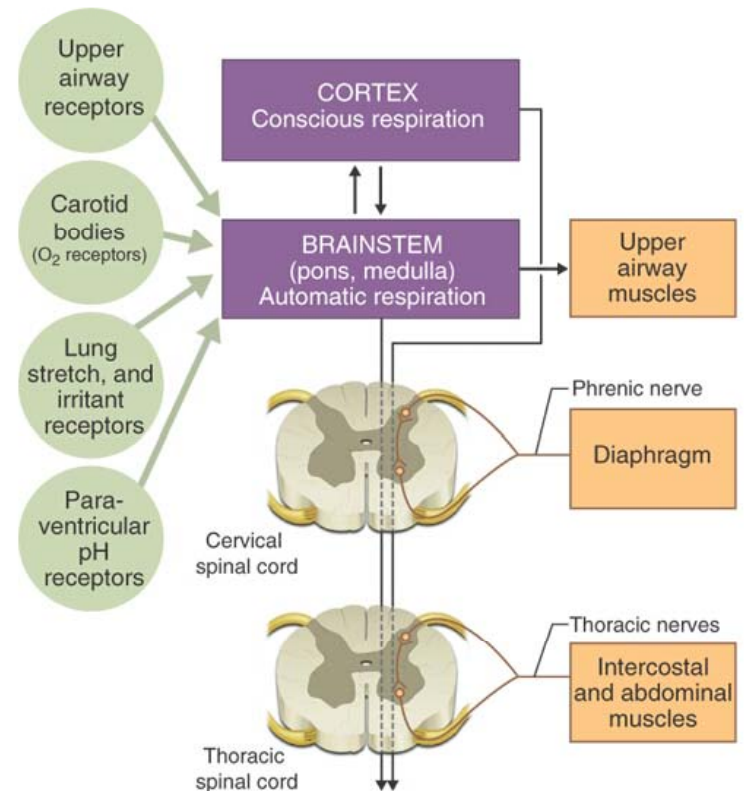


Neuromuscular Disease

R. Hernandez

Neuromuscular Disease

- Diseases that affect the brain, nerves, muscles, or thoracic cage which can lead to hypoxemia or respiratory failure (even when lung function is normal).
 - Hyperventilation
 - hypoventilation
 - Sleep apnea
 - Aspiration
 - Atelectasis
 - Hypoxemia
 - Pulmonary hypertension
 - Cor Pulmonale

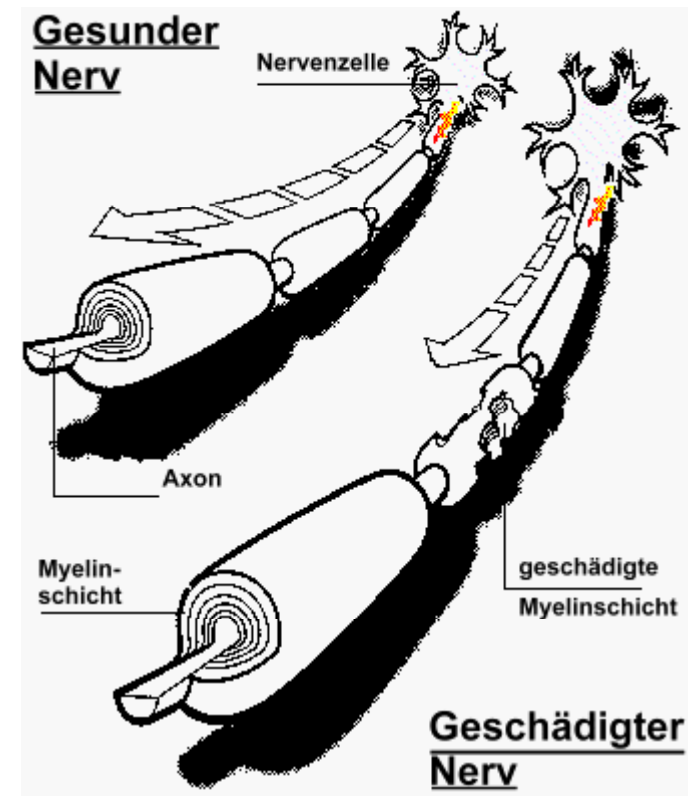


Locations at Which Several Neuromuscular Diseases affect the Respiratory System

Location	Disease
Cortex and upper motor neurons	Stroke, traumatic brain injury
Spinal Cord	Trauma, transverse myelitis, multiple sclerosis
Anterior horn cells (lower motor neurons)	Amyotrophic lateral sclerosis, spinal muscular atrophy, poliomyelitis and postpoliomyelitis
Peripheral nerves	Guillain-Barre syndrome, critical illness polyneuropathy, Lyme's disease
Neuromuscular junction	Myasthenia gravis, Lambert-Eaton Syndrome, Botulism
Muscle	Duschenne's muscular dystrophy, polymyositis, acid maltase deficiency
Interstitial Lung disease	Polymyositis, dermatomyositis, tuberous sclerosis, neurofibromatosis

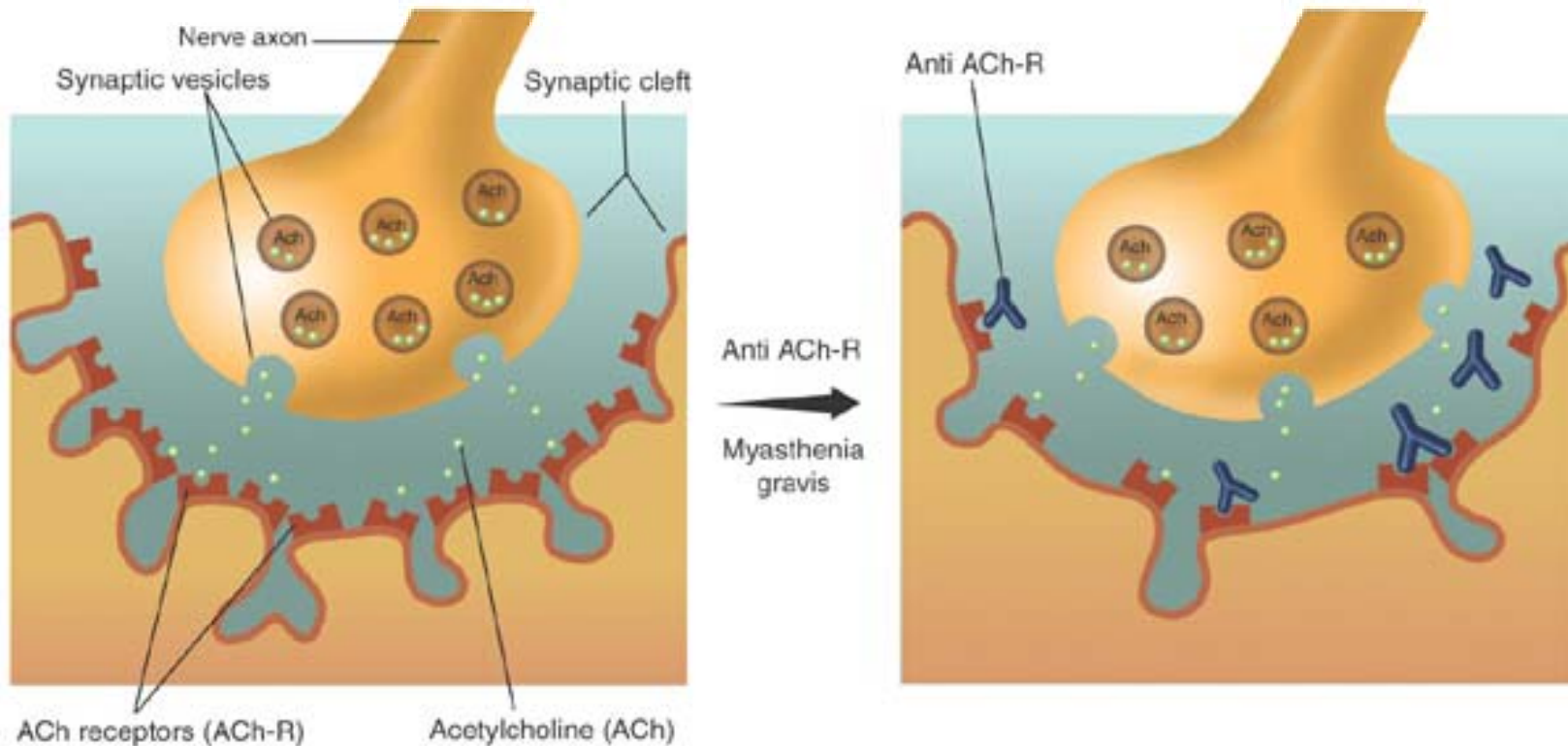
Guillain-Barre Syndrome (GBS)

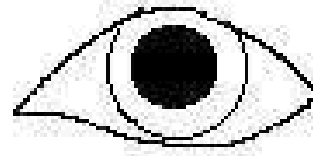
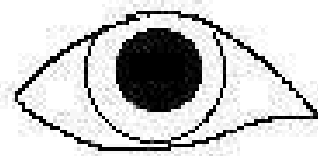
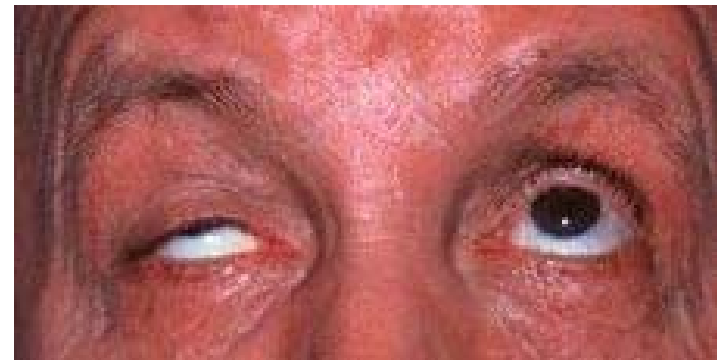
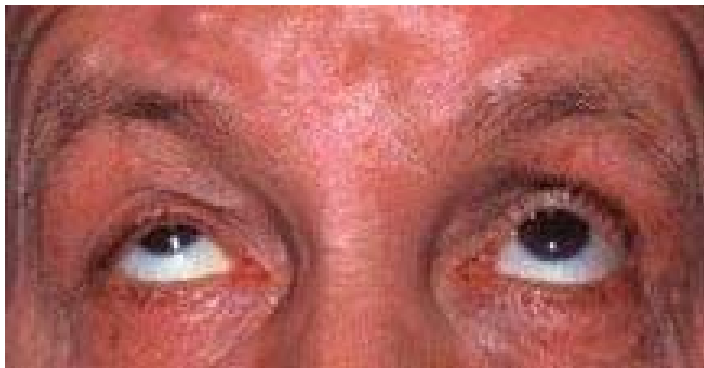
- Demyelination, inflammation, edema of peripheral nerves
 - Immune disorder – Infection (p.430)
 - High antibody titers
 - Elevated IgM
- Flaccid paralysis of the skeletal muscles
 - Distal paresthesia
- Loss of reflexes
- 30% progress respiratory muscle compromise
- Functional spontaneous recovery 85-90%



Myasthenia Gravis

- Chronic Disorder interferes with the chemical transmission of acetylcholine (ACh) between the axonal terminals. Only affects the myoneural junction.





chua

Myasthenia Gravis

- Circulating antibodies of the autoimmune system
 - Block Ach from the receptor sites of the muscular cell
 - Accelerate breakdown of Ach –
 - Tensilon (edrophonium chloride)
 - Destroy receptor sites
- Thymus gland abnormal
- Muscular weakness without sensory involvement
- Female 15-35 years
- Male 40-70 years

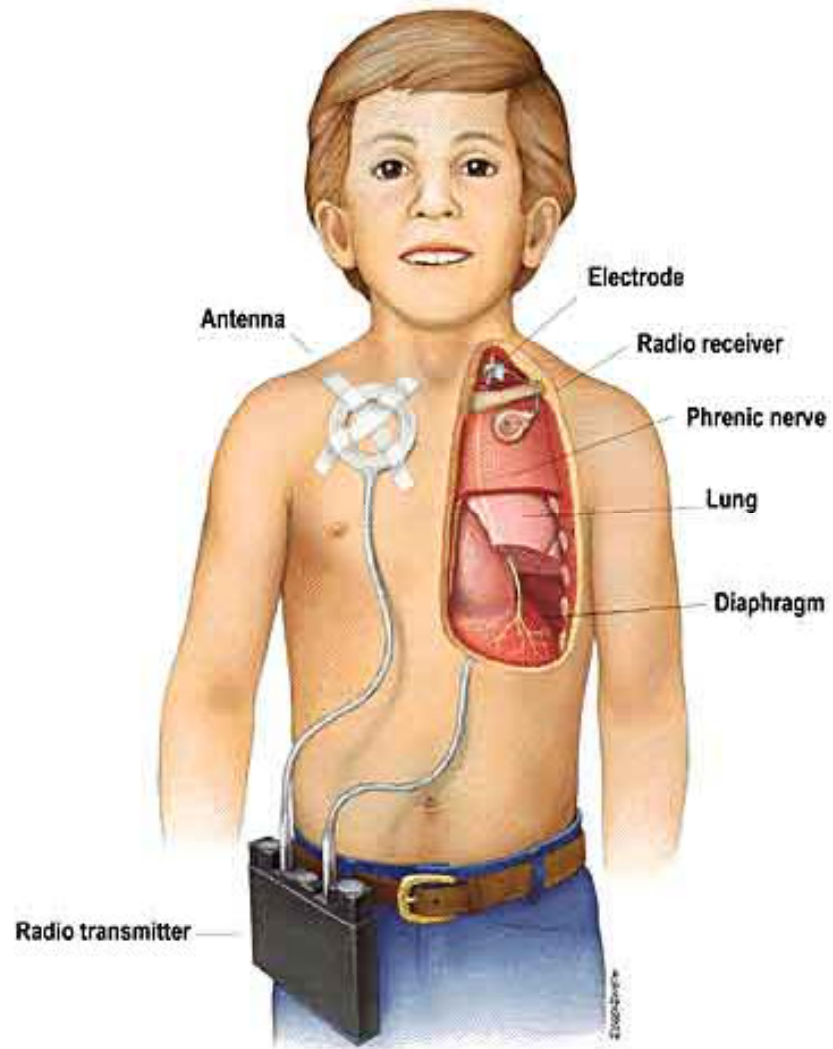
Phrenic Nerve Damage

- Originates from cervical vertebrae
- Hemidiaphragm innervation
- Causes of phrenic nerve dysfunction leading to respiratory dysfunction:
 - Cardiac surgery
 - Diabetes
 - Trauma
 - Thoracic aneurysm

Diaphragmatic Paralysis



Diaphragmatic Pacer



Respiratory Care

- Expiratory muscle strength
 - Adequate cough mechanism
 - $P_{I\max} > 40\text{cmH}_2\text{O}$
- Consideration for ventilatory assistance
 - $P_{I\max} < 30\text{ cmH}_2\text{O}$
 - $\text{PaCO}_2 > 45\text{mmHg}$
 - $\text{VC} < 20\text{mL/kg}$