



### Independent Student Review (continued)

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### Neurological Disorders

- Multiple Sclerosis
- Amyotrophic Lateral Sclerosis – ALS
- Myasthenia Gravis
- Inflammatory Brain Conditions
- Neoplasms

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### Multiple Sclerosis

- What is it?
  - Demyelination disorder of white matter of brain, Spinal Cord, and optic nerve

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## Multiple Sclerosis



- Stages
  - Relapsing remitting
  - Primary progressive
  - Secondary progressive
  - Progressive relapsing
- [http://www.youtube.com/results?search\\_query=Multiple+sclerosis&q=f](http://www.youtube.com/results?search_query=Multiple+sclerosis&q=f)

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## Multiple Sclerosis Signs and Symptoms



- Initial Symptoms
  - Vision problems-blurred vision
  - Sensory impairment-paresthesia
  - fatigue
- Hot baths worsens symptoms
- Muscle dysfunction
  - Weakness, paralysis
- Urinary disturbances
  - Incontinence, infections
- Speech problems- dysphagia

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## Signs and symptoms cont.



- Double Vision
- Electric shock sensations
- Slurred speech
- Lack of coordination
- Unsteady gait
- Stiffness or spasticity
- Forgetfulness
- Difficulty concentrating

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**Multiple Sclerosis**

- Diagnosis
  - Stage 1 – MRI shows inflammation and lesions
  - Stage 2 – MRI shows demyelination
  - Sometimes CSF examined
    - Lumbar puncture

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**Multiple Sclerosis**

- Treatment
  - Muscle spasticity drugs
  - Steroids
  - Fiber
  - Antidepressants
  - Immunosuppressive drugs
    - Interferon beta – 1a

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**MS treatment other than medication**

- Physical Therapy
- Occupational Therapy
- Counseling
- Plasma exchange

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### Lifestyle and Home Remedies



- Rest
- Exercise
- Avoid heat
- Cool down
- Well balanced diet

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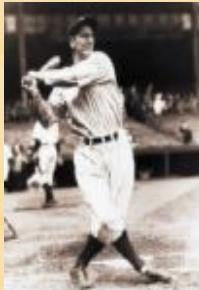
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### Amyotrophic Lateral Sclerosis - ALS



Commonly known as  
Lou Gehrig's Disease

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### Amyotrophic Lateral Sclerosis ALS



- Chronic progressive debilitating disease
- Most common form of motor neuron disease causing muscle atrophy
- Degeneration occurs in the spinal cord
- Onset most common between ages 40-60
- Twice as common in men than women
- No specific tests
- Death usually occurs 2-5 yrs from diagnosis
- [http://www.youtube.com/results?search\\_query=Multiple+sclerosis&aq=f](http://www.youtube.com/results?search_query=Multiple+sclerosis&aq=f)

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Amyotrophic Lateral Sclerosis  
ALS



- What is not effected?
  - Entire sensory system
  - Regulatory mechanism of control
  - Coordination of movement
  - Intellect remains intact

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Amyotrophic Lateral Sclerosis  
ALS



- Signs and Symptoms
  - Generalized muscle weakness
  - Spasticity and hyperreflexia
  - Impaired speech
  - Difficulty chewing and swallowing
  - Difficulty breathing
  - Emotional lability

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Amyotrophic Lateral Sclerosis  
ALS



- Diagnosis
  - UMN involvement Dysphagia, dysarthria, dysphonia, spasm and rigidity, impaired fine motor control
  - LMN involvement: weakness, muscle atrophy, hyporeflexia, fasciculation
  - In some ways ALS sounds a little like MS
  - ALS is distinguished by impairment of respiratory muscle

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## Amyotrophic Lateral Sclerosis ALS



- Treatment
  - No cure
  - Antispasmodic drugs and respiratory support
- Medication:
  - Riluzole (Rilutek) – only drug available for ALS
    - May increase liver enzymes
- Nursing
  - Prevent contractures
  - Prevent pneumonia

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## Myasthenia Gravis



- A disorder of the neuromuscular junction
- A deficiency of acetylcholine receptors on muscle surface (there may be only 20% normal receptors)
- Muscle receptors are destroyed by an autoimmune process
- Defect in the transmission of nerve impulses to skeletal muscle
- Onset between ages 20-40
- More common in women than men

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## Clinical Manifestations



- Weakness of striated muscles especially eye muscle
- Evidenced by ptosis and diplopia
- Chewing and swallowing difficulties
- Weakness of muscles of the lower face
- Needs to support chin when talking

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[http://www.youtube.com/watch?v=LBiz\\_41ucp4](http://www.youtube.com/watch?v=LBiz_41ucp4)



Ptosis (drooping of the eyelid)



ADAM

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### Diagnosis

- History and Physical examination
- Thyroid study
- Testing immune disorders
- Acetacholine receptor antibody testing
- CT scan
- The Tensilon Test



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### Treatment

- Medication Management
  - Anticholinesterase (Cholinergic)
  - Immunosuppressive Therapy
    - Prednisone
      - Start at 20 mg increase daily to 60 mg dose
      - Continue for 3 months or until clinical improvement
      - Taper gradually to every other day
    - Immunoglobulin G (Imuran)
      - 2 mg / kg/ day



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### Crisis

**Myasthenic Crisis**

- Result of severe disease or too little cholinesterase inhibition
- The patient is unable to maintain an airway or make sufficient respiratory movement and requires ventilation
- Increased BP and Pulse
- Increased secretions leading to ineffective airway clearance

**Cholinergic crisis**

- Nausea
- Vomiting
- Diarrhea
- Abdominal cramps
- Blurred vision
- Pallor
- Facial muscle twitching
- Hypotension

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### Crisis (cont)

- Myasthenic Crisis may be precipitated by a number of factors:
  - Non-compliance with medications
  - Excessive activities
  - Infection

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### Inflammatory Brain Conditions (Pg 1564-68)

- Abscess
- Meningitis
  - Viral
  - Fungal
  - Bacterial
- Encephalitis
  - Arboviruses
  - Enteroviruses
  - Herpes Simplex Virus Type I
  - Amebae

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## ABSCESS



- Bacterial
  - Streptococci and Staphylococci
  - Secondary to Paranasal sinuses
  - Mastoids
  - Middle ears
- Fungal
- Parasitic

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- Fungal
  - Coccidiomycosis
  - Mucormycosis
  - Aspergillosis
- Parasitic
  - Neurocysticercosis

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## Symptoms



- **Early Symptoms**
  - General Malaise
  - Fever
  - Chills
  - Anorexia
- **Late Symptoms**
  - Seizures
  - Decreased LOC
  - Hemi paresis
  - Expressive aphasia
  - Frontal headache

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## Meningitis

- Bacterial
- Viral



### Complications of Meningitis

- Communicating hydrocephalus
- Loculated CSF collections
- Subdural effusion / empyema
- Cerebral infarction
- Cerebral abscess
- Dural sinus thrombophlebitis

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## Bacterial Meningitis

- Causes may include Strep, H flu and E-coli
- Risk factors include head trauma, otitis media, sinusitis or immunosuppression
- Mortality rate is 25%
- Manifestations:
  - Fever
  - Chills
  - Headache
  - Nausea and vomiting
  - Stiff neck



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## Viral Meningitis

- Also call *aseptic meningitis*
- Less severe than bacterial
- Caused by Herpes simplex, Ebstein Barr or Cytomegalovirus (CMV)
- Most often appears after mumps infection
- Manifestations are similar to bacterial but milder
- Headache is intense
- Photophobia



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## Encephalitis

- Acute inflammation of the parenchyma of the brain or spinal cord
- Almost always caused by a virus
- Causes local necrotizing hemorrhage with prominent edema without exudate
- Manifestations:
  - Fever
  - Headache
  - Seizures
  - Stiff neck
  - Altered LOC

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## Treatment

- Brain Abscesses:
  - Broad-spectrum antibiotics
  - Antifungal agents (Diflucan)
- Meningitis/Encephalitis
  - Immediate Broad-spectrum antibiotics
    - Cephalosporins (Vancomycin)
  - Steroids to reduce edema (Decadron)
  - Antipyretics (Tylenol)
  - Analgesics (Opiates)
  - Anticonvulsants (Dilantin)

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## Neoplasms

- Primary Tumors
- Secondary Tumors
  
- PATHOPHYSIOLOGY
  - Cerebral Edema / brain tissue inflammation
  - Increased ICP
  - Focal neurologic deficits
  - Obstruction of the flow of CSF
  - Pituitary dysfunction

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## Classification of Tumors

- Malignant or Benign
- Location
- Cellular Histologic or Anatomic Origins



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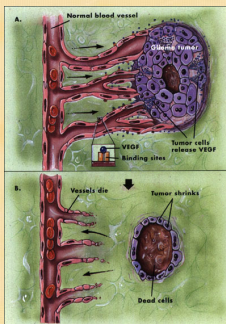
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## Primary tumors of the brain

### Gliomas



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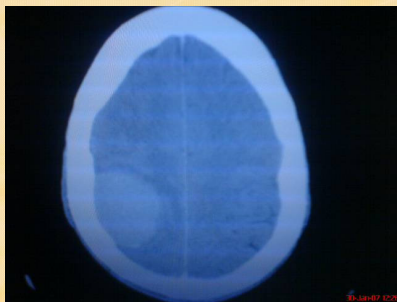
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## Primary tumors of the brain

### Meningiomas



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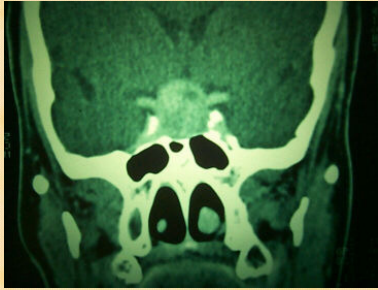
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### Primary tumors of the brain

- Pituitary tumors



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### Treatments

- Surgery
- ETTH
- Transcranial hypophysectomy
- Radiation therapy
- Medications



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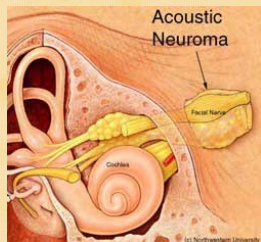
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### Primary tumors of the brain

- Acoustic Neuromas



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### Secondary tumors of the brain



- Most common origins
  - Lungs
  - Breast
  - Colon
  - Pancreas
  - Kidney
- General symptoms
  - Headaches
  - Nausea and vomiting
  - Visual symptoms
  - Seizures
  - changes in mentation or personality
  - Papilledema – swelling of the optic disc

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### Secondary tumors of the brain



- Diagnosis
  - Physical Exam
  - Neurologic Exam
  - CT scan
  - MRI
  - Angiogram
  - Spinal tap
  - Myelogram
  - Biopsy
    - Needle
    - Stereotactic

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### Secondary tumors of the brain



- Interventions
  - Nonsurgical Management
    - Radiation
    - Drug Therapy
    - Chemotherapy
    - Radiosurgery
      - Gamma Knife
  - Surgical Management

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- MS  
<http://www.youtube.com/watch?v=DvaJ9py-vOc&NR=1>
- MG
  - [http://www.youtube.com/watch?v=jNRaVnkQGs4&feature=Playlist&p=9C0081BB02C2F93D&playnext=1&playnext\\_from=PL&index=30](http://www.youtube.com/watch?v=jNRaVnkQGs4&feature=Playlist&p=9C0081BB02C2F93D&playnext=1&playnext_from=PL&index=30)

ALS

[http://www.youtube.com/watch?v=W\\_0TcqNtKVI](http://www.youtube.com/watch?v=W_0TcqNtKVI)

<http://www.youtube.com/watch?v=fKzZUnH7Wuk>

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