no need for specialized equipment
 - + no need to transfer the patient to a specialized unit
 - \$\$\$
 - Plasmapheresis
 - Contraindicated for those with autonomic involvement secondary to possible side effects of hypotension and arrhythmias

Medical Management

- Steroids
 - Clinical trials have shown this is NOT an effective treatment for GBS.
 - May be effective for CIDP



Prognosis

- Patients will get better!!!
- Recovery begins 2-4 weeks after progression of symptoms plateaus. (1 week to 2 months)

Prognosis

- Recovery can last weeks to years
 - 30% will continue to have some weakness after 3 years
 - Prolonged recovery in those with axonal form of GBS
- 80% of patients will be ambulatory within 6 months of onset of GBS.
- 5% mortality rate

Prognosis

- Forsberg et al, 42 patients with GBS
 - 21% required mechanical ventilation
 - 2 years post onset
 - 55% had decreased overall strength
 - 31% had decreased grip strength
 - 12% had decreased facial muscle function
 - 52% had some type of impaired sensation
 - 7% unable to ambulate 10 meters independently
 - Recovery occurred primarily during the first year after onset

Physical Therapy Management

- Guide to PT Practice – Pattern 5G
 - Impaired motor function and sensory integrity associated with acute or chronic polyneuropathies



Physical Therapy Management

- Examination (refer to Guide for complete list)
 - Strength – specific testing
 - ROM
 - Balance
 - Endurance
 - Skin Integrity
 - Posture
 - Pain
 - Respiratory
 - Sensation
 - Cranial Nerve Exam
 - Functional Mobility and ADL's

Physical Therapy Management

- Interventions (refer to Guide for complete list)
 - Use examination findings to determine appropriate interventions.
 - ROM, strengthening, endurance, gait training, transfer training, airway clearance/assisted cough, positioning, pressure relief education, adaptive equipment...

Physical Therapy Management

- Precaution
 - Avoid overworking patients with GBS
 - With decreased motor unit recruitment, available muscle fibers may become overworked.
 - Potential for harmful effects on reinnervation with overuse
 - Assess for overwork weakness by monitoring for muscle soreness and changes in strength
 - Educate patient about taking adequate rest breaks

Physical Therapy Management

- Aerobic Training
 - Use Borg Scale, Rate of Perceived Exertion, up to moderate exercise intensity level

6	no exertion at all
7	extremely light
8	
9	very light
10	
11	light
12	
13	somewhat hard
14	
15	hard (heavy)
16	
17	very hard
18	
19	extremely hard
20	maximal exertion

Interdisciplinary Approach

- Physician
- Nurse
- Physical Therapist
- Occupational Therapist
- Speech Therapist
- Social Worker
- Psychologist
- Vocational Therapist



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