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FLIGHT ROUNDS

A Program of the Milwaukee Regional Medical Center

Spring 2003

RESUSCITATED SUDDEN CARDIAC DEATH

Sharon Purdom, RN

Flight Nurse, Flight For Life - Northern Illinois

At 21:20 in the evening, the pagers sounded off. It was for the transfer of a post-resuscitation, non-trauma, 19-year-old female patient to Froedtert Memorial Lutheran Hospital. During the flight to the referring facility, we discussed possible causes for this event and a plan of care. My partner suggested a possible drug over-dose or a potassium depleted diet. As my 23 year old daughter was recently diagnosed with cardioneurogenic syncope, I thought the cause could be due to a cardiac anomaly.

Mechanism of Illness: A 19 year old female was at the wake of a friend when she felt faint and was assisted to the floor. She had a seizure and became pulseless, non-breathing (PNB). CPR was initiated by a nurse, a relative of the deceased. The police arrived a few minutes later with an automated external defibrillator (AED), and she was defibrillated twice before her heart returned to a normal sinus rhythm (NSR). She was intubated and transferred to St. Agnes Hospital in Fond du Lac.

We were met by the referring physician outside of the emergency department. He told us that this was a female with a history of low potassium but otherwise healthy. Her lab work was normal with a negative toxicology screen. In the emergency department at St. Agnes Hospital, she had one episode of ventricular tachycardia (VT) which was treated with a lidocaine bolus and lidocaine drip. She remained intubated, sedated, and chemically paralyzed; arrangements were made to transfer her to Froedtert Hospital in Milwaukee. During the flight, she had a run of bigeminy (extra ventricular beats) and VT; this was successfully treated with a second bolus of lidocaine. Two days after admission, she was extubated and found to be neurologically intact. Her diagnosis was "sudden death."

2003 UPCOMING EVENTS/CONFERENCES

TNS Refresher Course
September 24 and 25, 2003

Emergency Services Conference

Flight For Life will host its 19th annual Emergency Services Conference: Trends and Issues 2003 in September 2003.

Watch for more information.

PHTLS
August 16, 2003 - Recertification Class
September 20, 2003 - Instructor Course

Safety Inservice
August 2003

The Wisconsin helicopter will offer a safety inservice August 16, 2003. The location of the inservice will be Froedtert Hospital. Upon completion of the inservice, personnel are eligible to sign up for a ride along shift with the Flight For Life staff.

Participation in this program is open to pre-hospital personnel in the following counties: Dodge, Fond du Lac, Jefferson, Kenosha (north of Hwy 142), Milwaukee, Ozaukee, Racine, Sheboygan, Walworth, Washington, and Waukesha.

Participation is also open to registered nurses working in emergency and critical care departments.

To register, call Terry Hirsch at (414) 805-6427.

NORTHERN ILLINOIS
MEDICAL CENTER

Froedtert & Medical College

Flight For Life
A Program of the Milwaukee Regional Medical Center
9000 W. Wisconsin Avenue
Milwaukee, Wisconsin 53226
Administrative phone: 414/805-6427

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"That Won't Happen to Me..."

Lisa Heinz, RN
Flight Nurse and Staff Education Coordinator, Flight For Life –Wisconsin

We essentially have become a 24-hour society. The cost of living has created the need for many people to have more than one job and to work different shifts. Unfortunately, in order to meet the demands of work, home, and our social lives, we neglect our need for sleep which can lead to a "sleep debt." This debt can only be repaid to your body by sleeping. Try as you might, you cannot overcome this need with willpower, and it won't just go away either. So, while you may be wide awake one moment, the next you can start to doze.

How many times have you driven your vehicle while drowsy? Who HASN'T done that!? Isn't that what those rumble strips are for? It's nothing that a good ol' cup of coffee won't cure, right? WRONG! Driving drowsy can be just as dangerous and deadly as driving drunk. When you are drowsy, your reaction time slows, you have a decreased awareness, and your judgment is impaired. "Sleep deprivation is one of the major under-recognized killers in our society. In the contest between the will to stay awake and the need to sleep, sleep will always win."[1]

In a publication from the AAA Foundation for Traffic Safety titled "Why Do People Have Drowsy Driving Crashes? Input from Drivers Who Just Did," the authors stated, "Work and sleep schedules were both strongly associated with involvement in a sleep-related crash. … drivers in sleep crashes were nearly twice as likely to work at more than one job and their primary job was much more likely to involve non-standard hours. Working the night shift increased the odds of a sleep-related (vs. non-sleep-related) crash by nearly six times."

In addition to our work, family, and social commitments, here are some other things that may contribute to drowsiness while driving: medication, driving long distances without a rest break, driving through the night or at other times normally asleep, and driving on long, rural, boring roads.

Very few states have laws that can punish a person for being involved in a drowsy driving crash. You may only receive a citation for "failure to maintain control" or "operating left of center." However, if you cause a fatality, you could quite possibly be charged with negligent homicide.

Do you recognize the warning signs of inadequate sleep? These include the following, some which may surprise you:

- Difficulty waking up without an alarm clock
- A strong desire to take naps during work hours
- Difficulty staying awake during meetings, riding in a car, flying as a passenger in an aircraft, or while watching TV
- Falling asleep in less than 7 minutes after going to bed
- Looking forward to weekends or days off when one can "catch up on sleep"

And now, some symptoms of sleepiness to be aware of while you are driving:

- Unable to keep your head up
- Daydreaming or wandering, disconnected thoughts
- Yawning frequently or rubbing your eyes repeatedly
- Missing signs or you drive past your exit
- You feel irritable and restless
- You drift off the road and hit the rumble strips.

If you experience just one of these symptoms, you could be sleepier than you think and you need to get off the road NOW! What can you do? First of all, don't ignore it. Admit it: YOU ARE TIRED! Caffeine, driving with the windows down, turning up the volume on the radio, or eating are only short-term measures. If you are planning a long road trip, get enough sleep the night before. Don't plan to work all day and then think you can drive all night. Be aware of the time of day. Mid to late afternoon and the hours between midnight and 6 a.m. are sleep times. Take a power nap in a safe area. Try to schedule rest times on long trips – about every two hours or 100 miles. Traveling with another person is also helpful.

The best defense is the realization that YOU are NOT invincible. Taking care of yourself not only entails eating right and exercising but also getting enough sleep. Be responsible and accountable for your actions while driving a vehicle, whether it's your personal one or your employer's. There have been some recent ambulance crashes that unfortunately claimed the lives of fellow EMT's as well as people in the wrong place at the wrong time. Don't continue driving when you know that you are sleepy. You, your family, your partner, or other people don't need to be at risk when you drive while tired.

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[1]Daniel A. Katz, MD, Department of Neurology, Menniger Clinic, Topeka, Kansas
www.aaafts.org, www.voidd.com, www.sleepfoundation.org
www.merginet.com - "Sweet Dreams? Sleep Deprivation and Shift Work in EMS", Kate Dernocoeur, BS, Feb. 2003.

(Resuscitated Sudden Cardiac Death continued)

An electrophysiology (EP)[1] study was done, and she was found to have two different abnormailities. The first was an abnormal electrical pathway causing an arrhythmia, and this was ablated (destroyed). The second abnormality was discovered after infusing a medication that stimulates a sympathetic reaction in the heart. This second abnormality was a long QT[2] that led to ventricular tachycardia VT. The long QT was only present when there was sympathetic stimulation. To prevent further occurrences of VT, an automatic implantable cardioverter defibrillator (AICD) was placed. An AICD is a miniature implanted device that monitors the heart rate, and in life-threatening arrhythmias, administers a shock to the heart to restore normal rhythym.

Early defibrillation is critical to survival from cardiac arrest for several reasons: the most frequent initial rhythm in the witnessed sudden cardiac arrest is VF; the most effective treatment for VF is electrical defibrillation; the probability of successful defibrillation diminishes rapidly over time, and VF tends to convert to asystole. AEDs are now located in airports, airplanes, schools, casinos, shopping malls, golf courses, and numerous other public locations. Are you familiar with an AED? You may be the one to use it when in a public place without your own EMS equipment. You may be the one to save a precious life.

[1] EP is a nonsurgical subspecialty of cardiology which examines the electrical conduction system of the heart. During this procedure the electrophysiologist employs cardiac catheters to stimulate the heart and re-create the arrhythmia; sophisticated computers then generate electrocardiogram tracings and electrical measurements from within the heart chambers. Once the abnormal pathway is found, a specialized electrical catheter is inserted and radiofrequency energy is passed through the tip of the same catheter, thus cauterizing the small area of heart tissue that contains the abnormal pathway. The procedure is called ablation therapy, and was performed on this patient.

[2] The long QT syndrome (LQTS) is an abnormality of the heart's electrical system. The mechanical function of the heart is entirely normal. The electrical problem is due to defects in heart muscle cell structures called ion channels. These electrical defects predispose affected persons to a very fast heart rhythm (arrhythmia) called torsade de pointes which leads to sudden loss of consciousness (syncope) and may cause sudden cardiac death.

Flight For Life - Wisconsin Celebrates 10,000th Patient Transport

Claire Rayford

Professional Relations/Marketing Manager, Flight For Life - Wisconsin

Six year old Paraiz Jackson did not know that his particular helicopter flight on September 3, 2002 was special. All his family knew was that he was very ill, and needed to be air lifted from All Saints Healthcare - St. Mary's Medical Center in Racine to Children's Hospital of Wisconsin in Wauwatosa for treatment. Little Paraiz had a seizure on the day he was admitted to the emergency department at St. Mary's and they decided that Children's Hospital could offer the best care for his seizure disorder.

His flight was a milestone for Flight For Life - Wisconsin, as he was the 10,000th patient flown since the program began in January, 1984. As he was doing so much better, this event was celebrated at a special gathering held at Flight For Life's hangar on October 25th, 2002. Paraiz and his family had the opportunity to meet some of the helicopter crew who transported him: Lisa Heinz RN, Flight For Life, and Sue Butler RN and Andy Wahl RT (Respiratory Therapy) from Children's Hospital Transport Team. Of course, a chance to sit in the helicopter, along with balloons, cake and ice cream helped celebrate this happy event!

CLINICAL UPDATES

Stroke and Interventional Neuroradiology

Dr. Lotfi Hacein-Bey & Denise M. Lemke, NP
Froedtert & Medical College Neurosciences Center

It is estimated that approximately 730,000 new strokes will occur in the United States this year. Although 60,000 people will die, over 600,000 people will survive this devastating disease. Indeed, the prevalence of survivors is higher for stroke than for other neurological conditions such as Alzheimer's, Parkinson's, and even epilepsy. Most survivors will require rehabilitation and have significant limitations of daily life, such as walking or activities of daily living. The estimated annual cost of stroke to society is currently about 51billion dollars and rising.

Stroke is a local manifestation of a systemic disease, atherosclerosis, as is heart disease. Therefore, the war against stroke relies heavily on prevention. High blood pressure is perhaps the most important modifiable risk factor, followed by tobacco use and high cholesterol. Aspirin and other anti-platelet agents may have a protective effect against ischemic stroke. In addition, there are acute treatment options available. In many cases, the speed and accuracy of the initial acute assessment is important for good outcomes.

An acute stroke team, comprised of Neurology, Neurosurgery, and Interventional Neuroradiology professionals provides a multidisciplinary collaborative approach to the clinical evaluation, diagnostic work-up, and the determination of therapeutic options. Advanced surgical techniques and innovative interventional neuroradiology procedures are among the effective new medical options now available for stroke patients.

Interventional Neuroradiology offers minimally invasive treatment options for stroke. Aiming for revascularization of cerebral vessels, all treatment options are available at Froedtert Memorial Lutheran Hospital, including intra-arterial thrombolysis (clot busters to open brain arteries), carotid and intracranial angioplasty, and stenting.

Stroke and other neurovascular diseases have an enormous impact on our community. Consistent efforts to educate the public to learn the warning signs and risk factors and to use the EMS system will maximize prevention and treatment strategies. Further, by pioneering new approaches to the diagnosis and treatment of stroke, we can significantly improve patient chances for an optimal recovery and win the war against this life-altering disease.

New Treatment Opens Clogged Arteries

Joan LittelConrad
Physician Liaison

A relatively new treatment for patients who have undergone cardiac stent placement is available through the Froedtert & Medical College Cardiovascular Center. Intracoronary brachytherapy uses radioactive seeds to break up scar tissue that forms in the arteries of some cardiac stent patients. David Marks, MD, director of the Cardiac Catheterization Laboratory, performs the procedure, which allows patients to avoid repeat angioplasties, bypass surgery, or additional medication.

PET/CT Scanner Enhances Cancer Detection Abilities

Joan LittelConrad
Physician Liaison

Froedtert & Medical College is one of the first in the country to offer new imaging capabilities for cancer and other diseases. PET/CT technology "sees" anatomical changes and heightened metabolic activity typical of malignant cancer cells by combining positron emission tomography (PET) and computed tomography (CT) in one scan. The scanner allows physicians to detect tumors earlier by providing a more specific, comprehensive picture of disease. Read more about this innovative new technology online at www.froedtert.com. Go to Wellness Resources - Health News, and search using keyword PET/CT.

EMS Guidance on SARS

The current outbreak of Severe Acute Respiratory Syndrome (SARS) has included reports of cases in Southeast Asia, Europe, and North America and has required ground emergency medical services (EMS) to move patients to medical facilities for further assessment and care. This guidance is intended to assist EMS providers to manage suspected SARS patients while ensuring the safety of patients and transport personnel. These interim recommendations are based on standard infection control pratices and available epidemiologic information regarding the transmission of SARS.

www.cdc.gov/ncidod/sars/emtguidance

10 Things You Need to Know about Traumatic Brain Injury

Rich David, EMT-P
Flight Paramedic, Flight For Life - Wisconsin

Did you know that a traumatic brain injury (TBI) occurs every 15 seconds and sends more than one million individuals to hospital emergency rooms each year? It's true, and according to the Brain Injury Association Inc., a TBI occurs more often than breast cancer, AIDS, multiple sclerosis, and spinal cord injuries.

The Centers for Disease Control and Prevention indicates that there are more than 5.3 million Americans, slightly more than two percent of the U.S. population, living with a disability as a result of a TBI.

Despite these numbers, public awareness of brain injury and the frequency with which it occurs is very low, as the results reflect from a recently conducted Harris Poll.

As health care providers, are we aware of potential brain injuries? Are we minimizing the results of a "routine" head injury?

In our care and treatment of TBI patients, we as prehospital care providers can make an impact on our patient's outcome and long-term quality of life.

Here are 10 things you need to know about treating a TBI patient:

1. Preservation of cerebral perfusion and oxygenation are the first priority in managing patients with a TBI.

2. All patients sustaining a TBI should be given supplemental oxygen to avoid hypoxia.

3. Routine hyperventilation should ***not*** be performed. Hyperventilation is beneficial to patients exhibiting signs of cerebral herniation, but it is not recommended as a prophylactic measure. Traumatic Cerebral herniation is **always** preceded by severe altered mental status (GCS<9). Along with a GCS<9, signs of cerebral herniation include:
   A. Fixed and dilated pupils
   B. Asymmetric pupils
   C. Extensor posturing
   D. Decrease in the GCS score more than two points

4. The Glasgow Coma Scale should be updated as frequently as other vital signs with a watchful eye for any downward trend.

5. There are factors which alter the patient's level of consciousness and interfere with the GCS's ability to accurately reflect the severity of a TBI. So shock, hypoxemia, drug use, alcohol intoxication, and metabolic changes may alter the GCS independently of the brain injury.

6. If you suspect a TBI, transport your patient to an appropriate ED such as a Trauma Center.

7. Record the mechanism of injury (MOI) with as much information as possible. A Polaroid camera is extremely helpful and can show the receiving ED staff the direction and the amount of force of impact. A picture tells a thousand words.

8. Hypoglycemia has been reported as the cause of traumatic events. As with TBI, hypoglycemia may present with altered mental status with or without focal neurologic deficits.

9. Patients with a GCS less than 9 should be intubated, if possible, and transported to a trauma center.

10. Fluid therapy should be initiated to avoid hypotension and/or limit hypotension to the shortest duration possible. Hypotension is defined as a systolic blood pressure of less than 90 mmHg.

For more information about TBI, contact the Brain Injury Association of Wisconsin Inc. at (414) 778-4144 or the Brain Injury Association of Illinois Inc. at 708-344-4646 or 800-699-6443 (IL only).