Puzzling Calls

by Julie Aberger

EMT Objectives

After reading this article, the EMT will be able to:

- understand the difference between "shockable" cardiac dysrhythmias;
- reinforce the importance of patient assessment in cardiac arrest victims;
- review the layers of the cerebral membranes and their functions;
- recognize the importance of on-scene clues;
- understand that medical conditions once common to children can occur in adults;
- recognize the uncommon signs and symptoms of stroke and understand the time constraints for the use of clot-busting drug therapy.

Introduction

How often do you return from an EMS call with little understanding of what you just encountered? The patient was ill or injured, or maybe even dead, and you have no idea why. Your medical training is limited to the bare-bone basics of emergency medicine.

Other times a call takes a turn and leaves you puzzled. What just happened? Why did the patient's condition worsen or improve? ***Did I make an error, do something inappropriate or even negligent, something outside my scope-of-practice?***

You're not alone. Sometimes emergency department nurses and physicians are just as baffled by the medical conditions of the patients we deliver. A lot more time for further assessment and testing in the hospital is needed to establish a diagnosis.

This scenario-based article will take a brief look at several calls that may leave you scratching your head. We will examine a few medical conditions that you commonly see as well as those you may never see. But all of them are complex and interesting!

After each scenario, a brief explanation, based on current EMS assessment and treatment, will be discussed. Occasionally we'll even examine the role of the medic and the physician. And if you want to know more, further topical resources are also available at the conclusion of each scenario.

Scenario #1: Overkill

The late summer afternoon is lining up nicely for you and your crew. The 12-hour tour is just about ended when you are dispatched for "fall victim, unresponsive." Grumbling about last-minute calls, your crew climbs into the ambulance and takes off, lights blazing and sirens blaring.

At a downtown office you find a middle-aged male lying supine on the floor. As you enter the door, you hear an AED intone: **"Clear the patient."** CPR is in progress; a coworker is doing compressions and the AED is just about to deliver a shock.

The victim had been working at his desk when he suddenly collapsed. His coworker, trained in CPR, detected no pulse and no breathing and began compressions and ventilations with a bag valve mask. A second coworker applied an AED; three shocks had already been given.

Kneeling next to the patient, you feel a faint carotid pulse. His skin is pale, cool and diaphoretic. Your immediate instinct is get the man to the hospital as quickly as possible. As you strap him on the stretcher, the coworker orders someone to reattach the AED whose wires have become loosened during the move.

"Stand clear" the AED immediately orders. Everyone follows the machine's command and steps back. ***Why is the AED shocking a beating heart?*** you think. ***Did I really detect a pulse?***

There are two separate systems in the heart: the mechanical and the electrical.

As your crew loads the stretcher into the ambulance you notice a rise and fall of the chest; the patient has snoring respirations. You insert a nasopharynx airway, and give him oxygen. As you yell his name, the patient briefly opens his eyes, then immediately becomes unresponsive again. But his color has improved.

The medics arrive before you leave

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for the hospital, and you give them a brief report. They immediately begin IV lines and push cardiac drugs. The patient's pulse is 172 bpm, his blood pressure 132/108. Within minutes you're at the hospital and the man is still alive. ***We moved fast, but did we do the right thing?***

Shocking Details

There are two separate systems in the heart: the mechanical and the electrical.

- Electrical impulses cause the heart to contract. The electrical function is displayed on an electrocardiogram, EKG or ECG.
- The mechanical system is the pump itself, the heart's muscular contractions. The heart contracts only after it has received electrical impulses. If the electrical system malfunctions, the pump fails.

The automatic electrical defibrillator (AED) ***only*** detects electrical activity of the heart. It does not know if the heart muscle is actually contracting or not. However, ***you*** know by assessing for a pulse. If the patient has pulses, the mechanical system is functioning.

The AED shocks two dysrhythmias: ventricular tachycardia *(Figure 1)* and ventricular fibrillation *(Figure 2)*.

- V tach is fast, but the heart's electrical pacemakers are coordinated with its mechanical contractions.

Figure 1:

Ventricular Tachycardia (V tach)

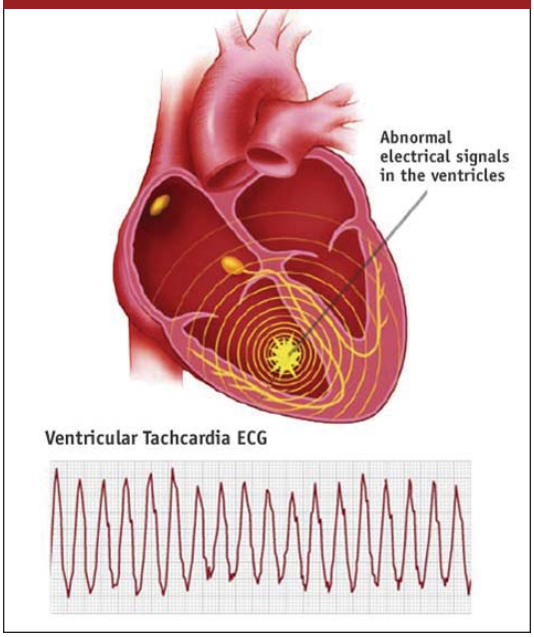
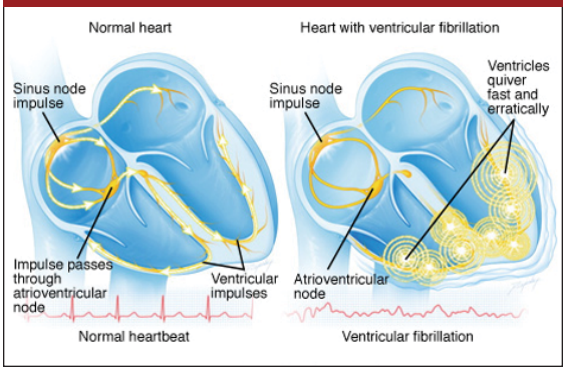


Figure 2:

Ventricular Fibrillation (V-fib)



- In V-fib the heart is quivering as opposed to mechanical contraction. There is no association between the atrial and ventricular pacemakers.

However, the patient in V tach ***may or may not*** have a pulse. That is, his heart muscle may or may not be contracting in a regular (but fast) rhythm. ***The AED cannot detect if the patient has a pulse or not.*** If you apply the AED to a patient with V tach and a pulse of more than 150 bpm, the AED ***will*** advise a shock. That is why we never apply an AED if the patient has a pulse. ***V tach may be the underlying rhythm of a patient*** **not** ***in cardiac arrest.***

Occasionally, poorly trained bystanders erroneously begin CPR on a patient with a pulse.

- On this call: In his panic, did the coworker fail to detect the victim's pulse? If he did, CPR was not appropriate and the patient was shocked unnecessarily.

The current *American Cardiac Life Support* protocol for ventricular tachycardia says: ***The key to managing a patient with any tachycardia is to check if pulses are present, decide if the patient is stable or unstable, and then treat the patient based on the patient's condition and rhythm. If the patient does not have a pulse, follow the ACLS Pulseless Arrest Algorithm.***

If the patient has pulses but is unstable, e.g., altered mental status, chest pain, dyspnea, diaphoresis, ALS treatment is electrical or chemical.

Chemical therapy, i.e., drugs, may be tried as long as it does not delay electrical therapy. Medics give intravenous adenosine, a drug that works to slow the electrical conduction of the heart, slowing its rate, or normalizing its rhythm. Amiodarone and lidocaine, both cardiac dysrhythmics, may also be used.

If chemical therapy is not indicated, the patient is given a series of low energy shocks, known as synchronized cardioversion, whereby a series of electrical shocks, at much lower joule-settings than used for defibrillation, are given. It is not a pleasant experience for the patient. If time permits, he may be sedated first.

- Did the EMS crew chief follow protocol when he first detected a faint pulse? Since there was a pulse, it was his responsibility to stop CPR and turn off the AED.
- Did he delay in changing direction of treatment?

Shocking a patient with pulses stops the heart, just like it does when the patient has no pulse, and there's no guarantee it will start again.

- Did the AED shocks damage the functioning heart? ***Shocking a patient with pulses stops the heart, just like it does when the patient has no pulse, and there's no guarantee it will start again.***

Since there was no subsequent Diagnosis & Disposition (D&D) from the emergency department, it is unknown if the patient survived and what kind of damage his heart sustained.

To Know More: Contact your local MICU. Paramedics are trained in cardioversion and defibrillation, and clinical coordinators may be available for your questions. You can also check out the ACLS website and its protocols for cardioversion/defibrillation.

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Scenario #2: What Won't They Think Of Next?

A 22-year old woman is found pulseless and apneic at home. When your crew arrives, you see many empty boxes of loperamide at her bedside and strewn on the floor. The woman's arms are covered with old and new "tracks" or needle marks on the skin from multiple intravenous injections indicative of addiction. There are other pill bottles, but they don't belong to the victim.

The woman's body is cold and lividity is evident on her back, buttocks and heels. The mottled discoloration is inky-blue, almost black, evidence of the blood accumulating in the lowermost blood vessels of her body closest to the floor. Her muscles have stiffened, a condition known as rigor mortis, which begins at the eyelids, neck and jaw, two-to-six hours after death. Over the next hours, rigor will spread to other muscles. Clearly the woman has been dead for some time. The medical examiner is called to rule out suspicious death.

But – what happened to her? Loperamide? Tracks on her arms?

Loperamide is the generic name for Imodium®, a drug that almost everyone has used at some time in their lives. *(See photo 1.)* It is an over-the-counter (OTC) anti-diarrheal remedy that travelers often carry, inexpensive and easy to acquire. Loperamide is an opiate that acts only on the intestinal cells in normal doses. Big-box anchor stores sell a box of 48 pills for about $8.

Photo 1:

But why would a drug addict be taking it?

"Clinical" Drug Testing On The Street

"Street pharmacists" is a term that became commonly known in 1999 with the release of a solo album entitled "Ghetto Street Pharmacist" by DJ U-Neek. The term refers to drug dealers who sell controlled substances just gone O-T-C, or "over-that-corner."

Been workin' off my tail shake the dirt under my nails

Street Pharmacist with no diploma from Yale

I'mma street general it shouldn't be hard for you to tell...

Some enterprising street pharmacist observed that large quantities of loperamide, when combined with other select drugs, enhanced the effects of opioids such as heroin, oxycodone, methadone, morphine, and opium.

Her muscles have stiffened, a condition known as rigor mortis, which begins at the eyelids, neck and jaw, two-to-six hours after death.

Another observation was that the anti-diarrheal could be used to ease opioid-withdrawal symptoms such as muscle pains, nausea, vomiting and, of course, diarrhea. It began to be called the "poor man's methadone."

But ingesting large amounts of loperamide produces central nervous system and cardiac toxicity. (It also causes painful constipation; users continually needed to take stool softeners.) The recommended dose of loperamide is one to two 17 milligram pills a day, but some reports describe patients ingesting up to 300 pills each day for weeks or months on end!

Typical side effects of loperamide overdose are altered mental status, respiratory depression and miosis, or pinpoint pupils, the same signs of an opioid overdose. Another possible side effect is ventricular dysrhythmias such as ventricular fibrillation, resulting in cardiac arrest.

Epilogue

Your crew reports finding the huge number of empty Imodium® boxes to the medical examiner. You also point out the tracks on the victim's arms. Having investigated hundreds of overdose victims, he immediately

Asked At Convention:

Tell us a "trick of the trade" you do on a call to help the patient.

"For a patient who is particularly anxious or in a lot of pain, I try to establish a personal connection and get them talking about themselves. It has a remarkably calming effect, and often manifests itself with a thank-you card and/or donation."

Patty Buckridee
Fanwood RS

"Listen to the patient. Reassure him or her that you're there to help. Caring assures the patient and earns their trust, which is so important."

Susan Abernathy
Ridgefield FA&AC

"Consider uploading photos of patient's medication vials with your electronic chart to save time and keep detail for the patient's care."

Bryan Fischberg
Pennington Road FAU

"Hold their hand and at the same time check the radial pulse. Is it absent, fast, slow, regular, irregular? Is their skin warm, dry, cool, etc.? Also count respirations. You get lots of info and make the patient feel better at the same time."

Laurie Luster
Quakertown Vol. EMS

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makes the connection between the antidiarrheal medications and opioids.

"Imodium, together with heroin, gives the user a greater high," he explains, "but sometimes the combination is more than the heart can bear."

The FDA is taking this phenomenon seriously. All cases of cardiac problems associated with the misuse or abuse of loperamide should be reported to its Medwatch online registry.

To Know More: Call NJ Poison Control, (800) 222-1222 for more information about this or any other (legal or illegal) drug that you don't understand. Poison Control has up-to-the-minute info on the latest deadly "on-the-corner" drug concoctions.

Layers of membrane surrounding the brain and spinal cord include the dura mater, the arachnoid and the pia mater.

Scenario #3: Prisoner of Pain

Your crew is called to the townhouse of a 59-year old male who fell while transferring from a recliner chair to his wheelchair. You find him lying on the floor, in no obvious distress. His wife is with him, anxiously pacing the floor, unable to help her husband.

You kneel and introduce yourself and ask if he hurt anything when he fell. Is he in pain?

"No more than usual," the man answers.

You ask him about his medical condition. "Arachnoiditis," he says.

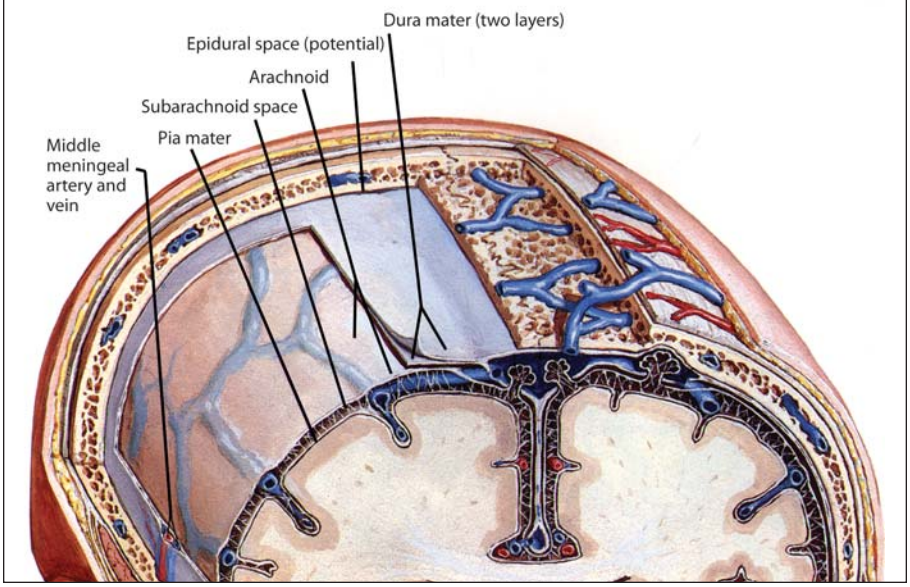
"Spiders?" your partner asks, naively.

"No," the man responds, "spinal disease."

You recall from anatomy and physiology that there are three layers of membranes surrounding the brain and spinal cord: the dura mater, the tough outer layer, the arachnoid, and the highly vascular pia mater. *(See figure 3.)*

Figure 3:

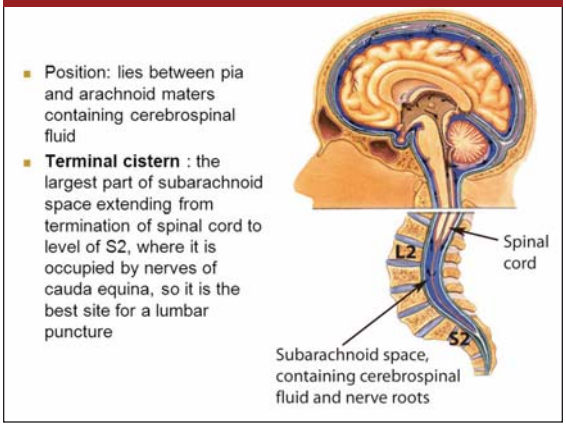
Layers Surrounding The Brain



- The outer membrane of the arachnoid consists of layers of connective tissue that is avascular, or, without circulation.

Figure 4:

Subarachnoid Space



- Beneath that membrane is the subarachnoid space that contains cerebrospinal fluid. The brain floats in this fluid that is essentially salt water. It circulates constantly from the brain to the sacral area, about every two hours.
- Brain tissue is fragile and unforgiving if injured. CSF protects that tissue from being injured when jolted or hit; the fluid absorbs shock waves. CSF also has homeostatic properties that rinse metabolic waste from the central nervous system.
- The spinal cord ends at about the level of the second lumbar vertebra (L2). *(See figure 4.)* The subarachnoid space, however, descends lower to the

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second sacral vertebra (S2), so fluid can be accessed below the spinal cord itself. This procedure is called a lumbar puncture, or more commonly, spinal tap. CSF, when analyzed and measured, contains a terrific amount of clinical evidence that can be used diagnostically. *(See figure 5.)* Physicians also use lumbar punctures to inject spinal anesthetics and chemotherapy drugs between L3 and L4

Cerebrospinal fluid circulates constantly from the brain to the sacral area about every two hours.

Arachnoiditis is a rare disease characterized by an inflammation that occurs in the exterior layer of the dura and the arachnoid. Approximately 11,000 persons are diagnosed with it a year.

The inflammation affects the nerve roots extending from the spinal cord (two roots for each segment of the spinal cord) and causes them to adhere to one another. These clumps subsequently alter their neurological function and cause severe chronic pain.

What causes this progressively debilitating condition? Unfortunately, many reasons are related to medical errors:

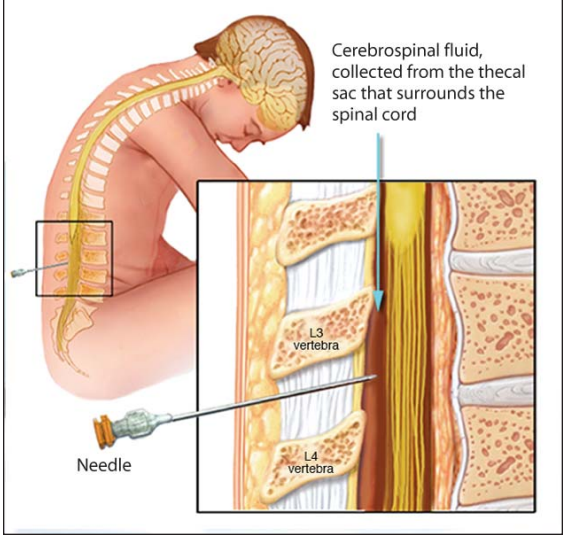
- The arachnoid is injured, knicked or cut, during a spinal operation, or during subsequent operations requiring corrective surgeries.
- Repeated manipulation of catheters within the vertebral space during the procedure.
- One or more spinal taps.
- Multiple steroid injections.
- Injections of dye into the spinal canal to assess the nerve roots. This is called a myelogram.
- Infections that may cause meningitis (bacterial, viral or fungal).

There is no cure for arachnoiditis, but neither is it fatal. Those who suffer with it become progressively weaker and more disabled. The prognosis is complicated by the fact the disorder has no predictable pattern or severity of symptoms. Patients are almost always heavily medicated because of the intense chronic pain.

Pain is mostly localized in the lower back, perineum (area between the anus and the scrotum or vulva), legs and feet, and often accompanied by a tingling or burning sensation. Other symptoms include severe headache, muscle cramps, vision disturbances, hearing problems, dizziness, nausea, vomiting, bowel, bladder, and sexual dysfunction. These symptoms are the result of clumped spinal nerve roots, scar tissue and fibrosis, (thickening and scarring of connective tissue, usually as a result of injury), impeding or altering the flow of cerebrospinal fluid circulation.

Figure 5:

Lumbar Puncture (Spinal Tap)



Our "fall victim" told us of the many surgeries he had had to correct back injuries as well as multiple lumbar punctures and myelograms. Now he was in chronic unremitting pain and his legs were useless; he was confined to his bed or a wheelchair. His medications included antidepressants, anti-anxiety drugs and of course, pain killers, e.g., morphine and dilaudid, an opioid pain reliever similar to morphine. The list of narcotics was long and forecast an indescribable life of suffering for this man *and* his wife.

One victim of arachnoiditis blogged:

The pain from this disease has been described by several in the medical profession as that of a cancer patient but without the relief of death. No, arachnoiditis will not kill you, but it will make you wish you were dead...

An injection of dye into the spinal canal to assess nerve roots is called a myelogram.

You may never encounter a patient with arachnoiditis, but if you do, be mindful of their suffering. You may be called for a "fall victim" or maybe even a more significant injury or illness. Assess and treat as you would any patient, but be empathetic. This patient needs as much understanding, care and kindness as you can give.

To Know More: visit the website of the National Institute of Neurological Disorders & Stroke: www.ninds.nih.gov/disorders/arachnoiditis/arachnoiditis.htm

Scenario #4: Airway Emergency

You are called for a 55-year old man complaining of respiratory distress. You arrive at a small house in a poor neighborhood. You find your patient in his kitchen, tripod position *(see figure 6)*, chin raised, mouth open and drooling. He looks real sick.

During your primary assessment you hear inspiratory stridor; his airway is obstructed. His breathing is

Tripoding is a position that may be assumed during respiratory distress to facilitate the use of accessory respiratory muscles. The patient sits leaning forward, with hands placed on the bed, a table or his knees, with arms braced.

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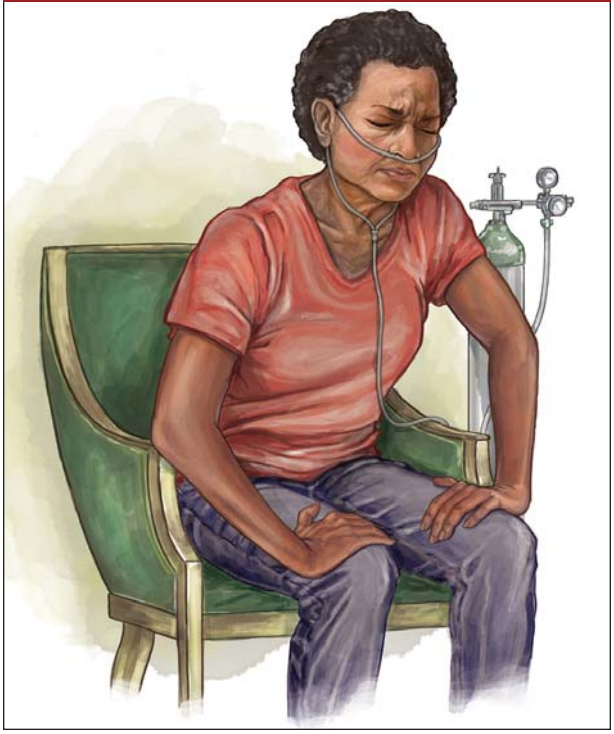
fast and shallow with a respiratory rate of 36 breaths-per-minute.

His breath sounds are diminished bilaterally with scattered rhonchi. He's using intercoastal muscles to strengthen his breathing effort. His pulse is fast and thready. His skin is flushed, hot and diaphoretic. He is unable to speak more than a few words, and is tiring fast.

Figure 6:

Tripoding



Your crew immediately administers 100% oxygen, and places him upright on the litter. In the rig, you watch his airway carefully, with the suction machine and BVM ready. The medics are unavailable, but fortunately the hospital is nearby and you drive, lights and sirens, arriving in six minutes. Your onscene time was 11 minutes.

As you deliver your patient, you recognize these signs and symptoms from your EMT training: Severe respiratory distress, fever, rapid breathing, diminished breath sounds, tripoding, difficulty swallowing, drooling. Could it be epiglottitis?

Seriously – isn't epiglottitis strictly for kids?

Epiglottitis In The Adult

Since the advent of the Haemophilus influenzae, *type b* (Hib) vaccine in the 1990s, there has been a steep decline of epiglottitis in children. Hib vaccine prevents serious infections from Haemophilus influenzae, *type b*, such as meningitis, pneumonia and epiglottitis. A child receives three doses before the age of three.

But epiglottitis can occur at any age from multiple different organisms. The microorganisms posing a threat are Hemophilus influenzae *type a*, strep and staph bacteria and herpes simplex. In addition, epiglottitis can also be caused by trauma, ingestion of caustic materials, inhalation of hot vapors and smoke. It is also associated with systemic disease, or reactions to chemotherapy.

Epiglottitis is a *big* threat to the airway. There's only one route to the lungs and that's past the epiglottis, the leaf-shaped cartilage that covers the opening to the larynx and prevents food from entering the windpipe. When you eat or speak, it closes; when you breathe, it opens. *(See figure 7, next page)* But when the epiglottis and the tissues surrounding it become inflamed and edematous or swollen, this vital passageway becomes progressively narrower, causing obstruction. As breathing becomes more difficult, the patient retains more carbon dioxide (CO_2) and becomes hypoxic.

Adults with epiglottitis tend to present with the same major symptoms as children: acute fever and sudden onset of sore throat with difficulty swallowing.

Adults with epiglottitis tend to present with the same major symptoms as children: acute fever and sudden onset of sore throat with difficulty swallowing. The victim tripods and leans forward in an attempt to keep his airway open. He drools because it is too painful to swallow.

It is essential not to agitate the patient as it may cause laryngospasm, a condition that can lead to complete airway obstruction. It can happen in minutes.

When inflamed and infected, the muscles of the epiglottis can quickly

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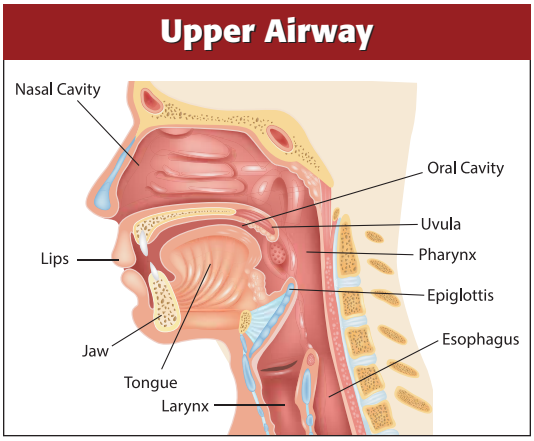
spasm and shut, preventing ventilation. Your patient begins to panic and fight for air, his breath sounds becoming high-pitched as the airway constricts. He feels like he is dying.

This patient is a high priority and needs to be hospitalized immediately. He may need to have his airway secured with a surgical tracheostomy. He also needs IV antibiotics and steroids.

Figure 7:



Put him in his position of comfort on the stretcher and provide humidified high-flow oxygen. If he doesn't tolerate a nonrebreather, use a nasal cannula. Keep calm, lower your radios and your voices. The medics should be dispatched, but if they're not there, get moving. Epiglottitis, which most of us thought strictly as a pediatric condition, can be fatal in adults and should be treated with the same degree of urgency.

To Know More: Check anesthesiology websites for epiglottitis.

Scenario #5: Misleading Statistics

Late that night, your BLS crew is called for a "sick patient."

You find a 32-year old male lying on the bathroom floor in his condo. He is alert and oriented, but in obvious distress. He was working on a major project for his job when he began to feel unwell. He is agitated and wants to go to the hospital *now*.

CC: sudden onset of dizziness lasting ten minutes, vomiting, weakness and he cannot sit up or stand. The man is pale and cool, but you notice when he looks at you, his eyes swing rapidly from side to side, rather than following your motion smoothly.

A quick set of vital signs reveals: BP 178/94; HR 96 and regular; RR 16. His lungs are clear bilaterally. It's difficult to assess his pupils as they jerk from side to side. The patient has a history of hypertension and is taking a homeopathic medicine for it. He is a smoker, slightly overweight and lives a sedentary lifestyle.

The possibilities of what's wrong with this patient are unlimited! Infection, myocardial infarction, dehydration, internal bleeding, panic disorder, too much caffeine, medication side effects, pulmonary embolism – obviously he needs to go to the hospital, but is it an emergency or not?

You err on the side of the patient and call for ALS. Your patient could have a life-threatening/altering condition that needs immediate treatment. Unfortunately, there is no ALS unit available, so you quickly load the patient left lateral recumbent on the stretcher, and head to the hospital. En route he begins to vomit; you quickly suction to protect his airway from aspiration. At the hospital, the patient is moved to an ED bed. As you give your report to the nurse, you notice she is distracted. You stress the patient's odd eye movements and his persistent dizziness, but she pays scant attention.

Later in the afternoon you call the emergency department for a D&D, and are told the patient is in the ICU. He had an ischemic stroke, i.e., a blood clot disrupted circulation in the cerebral blood vessels. (As opposed to a hemorrhagic stroke caused by bleeding.)

The involuntary to-and-fro oscillatory movement of the eyeballs is called nystagmus, a symptom of stroke and a long list of other conditions.

Stroke: A Difficult Diagnosis

Most EMTs are cued into the obvious signs of stroke: one-sided weakness, facial droop, and dysphasia, or difficulty speaking. But not all strokes present with those symptoms.

For instance, our call:

- The patient is 32-years old. Nearly three-quarters of all strokes occur in people over the age of 65.
- His main complaint is "dizziness" which can be caused by many conditions: migraine, medications, and alcohol. It can also be caused by a problem in the inner ear, where balance is regulated. Patients often cannot distinguish one type of dizziness from another, and their symptoms are sometimes vague and misleading.
- The involuntary to-and-fro oscil-

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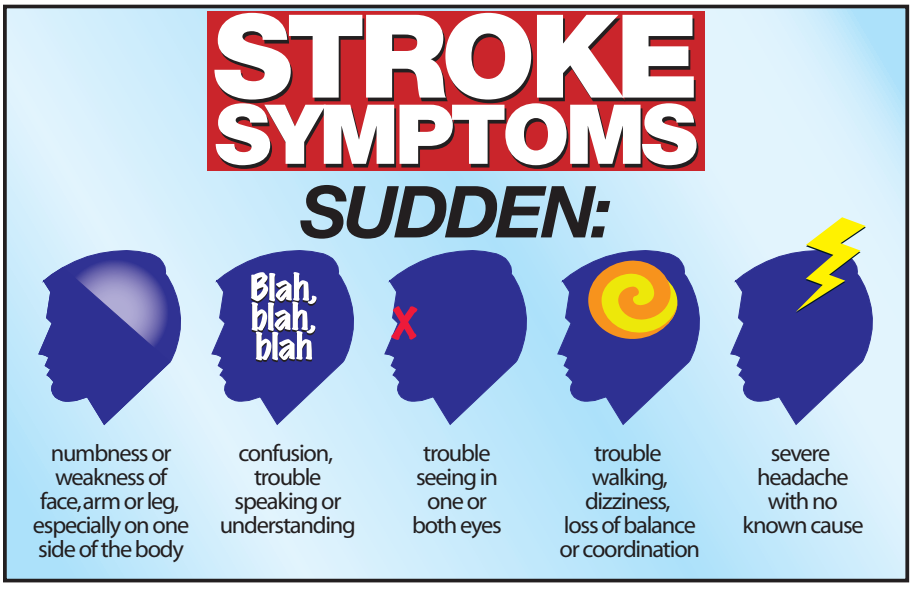

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latory movement of the eyeballs is called nystagmus, a symptom of stroke and an inexhaustible list of other conditions such as tumors, brainstem lesions, blindness, multiple sclerosis, beriberi, myasthenia gravis, concussion, etc. And it's not *always* present in stroke.

● In a recent study, patients 18-to-45-years old were seven times more likely to have their stroke missed than the patient over the age of 75.

Why are young stroke patients being misdiagnosed?

A strong factor in medical diagnosis is "predictive risk," i.e., weighing the probability of a patient developing a disease as opposed to looking at the presence of the disease.

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In an article entitled "Seven ways predictive analytics can improve health care," Dr. Linda A. Winters-Miner writes: *Predictive analytics (PA) uses technology and statistical methods to search through massive amounts of information, analyzing it to predict outcomes for individual patients. That information can include data from past treatment outcomes as well as the latest medical research published in peer-reviewed journals and databases.*

More than one-in-five patients presenting to two hospitals were initially misdiagnosed, according to a new study published in *Stroke,* 2016.

The type of ischemic stroke commonly missed by physicians occurs in the posterior-circulation of the brain. These strokes account for about 20% of all ischemic strokes. *Symptoms are not typical:* longer-lasting dizziness and vertigo, followed by nausea, vomiting, trouble walking and headache. And CT scans are not always reliable indicators.

Is it the predictive risk of stroke in younger patients that accounts for medical tunnel vision? Or is it sometimes diagnosing stroke requires expertise that isn't available on site, even in a stroke center.

The type of ischemic stroke commonly missed by physicians occurs in the posterior-circulation of the brain. These strokes account for about 20 percent of all ischemic strokes.

Because there was a keen ED doc on that night, she zeroed-in on our patient's dizziness and looked for other associated neurological symptoms or abnormal vital signs. She studied the timing and triggers of the onset: When did it happen? What other symptoms subsequently appeared? What other possible causes might have triggered the dizziness? She also heavily relied on the physical exam, testing his gait, his eyes, and associated symptoms. A CT scan was ordered.

Within 15 minutes the physician called a stroke alert and the patient was sent for "tPA" or tissue plasminogen activator treatment. tPA is given through an IV in the arm and works by dissolving the clot and improving blood flow to the part of the brain being deprived of blood flow. If administered within three hours, tPA may improve the chances of recovering from a stroke. (A small number of select patients may receive tPA within 4.5 hours.)

A significant number of stroke victims don't get to the hospital in time for tPA treatment. This is why it's so important for EMTs to think globally when encountering neurological signs or symptoms, and determine the time of onset and/or time last seen normal. Time is Brain!

A few weeks later the crew heard that their 32-year old patient had subsequently walked out of the hospital with little neurological deficit. A month later, their volunteer squad got a thank you note with a sizeable donation.

For More Information: Check the American Stroke Association or National Stroke Association websites.

***Julie Aberger** is an EMT instructor and an active member of the **Pennington First Aid Squad.** Julie is also the editor emerita of* The Gold Cross.

Many thanks to Dr. Steve Vetrano for his medical review of this article.

Asked At Convention:

Who has inspired you the most in EMS and why?

"Walt McKinley – Dedication, inspiration, a good friend, and Walt's 55 years of service to all of us."

Paul G. Kennedy
Middletown FA&RS

"At each point, a different person has inspired me. From the people who introduced me to the squad, mentored me as an EMT, to being in leadership. You can learn something from everyone."

Melissa Padulsky
Fanwood RS & Scotch Plains RS

"Marianne Willis. As my EMT instructor, Marianne was knowledgable, professional, and had a great sense of humor. She wrote for this publication and provided me with several anecdotes for my two EMS novels."

Pat Leonard
Editor - *The Gold Cross*

"My previous medical training and meeting Mary Kerslake and Charlie Bird. I care for people who need help."

Gabriella Pall
E. Brunswick RS