CHAPTER 28
Problem Solving: Part IV
Diseases of the Cerebral Hemispheres

LESION DIAGRAMS: For each of the following diagrams indicate the structures involved by the cross hatched lesion. For each structure involved, indicate the expected clinical symptoms or signs with appropriate lateralization. Where appropriate, indicate the vascular territory involved or the designation of the most likely type of pathology. (Diagrams to be inserted).

Figure 28-1.

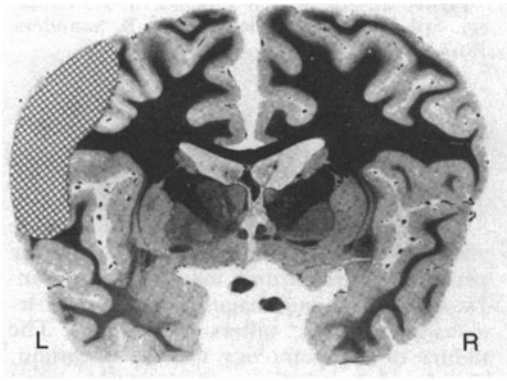

Figure 28-2.

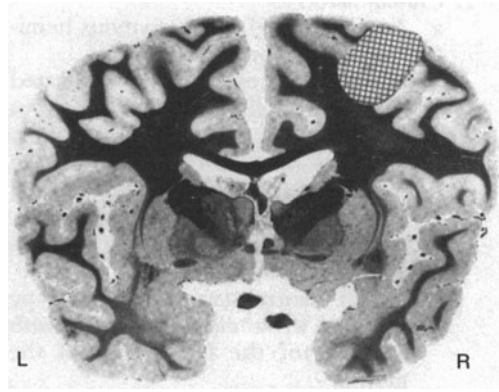

Figure 28-3.

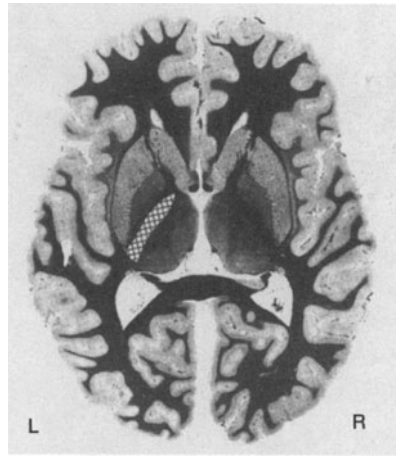

Figure 28-4.

Figure 28-5.

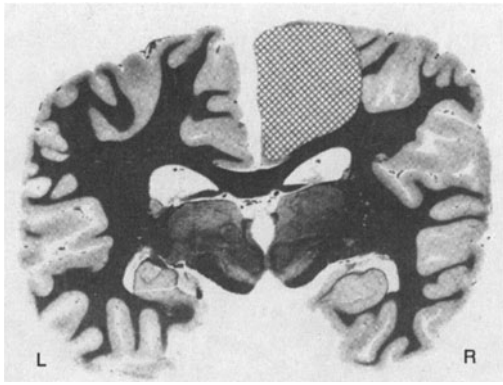

Figure 28-6.

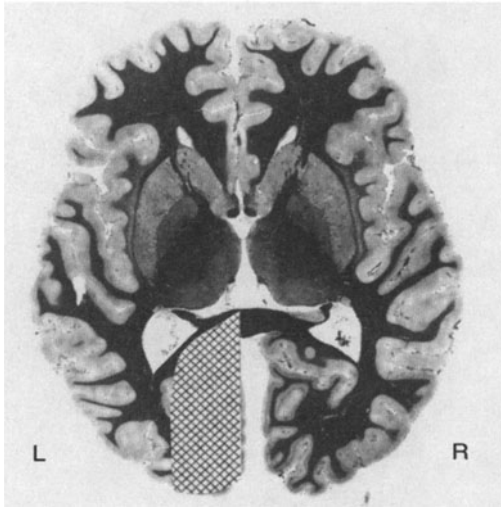

Figure 28-7.

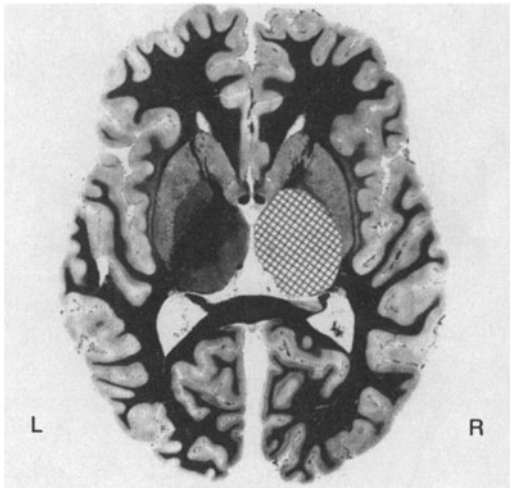

Figure 28-8

Figure 28-9A

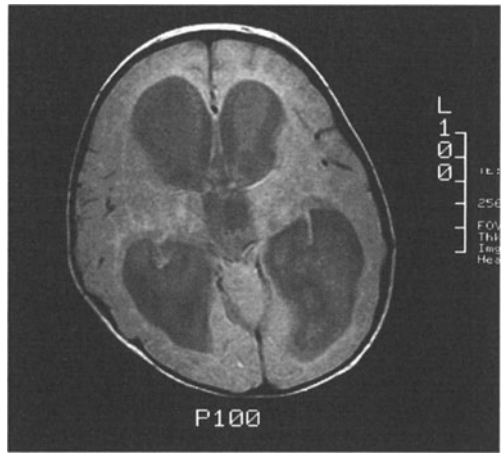

Figure 28-9B

Figure 28-9C

CASE HISTORY PROBLEM SOLVING PART IV: CEREBRAL HEMISPHERES

These cases represent the gamut of disease affecting the cerebral hemispheres. The pathology represented may be tumor, infarction or hemorrhage. Some of the lesions are intrinsic; others are extrinsic. The nature of the pathology may be uncertain; the location of the pathology, however, should be evident to you.

Diagram each lesion. If the etiology appears to be vascular, attempt to identify the vessel involved.

Case 28-1: This 53-year-old, right-handed, white housewife had experienced intermittent right-sided headaches and retro-orbital pain for approximately 2 months. Five days prior to admission to the neurological center, the patient awoke from a sound sleep at 7:00 a.m. complaining of the most severe headache she had ever experience. "It felt like something bursting inside my head". This was accompanied by nausea and vomiting. Patient was admitted to her local community hospital. Two days prior to transfer to the neurological center the patient reported ptosis and diplopia. Severe headaches persisted, requiring the administration of meperidine hydrochloride (Demerol hydrochloride).

NEUROLOGIC EXAMINATION

The patient was a well-developed white female with blood pressure of 160/90. Cardiac status was normal.

1. *Mental status:* The patient was lethargic but easily aroused. When aroused, she then responded with alert, appropriate responses.
2. *Cranial nerves:*

a. The right pupil was dilated and sluggish in response to direct or consensual stimulation with light. The left pupil was of normal size. Ptosis of the right lid was present. There was partial weakness of right medial rectus, inferior rectus, and inferior oblique and superior rectus.

b. All other cranial nerves were intact.

3. *Motor system:*

There was minor weakness of the left arm and left leg with an increase in tone in the left arm and left leg (minor spasticity).

4. *Reflexes:*

a. Deep tendon reflexes were everywhere increased on the left side.

b. Plantar responses were extensor bilaterally but much more prominently so on the left.

5. *Sensory system:* No definite abnormalities were present.
6. *Head & Neck:*

a. There was resistance to flexion at neck.

b. No bruits were present over neck, orbits and head.

QUESTION:

What is the most likely clinical diagnosis at this point?

LABORATORY DATA:

1. *Skull and chest X-rays* were normal.
2. *Lumbar puncture:*

a. Opening pressure was 300 mm of CSF; closing pressure was 150 mm of CSF.

b. The fluid was grossly bloody. First tube demonstrated 55,000 red blood cells per cubic millimeter and 60 white blood cells per cubic millimeter. Third tube demonstrated 72,000 red blood cells per cubic millimeter.

c. The CSF protein was 84 mg/100 ml. The spinal fluid sugar was 60-mg/100 ml with a simultaneous blood sugar of 90-mg/100 ml.

HOSPITAL COURSE:

The patient remained relatively stable and alert until definitive procedures were performed.

QUESTIONS:

1. Based on the symptoms and signs in this case what is your diagnosis?
2. How do you interpret the results of the lumbar puncture?
3. If you had seen this patient in the emergency room directly at the onset of symptoms, which study would you have obtained? Would the lumbar puncture have been your initial study?

4. Where is the basic pathologic lesion located? Be specific.
5. Indicate the single most definitive diagnostic procedure that should be performed in this case prior to definitive therapy. When should this be performed?
6. Define definitive therapy in this case. When should this therapeutic procedure be performed?
7. Discuss the complications of this disorder.
8. Discuss prognosis of this clinical problem.

Case 28-2: This 56-year-old right-handed white male truck driver, on the day prior to admission, had the sudden onset of a transient monocular blindness involving the right eye. On the morning of admission the patient developed a weak, numb and useless left arm. These symptoms had shown considerable improvement by the time of his initial admission that afternoon.

PAST HISTORY:

1. The patient smoked two packs of cigarettes/day.
2. Occasional symptoms of intermittent claudication had been present.

PHYSICAL EXAMINATION:

1. Blood pressure was 150/80; pulse was 100 and regular.
2. Bruits were present over the right carotid, left subclavian, and both femoral arteries.
3. Posterior tibial pulses were absent.
4. There were no cardiac murmurs.

NEUROLOGIC EXAMINATION:

1. *Mental status:* Intact.
2. *Cranial nerves:* Intact.
3. *Motor system:* There was minor weakness and incoordination of the left hand.
4. *Reflexes:* Intact.
5. *Sensory system:* Intact.

SUBSEQUENT COURSE:

Six days later, the patient had a focal motor seizure involving his left arm. Twenty-three days later, the patient experienced another transient episode of weakness and numbness involving the left arm. Approximately four weeks later definitive diagnostic studies were performed.

QUESTIONS:

1. What is the most likely diagnosis?
2. Outline your approach to effective management.
3. Which non-invasive studies would you obtain and when would you obtain those studies?
4. You have obtained these studies and the results confirm your clinical diagnosis. Which physician would you now consult?
5. Which surgical procedure would now be appropriate?
6. Indicate the classical definition of a transient ischemic attack (TIA). Now indicate the more modern operational definition that takes account of new developments in the acute treatment of ischemic stroke. What is the definition of the term reversible ischemic neurological deficit (RIND)? What is the definition of the term completed stroke? What is the meaning of the term stroke in evolution?

Case 28-3: This 32-year-old white male was admitted to the hospital because of severe headache, confusion and aphasia. The patient had been in good health except for frequent headaches for the 10 years prior to admission. Six days prior to admission at approximately 2:00 p.m., the patient returned from a hunting trip, and went into the bathroom. His wife heard a noise, a thud, as though the patient had fallen to the floor. She found the patient lying on the floor, moaning and groaning, as if in pain. The patient showed evidence of significant confusion; he was, however, moving all his extremities and she surmised that he had no actual paralysis. The patient was admitted to his local hospital, where a lumbar puncture demonstrated the presence of blood in the spinal fluid. Over the next few days, the patient complained more and more of

headaches, became more and more agitated, and increasingly restless. He was subsequently transferred to a neurosurgical center.

GENERAL PHYSICAL EXAMINATION:

There were no remarkable features. Blood pressure was 125/70.

NEUROLOGIC EXAMINATION:

1. *Mental status:*

a. Patient was oriented for time and place

b. The patient was sleepy but agitated when roused from sleep

c. The patient had difficulty with word selection and would not cooperate in repeating simple words or identifying simple objects

d. The patient often spoke words that were unrelated to questions he had been asked or to the conversation.

2. *Cranial nerves:*

a. A minor right visual field defect was suggested

b. A right central facial weakness was present

3. *Motor system:* A minor weakness of the right upper extremity was present. When outstretched, the right hand rapidly fell downward.

4. *Reflexes:*

a. Deep tendon reflexes were symmetric.

b. Plantar response was extensor on the right, flexor on the left

5. *Sensory system:* All modalities were intact.

6. *Neck:* Marked nuchal rigidity was present. The patient complained of severe pain on neck motion.

HOSPITAL COURSE:

Over the next four hospital days, the patient developed increasing expressive aphasia, increasing right central facial weakness and increasing weakness of right upper extremity. The degree of right upper extremity weakness was now marked, with total paresis of movements of right hand and partial paresis of movement at the shoulder and elbow. The patient continued drowsy and intermittently agitated. Some observers felt that the patient now had a slightly larger pupil on the left side than on the right. Specific diagnostic and therapeutic procedures were performed.

QUESTIONS:

1. Indicate the original pathology and location of pathology.
2. Indicate the complications of this pathology that occurred prior to surgery and within 2 weeks of the initial episode.
3. Indicate the specific diagnostic procedures that were performed to localize the lesion prior to surgery.
4. What primary indications for surgery were present in this case?

When should surgery be undertaken? Which surgical procedure should be performed?

SUBSEQUENT COURSE:

The patient then underwent a surgical procedure 12 days after the initial episode. Postoperatively the patient had a marked right hemiplegia, with increase in the degree of aphasia. This was a mixed type of aphasia; when the patient did speak, he used jargon and he also appeared unable to understand language.

Eleven days postoperatively, the patient developed fever of 104° and a recurrence of nuchal rigidity. Spinal fluid examination now indicated 1200 white blood cells (92% polymorphonuclear); spinal fluid sugar was 50-mg/100 ml with blood sugar of 130-mg/100 ml. Specific treatment was administered.

QUESTIONS:

5. Indicate the diagnosis that explains this complication of fever and nuchal rigidity. Be as specific as possible in terms of the agent producing fever.
6. How would you treat this complication?

SUBSEQUENT COURSE

At the time of discharge, the patient was alert and oriented, but had a significant expressive aphasia and a moderate hemiparesis (arm

greater than leg) in addition to a right central facial weakness. Four months after the initial episode, the patient had a generalized convulsive seizure. Two to three weeks later, he had a focal seizure characterized by clonic movements of right upper extremity. One year after the initial episode, patient had focal seizures consisting of clonic contraction of the right face accompanied by arrest of speech. These seizures were preceded by a sensation of tightness in the face. Twenty-one months later, the patient was reported as having frequent focal seizures characterized by numbness of the right hand and face, followed by transient paralysis of the right lower extremity. Follow-up 33 months after that indicated several minor seizures every day involving numbness of the right hand and perioral area of face.

Neurologic examination almost 6 years after the initial episode, indicated the following significant residual deficits:

1. Hesitancy in speech with mild expressive aphasia and a more significant nominal aphasia. In addition, left right confusion was present.
2. Right upper quadrantanopia.
3. Mild right central facial weakness.
4. Minimal weakness, right upper extremity in a right-handed man.
5. Deep tendon reflexes were increased on the right side with a right extensor plantar response.

The patient was treated with specific medications resulting in a reduction of the frequency of his focal seizures.

QUESTIONS:

7. In the years following surgery, the patient had focal sensory and motor seizures involving hand and face. Indicate the medications to be used in the treatment of these episodes.
8. The patient also had secondarily generalized seizures in the post-operative years. Indicate the recommended medical treatment.

Case 28-4 (patient of Dr. George Robertson and Dr. Huntington Porter): This 73 year old right handed white businessman from Maine was involved in an auto accident approximately 10 days prior to admission, in which his auto was struck by a heavy logging truck. The patient walked away from his car but was dazed and amnestic for the events of the next 15 minutes. This condition however then cleared. At the emergency room of his local hospital skull x-rays were normal and the patient was found to have no significant injuries except for ecchymosis about the right eye and knee. The patient subsequently however did note a steady bilateral frontal temporal headache, which would on occasion awaken him from sleep and which gradually, became worse. Five days prior to admission, some fogginess in thinking was noted and the patient's family reported some personality change. The patient reported some weakness of both legs in getting out of a bathtub perhaps somewhat greater on the right side. Two days prior to admission, the patient was noted to be sleeping longer. On the day of admission, the patient and his physician noted a more persistent left sided weakness. The patient was admitted to the neurology service.

PAST HISTORY:

Hyperthyroidism had been under treatment for three years. Three years prior to admission, the patient had been evaluated for a minor episode of dizziness, which had occurred in relation to bradycardia and a transient fall in blood pressure. The neurological consultant at that time had noted a totally normal examination .The right carotid pulse however was noted to be decreased compared to the left.

NEUROLOGIC EXAMINATION
(day of admission):

1. *Mental status:* The patient was alert, well oriented in all three spheres with an excellent knowledge of current events. He could remember 4/5 objects in 5 minutes. His digit span was 8 forward and 5 in reverse.
2. *Cranial nerves:* All were intact except for a questionable left central facial weakness.

3. *Motor system:*

a. There was a significant decrease in strength predominantly distal in the left leg. To a lesser degree, a mild weakness of the left upper extremity was present.

b. The patient dragged the left leg in walking.

4. *Reflexes:* Deep tendon stretch reflexes were increased bilaterally in a symmetrical manner. Plantar responses were flexor.
5. *Sensory system:* All modalities were intact
6. *Carotids*: The right carotid pulse was decreased as previously but no bruits were present.

QUESTIONS:

1. It is an often quoted axiom in neurology that 75% of neurological diagnosis is based on the history. This patient was seen before the era of the CT scan and yet the most likely diagnosis was clear. What is your diagnosis as regards location of the lesion and the nature of the pathology? Be specific.
2. Is the apparent decrease on palpation of the right carotid pulse of any significance?
3. How would you evaluate this patient at this point in time utilizing current technology?
4. An EEG was performed demonstrating focal 3-5 Hz slow wave activity. Predict the location of that abnormality.
5. The patient had some transient symptoms after the initial trauma; he was dazed and amnestic for a short period of time. What term is applied to those symptoms?

HOSPITAL COURSE:

A progressive change in neurological status was soon evident. Twenty-four hours after admission, the patient was found to be intermittently lethargic, if roused, he was able to answer questions but it was evident that he was disoriented for time. In addition deep tendon reflexes were now increased on the left side, and a left Babinski sign was now present. Later that day, increasing weakness of the left arm and leg developed. The patient was unable to raise the arm at the shoulder or the leg at the hip. The patient became increasingly more lethargic. Thirty hours after admission, the right pupil was found to be sluggish in response to light. The pupils which had been previously symmetrical were now asymmetrical, the right measured 3.5 mm, the left 2.5 mm. An emergency carotid arteriogram was performed. Based on that study, a surgical procedure was immediately undertaken by the neurosurgeon, Dr. Bertram Selverstone.

The patient made a rapid recovery. Examination, 10 hours after surgery, demonstrated an alert and well-oriented patient who was able to lift his leg off the bed and had only a minimal weakness in the left upper extremity. Pupils were now equal. The deep tendon reflexes were now symmetrical and the plantar responses were now flexor. At the time of hospital discharge, 13 days following surgery, the neurological examination was now normal.

QUESTIONS:

6. What change if any would you now make in your diagnosis?
7. Which complication of the original disorder has now occurred?
8. How would you manage that complication?
9. What did the carotid arteriogram demonstrate?
10. Which diagnostic procedure would you perform today? Describe the expected results of that study?
11. Which surgical procedure was performed? Describe the most likely surgical findings.

Case 28-5: This 62-year-old white right-handed male research associate, 18 months prior to admission, had the onset of focal motor seizures, which would begin in the left side of the tongue, and then spread to the face, shoulder, arm, and hand.

At the same time, he would note spread of tingling paraesthesias over the same parts of the left side of the tongue, face, and hand. Neurologic examination at that time was not remarkable.

Anti-convulsant medication produced a signif-

icant reduction in focal seizures. However, 1 month prior to admission, the patient had a focal seizure that was followed by transient residual weakness of left face and hand.

Three weeks prior to admission, a minor degree of weakness of the left hand developed. This progressed in degree and also began to involve the left leg and left side of face, as well.

Two weeks prior to admission, right-sided headache developed.

NEUROLOGIC EXAMINATION:

1. *Mental Status:* Intact
2. *Cranial Nerves:* Intact except for a severe left central facial weakness.
3. *Motor System:*

a. Weakness of the left hand was present, with thumb opposition most severely involved. Minor weakness was present in the left lower extremity.

b. In walking, the patient dragged the left lower extremity to a minor degree.

4. *Reflexes:*

a. Deep tendon reflexes were increased on the left.

b. Instinctive grasp reflex was present on the left.

5. *Sensory System:*

a. Graphesthesia was decreased over left face and hand.

b. Tactile localization and two-point discrimination were decreased over the left hand.

QUESTIONS:

1. Where is the lesion? Be specific.
2. In terms of the pathological diagnosis, list the three most likely possibilities.
3. Indicate the most definitive laboratory test for establishing the diagnosis and the expected findings.
4. Indicate the other studies that would be useful and the expected findings.
5. Indicate a plan of management for each of the possible diagnoses.

Case 28-6: This 58-year-old white right-handed female with a past history of hypertension and angina pectoris had the acute onset of a right-sided weakness while at work. She had no change in consciousness, no sensory symptoms, no impairment of language function and no headache. She had experienced no vertigo, no diplopia, no vomiting and no visual symptoms. She had no complaints of chest pain or of shortness of breath.

PHYSICAL EXAMINATION:

Blood pressure was elevated to 180/120

NEUROLOGIC EXAM:

1. *Mental status:* This was entirely intact, with no evidence of aphasia.
2. Cranial nerves: A marked right central facial weakness was present with minimal deviation of the tongue to the right.
3. *Motor system:* A dense right hemiparesis was present.
4. *Reflexes:*

a. Deep tendon reflexes were increased on the right.

b. The plantar response was extensor on the right (sign of Babinski).

5. *Sensory system:* All modalities were intact.

LABORATORY DATA:

Assume the EKG was not relevant and the cerebrospinal fluid studies were normal.

HOSPITAL COURSE:

The patient was stable and alert during the next 2 days and at her request, was transferred to her local hospital.

QUESTIONS:

1. What is the most likely diagnosis? How would you confirm the diagnosis?
2. *Contrast Case #1:* Assume that this patient presented with a 1-month history of 5 transient episodes of numbness and weakness of the right hand. In addition, the patient had experienced two or three episodes of sudden transient blindness of the left eye. Then on the morning of admission, she awoke with numbness and weakness of the right hand and arm, with increased deep stretch

reflexes at the right biceps, triceps, patellar and Achilles tendons and a right sign of Babinski on plantar stimulation. You also find errors in position sense and in graphesthesia involving the right fingers and hand. The patient has moderate but incomplete recovery over the next week. At no time does the patient complain of headache. What is your conclusion as to the most likely diagnosis? How do you establish the diagnosis and manage the case?

3. *Contrast Case #2:* Assume that this patient has a history of rheumatic heart disease with mitral stenosis and atrial fibrillation. The patient suddenly, while at work at 11:00 a.m., stopped speaking in mid-sentence fall to the floor with a focal seizure involving the right side, with subsequent generalization. On recovery from the post-ictal confusion, the patient is found to manifest:

1. *Mental status:* Patient appears alert but has a dense global aphasia.
2. *Cranial nerves:*
   a. A dense right homonymous hemianopsia.
   b. Deviation of head and eyes to the left.
   c. A dense right central facial weakness.
3. *Motor system:* A dense flaccid right hemiparesis
4. *Reflexes:*
   a. A depression of the deep tendon reflexes at the right arm and right leg.
   b. A right Babinski sign.
5. *Sensory system:* Absence of all sensory modalities on the right side.

Assume that the initial CT scan at one hour after onset of symptoms is interpreted as normal and that the cerebrospinal fluid is clear with no cells.

QUESTIONS:

4. After seeing this patient at 12 noon in the emergency room, what conclusions do you reach as to diagnosis and what course of action do you recommend?
5. Unfortunately, the patient is found to have contraindications to the therapy, which you recommended. An alternate course of action is followed. No significant change occurred over the next 10 days except for transient lethargy and the minimal return of deep tendon reflexes. Discuss these issues.
6. Why were the deep tendon reflexes acutely depressed on the side of the hemiparesis?

Case 28-7: This 14-year-old right-handed white female was admitted with a chief complaint of "draining left ear" and left frontal headache. Approximately 4 weeks prior to admission, the patient had the onset of progressive pain in the left ear accompanied by fever up to 104 degrees F. Four days later a discharge from the left ear developed. Three days later a total left sided facial paralysis developed. The patient was evaluated at the Massachusetts Eye and Ear infirmary where drainage of the left middle ear was performed yielding purulent material. Culture of this drainage revealed Staphylococcus aureus .the patient was treated with antibiotics with a complete resolution of symptoms. However one week prior to admission, the patient developed a constant severe left frontal headache with swelling about the left eye. There was now a recurrence of discharge of a thick green purulent material from the left ear. Two days prior to admission, the patient developed confusion and delirium. She was also noted to have marked difficulties in language function and in calculations.

GENERAL PHYSICAL EXAMINATION:

Temperature was normal at 98.6 degrees F. The patient appeared chronically ill. Gauze soaked with purulent drainage was present in the left external auditory canal.

NEUROLOGIC EXAMINATION:

1. *Mental status:*

a. The patient was oriented for the day and year but not for the month. There was considerable confusion as to past and recent events.

b. She had a marked deficit in naming objects. Even when the name of the object was

supplied in a multiple-choice scenario, she was unable to recognize the correct name. Paraphrasing was evident. She was able to carry out spoken commands. Simple writing and spelling were intact but reading of isolated words was defective. She had no left-right confusion. She was able to identify and to point out the various parts of her body with the exception of the thumb.

c. At times, the patient acted in a "silly" manner and would giggle inappropriately in response to questions

2. *Cranial nerves:*

a. Fundoscopy demonstrated papilledema with elevation of the disk on the right. A recent hemorrhage was present just below the disk of the right eye.

b. A minor peripheral left facial weakness was present, most prominent in frontalis muscle.

c. Hearing was decreased on the left.

3. *Motor system:* Strength, gait and cerebellar functions were intact.
4. *Reflexes:* Deep tendon reflexes were intact. The right plantar response was equivocal; the left was flexor.
5. Sensory system: All modalities were intact.

QUESTIONS:

1. What is your diagnosis as regards localization and pathology?
2. What laboratory studies would you request?
3. Would you perform a lumbar puncture on this patient? Justify your answer.
4. What is your explanation for the left peripheral facial weakness?

LABORATORY DATA:

1. White blood count and differential were normal.
2. Skull and mastoid X-rays indicated an acute mastoiditis on the left with an increased density throughout the left mastoid extending throughout the medial aspect of the petrous ridge.
3. EEG was abnormal because of focal and hemispheric 2 -3 Hz slow wave activity.

QUESTIONS:

5. Do you wish to alter your diagnosis or diagnostic approach?
6. Outline your approach to therapy. Which categories of physicians would you consult?

SUBSEQUENT COURSE:

Dr. Daniel Miller of the ENT service performed a left mastoidectomy and epidural exploration. Pus was present in the softened mastoid cells. Purulent granulation tissue extended into the adjacent epidural space. Cultures were obtained and antibiotics were re instituted. Over the next 4 day improvement occurred in the clinical and EEG findings but then findings worsened. Dr. Sam Brendler of the neurosurgical service then performed more definitive procedures. Following surgery, the patient had a nominal aphasia and a noncongruous right visual field deficit with some sparing of the inferior quadrant. The patient had a single generalized convulsive seizure, 6 years after surgery and anti convulsants were instituted. At that point in time, the nominal aphasia had shown marked improvement; she hesitated and stumbled over words. The right visual field defect was unchanged.

QUESTIONS:

7. Which procedures were performed by the neurosurgeon?
8. Explain the visual field deficits.

Case 28- 8: This 29 year old right-handed single white female schoolteacher was about to testify in court in the late afternoon on the day of admission, when she suddenly dropped to the floor. She began to babble but did not lose consciousness. She was taken to the emergency room of the local hospital at 4:15 p.m., where she was initially described as "confused, disoriented, unresponsive to questions, and not verbalizing". At 7:50 p.m., she was subsequently described as agitated with garbled speech. Later that evening, she was transferred to this hospital.

PAST HISTORY:

Patient was receiving birth control pills.

GENERAL PHYSICAL EXAMINATION:

1. Blood pressure 120/70.
   Pulse 90 and regular
2. No heart murmurs were present.
3. No bruits were present over the carotid arteries and carotid pulses were strong.
4. Neck was supple with no nuchal rigidity.

NEUROLOGICAL EXAMINATION:

1. *Mental Status:* The patient was anxious and alert with intermittent agitation. She appeared to understand but only intermittently followed verbal commands. She used only a few words. She attempted to name objects but produced only paraphasia and jargon speech.
2. *Cranial Nerves:*

   a. A right homonymous hemianopsia was present

   b. There was decreased pain and touch over the right side of the face.

   c. A right central facial weakness was present.
3. *Motor System:* A dense right hemiplegia was present.
4. *Reflexes:*

   a. Deep tendon stretch reflexes were increased in the right upper and lower extremities with clonus at the right patellar and Achilles tendon reflexes.

   b. The plantar response was extensor on right and flexor on left.
5. *Sensory System:* An apparent right hemisensory deficit was present to all modalities.

LABORATORY DATA:

1. CSF pressure was normal at 160, with clear fluid (cells = 0, protein =11mg%, sugar = 75mg% with blood sugar of 104).
2. Skull X-rays were normal.
3. EKG - normal.

HOSPITAL COURSE:

By 48 hours after onset, speech had shown some improvement. The patient was using more recognizable words. Occasional appropriate two-word phrases were employed. The dense right hemiparesis had persisted but the right homonymous field cut and the sensory pain deficit were no longer present. By 72 hours after onset, slight movement was present in right lower extremity. However at 5 days after onset, the patient had the sudden development of a cold, pulseless left arm.

QUESTIONS

1. Localize the lesion.
2. Characterize the speech deficit at various stages. Did this patient have a dysarthria or aphasia? If aphasia was present was this primarily a fluent or non fluent.
3. Discuss the use of the term "confusion". Discuss the use of the term "babbling".
4. Discuss the pathology and likely etiology and pathophysiology. If vascular indicate the vascular territory.
5. What other information would you wish to have?
6. This patient was seen before the era of the CT scan. Assume that this patient had arrived in the emergency room today 30 minutes after the acute events, and you are the emergency room physician or the consulting neurologist how would you manage this problem.