


The background image shows two EMTs in an ambulance. One EMT on the left is wearing a dark uniform with a stethoscope and is looking down at a patient. The other EMT on the right is wearing glasses and a dark uniform, also looking down at the patient. The patient is lying on a stretcher, covered with a light blue blanket. The ambulance interior has windows with the word "BRADY" visible on the right window. The overall scene is brightly lit, likely from the ambulance's interior lights.

TRANSITION SERIES

TOPICS FOR THE EMT


TOPIC 16

**Neurology: Altered
Mental Status**



Objectives

- Review the frequency with which altered mental status occurs.
- Understand the necessary components needed for consciousness and orientation.



Objectives

- Discuss how metabolic or structural abnormalities can affect mental status.
- Review current treatment standards for patients with an altered mental status.



Introduction

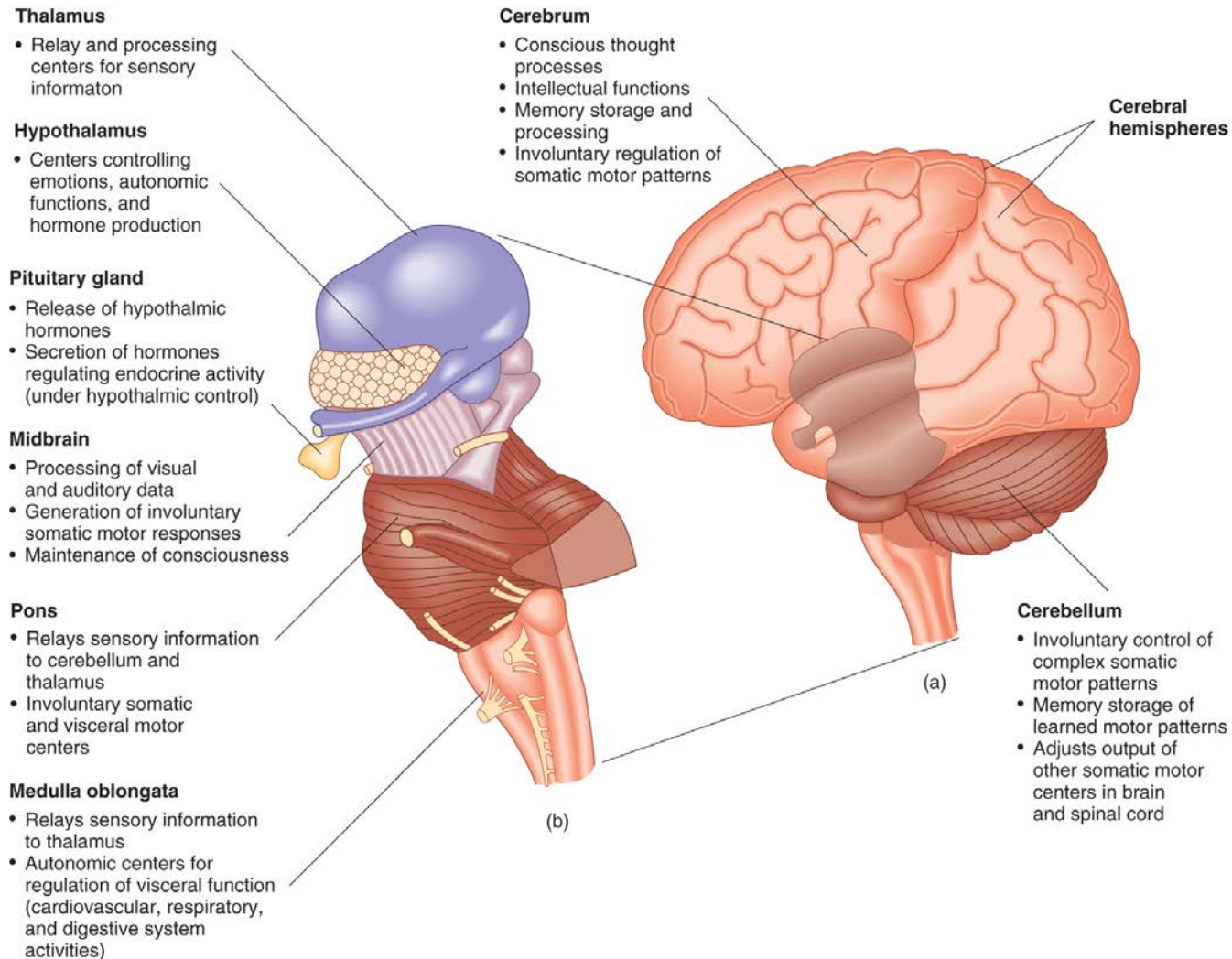
- Changes to mental status can occur with almost any illness or injury.
- Equally, alterations in mental status can occur in any age group.
- One way to help identify a cause for altered mental status is to determine if the disturbance is a metabolic derangement or structural abnormality.



Physiology

- Structure of the brain
 - Cerebral cortex
 - Cerebrum
 - Cerebellum
 - Brainstem

Figure 16-1 The human brain: (a) Superficial view of the brain. (b) Components of the brainstem.





Physiology

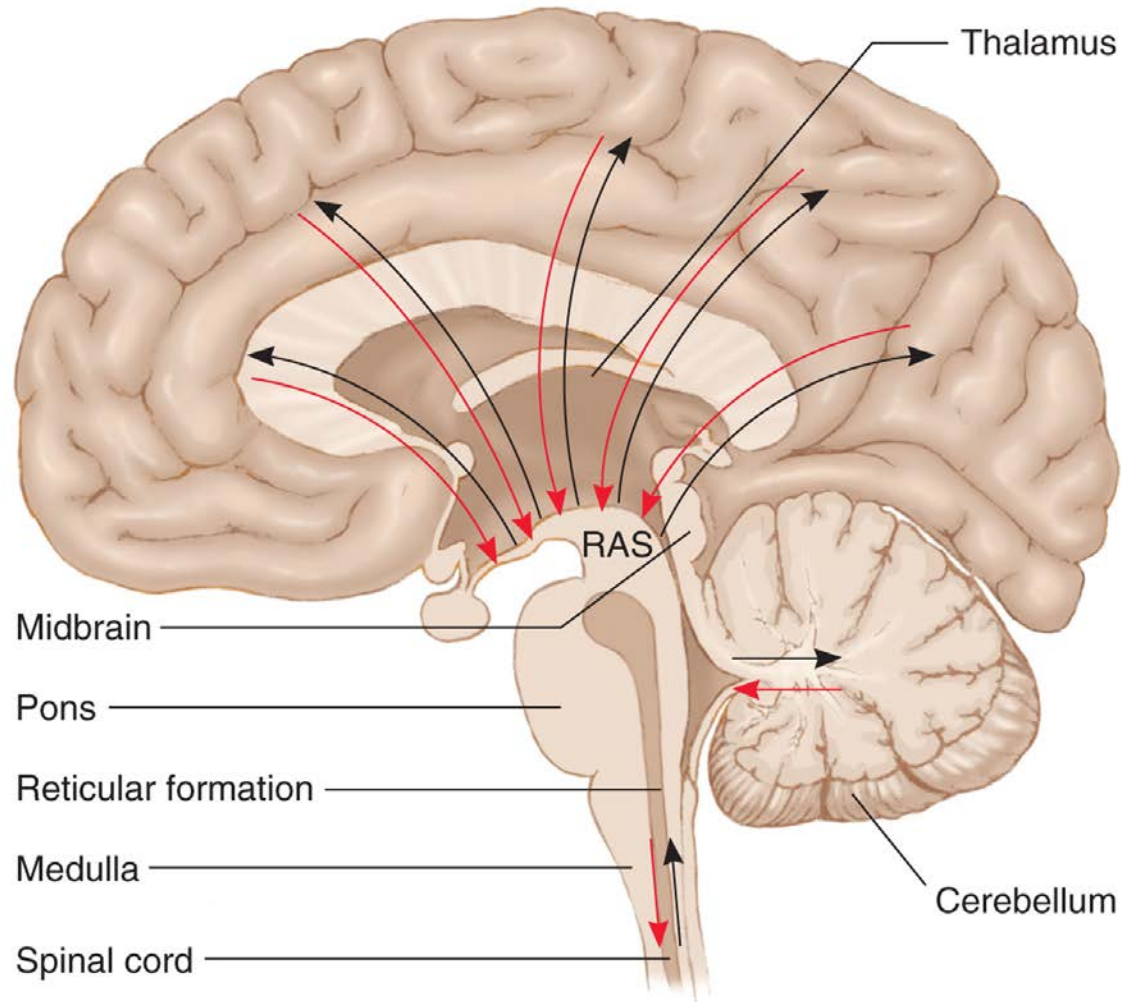
- In order to be conscious and orientated
 - Function of three structures
 - Reticular activating system
 - Cerebral hemispheres (2)




Physiology

- In order to be conscious but now disoriented
 - Function of two structures
 - Reticular activating system
 - Cerebral hemispheres (1)

Figure 16-2 The reticular activating system (RAS) sends and receives messages from various parts of the brain.

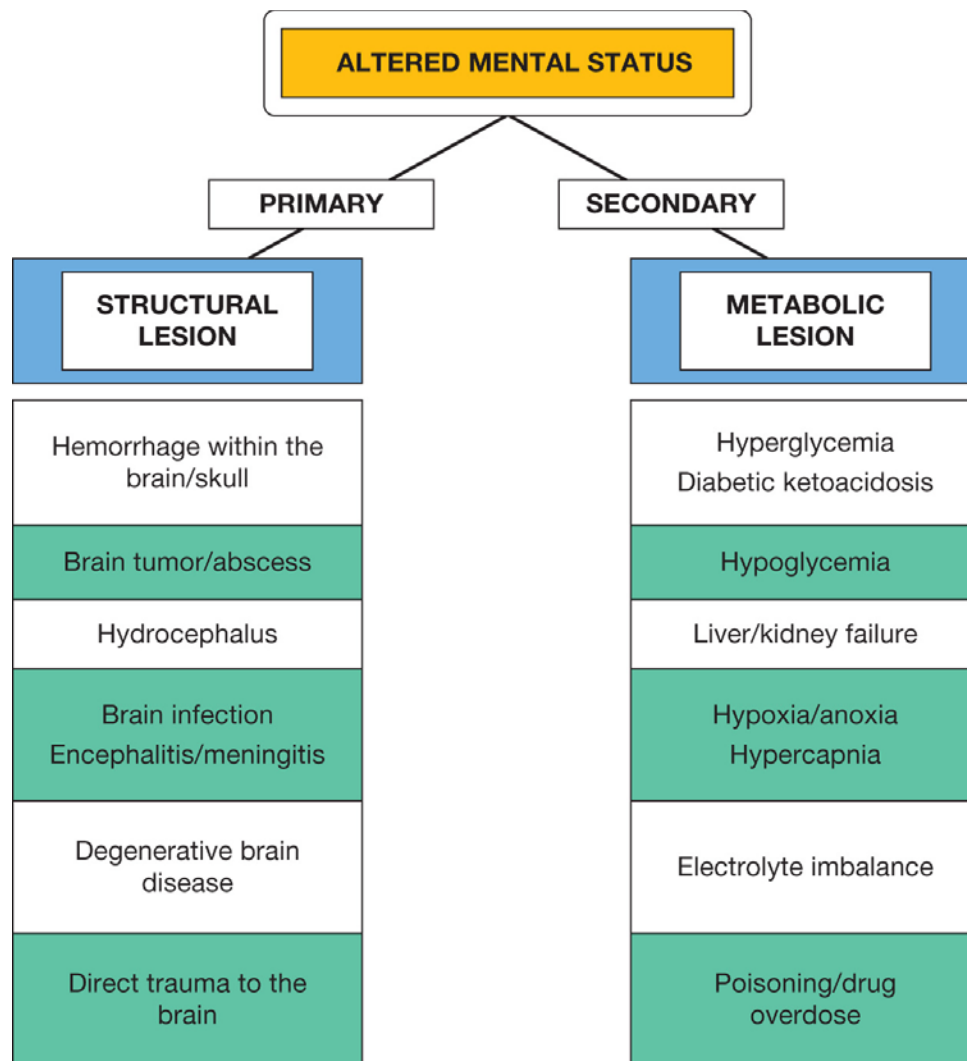




Pathophysiology

- Damage to RAS or hemisphere(s) can change consciousness and orientation
 - Structural (primary) disturbances refer to space-occupying lesions that affect ICP and damage RAS
 - Metabolic (secondary) disturbances refer to blood chemistry changes that affect brain tissue globally

Figure 16-3 Structural and metabolic lesions as causes of altered mental status.



Pathophysiology

- If a patient is unresponsive
 - Structural change disrupted RAS
 - Findings of asymmetry (pupils, muscles, etc.)
 - Metabolic change disrupted hemispheres
 - Findings of symmetry (pupils, muscles, etc.)

Clinical Findings

- Structural or primary lesions
 - Findings of asymmetry
 - AMS or unresponsive
 - History consistent with lesion type
 - Pupillary changes
 - Motor changes (unequal grips)
 - Unilateral facial droop
 - Rising systolic pressure and slowing heart rate

Clinical Findings


- Metabolic or secondary lesions
 - Findings of symmetry
 - AMS or unresponsive
 - History consistent with lesion type
 - Symmetrical pupil findings
 - Equal motor responses
 - Vitals consistent with metabolic disturbance

Emergency Medical Care

- Consider spinal precautions
- Support lost function
 - Airway, breathing, circulation
- If structural lesion suspected
 - Contact ALS and consider ventilations with med consult
 - Primary concern is ICP problems


Emergency Medical Care

- If metabolic lesion suspected
 - Treat underlying condition causing change
 - BGL, hypoxia, hypercapnea, toxidrome, MI, hypoperfusion, etc.



Case Study

You are called in the afternoon to the local high school where a female is found unresponsive in the bathroom.




Case Study

- Scene Size-Up
 - Young female, 17 or 18 years old
 - No sign of struggle or trauma
 - Found in bathroom, lying supine


Case Study

- Primary Assessment Findings
 - Patient unresponsive to verbal stimuli
 - Patient responds with bilateral movement of arms (nonpurposeful) with noxious stimuli
 - Slight inspiratory snoring with each breath
 - Ventilations are slow and shallow
 - Pulse is a normal rate, but peripheral perfusion is weak



Case Study

- Is this patient a high or low priority? Why?
- Does this patient possibly have spinal injuries as well?
- Other than mental status, what other life threat(s) exist?
- Does the primary survey suggest a structural or metabolic disturbance?



Case Study


- Medical History
 - Immediately unknown, but school secretary is retrieving the student file from the office
- Medications
 - Diet pill bottle found in purse, contains multiple different pills
- Allergies
 - Unknown at this time

Case Study

- Pertinent Secondary Assessment Findings
 - Pupils pinpoint and nonreactive to light
 - Patient has intact gag reflex
 - Lungs clear, but breathing is slowing
 - Pulse oximeter reads 88% on room air


Case Study

- Pertinent Secondary Assessment Findings
 - Muscle tone is noted to all extremities
 - Old needle tracks on left arm
 - Skin cool and dry, color normal
 - B/P 92/64, Pulse 62, Respirations 4



Case Study

- What is your final determination regarding the type of lesion?
- Discuss the relationship between the lesion type and the patient findings.
- What clue would the diet pill bottle found in her purse provide?




Case Study

- How does the respiratory rate fit into the clinical picture of the disturbance?
- Why would the heart rate not be tachycardic given the blood pressure?
- Why is the breathing slow given the fact she is not saturating well?


Case Study

- Care provided:
 - Spinal precautions taken
 - Airway maintained with manual technique
 - PPV with high-flow oxygen provided
 - Determination of BGL level
 - ALS intercept initiated prior to departure
 - Patient packaged and transported to ambulance




Case Study

- Explain how the following interventions may help improve the patient's condition:
 - Oxygen administration
 - Positive pressure ventilation
 - Keeping the patient lying supine



Case Study

- If the patient improves, what would be the expected findings with:
 - Vital signs
 - Pulse oximeter
 - Breath sounds
 - Mental status



Case Study

- What would be the likely assessment findings should the patient continue to deteriorate despite treatment?



Summary

- A lesion to either the RAS or cerebral hemisphere(s) is what directly causes an altered mental status.
- Unilateral lesion will not usually impair consciousness.



Summary

- Even the smallest lesion to the RAS can impair consciousness.
- Constantly attempt to differentiate between structural and metabolic causes by the findings of symmetry or asymmetry.