



SAVING LIVES - REDUCING RISK

From The Editor

Well the snow is flying in my part of the country and it's **COLD**. I seem to recall predictions for a warm, dry winter. But this is Chicago, so no such luck. This much time indoors gives me plenty of opportunity to put together the TSG Winter Newsletter!

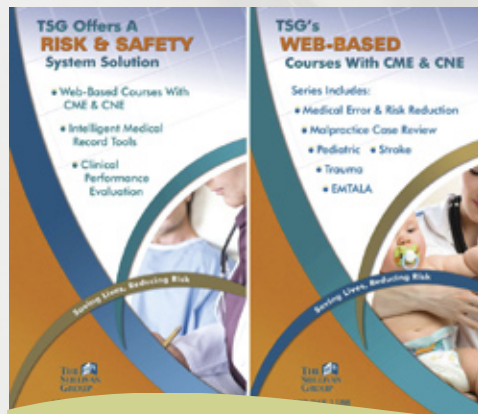
This month we present a recent case involving the failure to diagnose MI. We compare and contrast this to a similar case in the Spring Newsletter. Although the failure to diagnose MI has

improved nationally, it remains a regular source of medical error and patient morbidity and mortality. Once again, a residency trained, board certified, highly respected veteran

emergency physician makes the wrong decision in the face of a fairly obvious fact pattern. Find out why.

As always, we are very interested in your feedback as well as any cases we can share with our readers to improve the quality of emer-

gency medical care, reduce medical error, and improve patient safety.



If you plan on attending the ENA Leadership Conference Feb. 19-20, please stop by and see us.

Visit us at ENA - Booth # 1113

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Stay warm!



Failure To Diagnose MI

Case #1

In the Spring TSG Newsletter, we reported a case of failure to diagnose MI. Review this short summary of that case, and compare it to the following case (Case #2). In Case #1, an elderly patient presented to the ED with neck and chest pain that started while he was using his snowblower. He presented to triage complaining of neck pain and a history of a prior neck injury. He told the primary nurse he had neck pain while working with the snowblower. The pain increased when he moved his neck.

The emergency physician obtained a history that the patient developed chest pain and neck pain while using the snowblower – “Severe and intolerable when it occurs.” When he had the pain, it was difficult to breathe.

Feel free to go to the TSG web site and take a look at the full case. The bottom line was that the patient perhaps subtly suggested to the nurses and physician that his symptoms were related to a history of neck problems, although clearly something was different about the pain, which is why he came to the ED. The triage nurse anchored on the neck and did not get the chest pain and shortness of breath history. The primary nurse anchored on the neck pain and the prior neck diagnostic evaluation. All of the nursing documentation pointed to an old neck problem. In retrospect, after reading through the deposition testimony, the nursing documentation and a recent visit to an internist steered the emergency physician toward the neck problem and away from possible cardiac disease.

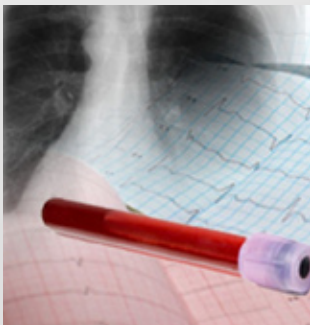


The physician got the correct history; however, careful scrutiny of deposition testimony indicates that he also anchored on the prior neck history, and in the face of symptoms

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that suggested the possibility of an acute coronary syndrome, he considered that possibility and dismissed it. There were no diagnostics for possible heart pathology.



The patient was discharged with exacerbation of a prior neck injury and follow-up to his private physician. He was dis-

charged around 5:00 pm and died during dinner two hours later from an acute myocardial infarction.

Compare and contrast that case with Case #2 below. Unfortunately, both of these cases are recent and demonstrate that although we have reduced the failure to diagnose MI nationally, medical errors continue to occur in this high-risk area, and a regular review and reminder of the 'near misses and the crashes' helps to keep these issues front of mind. Also, it is so important to remember the old adage: "It is all in the history." ■

"It is all in the history."

Case #2

Physician History of Present Illness

A 55-year-old male presented to the ED at 7:40 am with complaints of left arm pain that radiated to his left hand; it began the previous evening and lasted through most of the night. The patient told the physician that he had a history of the same pain the year before and had an epidural injection for a ruptured disk in his C-spine. He provided a history of HTN and had a long smoking history. Neither the physician nor the primary nurse documented the presence of chest pain, nor did they document that there had been "no chest pain."

Vital Sign Table

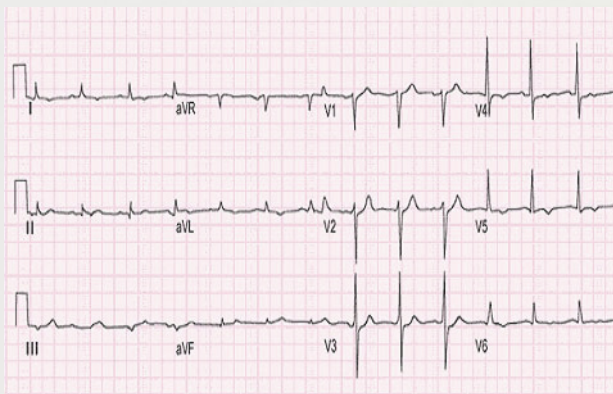
BP	Pulse	Resp	Temp	Pulse Ox
120/74	80	18	98.2°F	97% RA
132/76	74	18		
136/74	78	16		
130/70				

The physician ordered a basic metabolic profile, ECG and cardiac markers, a cervical spine series, and PA lateral chest x-ray. The C-spine film revealed a suboptimal visualization of the cervical spine, especially the neural foramina. The final reading of the film indicated that there were degenerative changes as well as neural foraminal narrowing, minimal retrolisthesis of C3 on C4 and C4 on C5, which may reflect mild ligamen-

tous laxity. The radiologist recommended a CT or MRI of the C-spine.

Chest x-ray revealed interstitial abnormality throughout the lungs of uncertain chronicity, and possible mild acute or chronic interstitial process with no evidence of focal airspace opacity or significant effusion. The heart size was borderline enlarged.

Labs returned at 9:45 am with a CK of 119 (normal 21-232) and Troponin I of .06 (normal .00 to .19). The final discharge summary report on the lab work indicates that it was non-diagnostic for myocardial infarction. An ECG revealed a normal rate and intervals, a normal sinus rhythm and nonspecific T-wave abnormality. The computer auto-documented that it was an "abnormal ECG." See the ECG below.



In his deposition, the emergency physician (EP) testified that there were non-specific changes in the inferior and lateral leads. There were ECGs in medical records from within the last six months. The EP did not request prior ECGs.

The EP diagnosed the patient with body aches, and discharged him at 10:30 am to follow up with his private physician. There was no specific time frame for follow-up.

Editor's Note: *Stop here for just a moment. You may disagree with this management and believe that this physician made an obvious error. Consider that this is a veteran, residency trained and board certified emergency physician. He has never had a malpractice case prior to this one, and he is highly respected by his peers as an outstanding emergency physician. The learning point here is to work through this case and try to understand the cognitive traps that may impact decision making for any physician working in a similar environment.*

According to the patient's wife, he continued to have pain at home. They returned to the ED four hours later. The staff obtained an ECG; the lateral leads are shown below. The arrows indicate the obvious ST segment elevation indicating injury to the lateral wall.



The patient went into cardiac arrest within 20 minutes of arrival and could not be resuscitated. Autopsy revealed the immediate cause of death to be coronary atherosclerosis. Diagnoses on autopsy were: coronary atherosclerosis; right coronary artery 90% occlusion; patchy, diffuse, dystrophic calcification

of the coronary artery tree; cardiomegaly 450 g; moderate pulmonary congestion and edema; broad base scars of the kidney; hepatic, renal and splenic congestion; calcification of the falx; degenerative joint disease of the spine; mild cerebral edema with cerebellar tonsillar notching.

Deposition Testimony

Treating Emergency Physician. The emergency physician testified that he felt comfortable discharging the patient without ordering serial enzymes because he did not have any complaints at the time of discharge. He considered the patient's problems to be orthopedic in nature as opposed to cardiac. The patient gave a history of having a ruptured cervical disk, which was consistent with his complaints of

left and right arm pain that occasionally radiated to both legs. The physician admitted that neither a CT nor MRI was ordered despite the recommendation by the radiologist for an MRI. He did not know what caused the decedent's pain, and told him he should follow up with his primary care physician.

He testified that he recognized the non-specific changes on the ECG, but because the pain was consistent with prior pain and

NEED ETHICS CME?

The Texas Medical Board has designated 4 TSG courses as meeting their requirements for ETHICS CME.

- 1 [Against Medical Advice: Medical Error and Risk Reduction](#)
- 2 [Duty to Warn Third Parties: Medical Error and Risk Reduction](#)
- 3 [EMTALA Basics](#)
- 4 [HIPAA Fundamentals for the Emergency Physician](#)

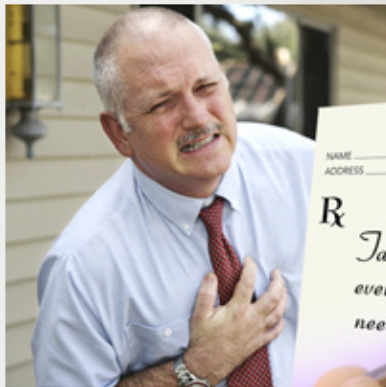
click on the course name to see the course description



there was obvious pre-existing cervical disease, he did not feel further cardiac evaluation was required (either old ECG review or serial cardiac markers).

Primary Nurse. The patient was 55 years old. He complained of left arm pain that began the night before and was similar to pain he had a year earlier after an epidural steroid injection for a ruptured disc.

Patient's Wife. The patient began to complain of chest and right leg pain at 4:00 am prior to his first ER visit. His pain increased before finally going to the ER. His wife reported that the ECG was done in less than 5 minutes. She filled the prescriptions they were given. Her husband took them when they arrived home, but he was in too much pain to eat. She testified that his pain increased after he took the prescribed muscle relaxant. They returned to the hospital because the chest pain was becoming more severe.



Patient's Son. The patient's wife called their son during the first ED visit at 10:00 am to report that his father was in the ED for dizziness, light-headedness, and pain in his arm, leg and chest. The son spoke with his father at home after discharge. His father said he was still in pain but did not want to return to the hospital.

Plaintiff's Emergency Medicine Expert. The emergency physician failed to take an adequate history and perform a thorough evaluation to rule out a cardiac problem. The patient did have a history of cervical spine disc pathology; however, the patient had chest pain, multiple cardiac risk factors, and non-specific changes on his initial ECG.

The physician was obligated to obtain serial cardiac markers and perform a comparison with old ECGs if available. If not, the physician had to assume that the ECG changes were new and that acute coronary syndrome had to be ruled out. The patient ultimately had a lateral wall myocardial infarction, which caused his death. The expert is also critical of the nurse who allowed the patient to be discharged.

Plaintiff's Emergency Nurse Expert. The nurses in the ED fell below the standard of care by allowing the patient to be discharged. The nursing staff violated the



standard of care by failing to continuously monitor the patient, repeat enzymes, administer oxygen, and perform a second ECG.

Defense Emergency Medicine Expert #1.

The expert noted that the patient presented with a history of left arm pain that started one night previous and a history of the same pain one year ago. The EP took appropriate labs and also conducted an ECG. The labs were normal and the ECG was equivocal, showing only slight T-wave changes in the lateral leads that would more often than not be non-diagnostic for ischemic heart

disease. The EP ordered a cervical spine and PA lateral chest x-rays. The cervical spine x-ray showed degenerative changes as well as a neural foraminal narrowing with arthritis at the C3-C4 and C4-C5 levels, which would explain the left arm pain. The patient presented with no known risk factors of coronary artery disease other than HTN, which was under control. The expert testified that it would have been appropriate to get a second set of cardiac enzymes, but that it was not required by the standard of care. He said there were some inverted T-waves, which is uncommon. The T-wave abnormality is normal with many patients, and it is not a cause for concern solely on the basis of the ECG. However, he did note that if other

New CME Course Requirements

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ACCME has new CME requirements that ACEP, TSG's CME Provider, must adhere to, and so must we. For new courses and courses undergoing reaccreditation, we are required to add new information to the pre- and post-course pages, including:

- CME Disclosure Statement
- Conflict of Interest
- Method of Participation
- Study Time
- Copyright Statement
- New Learning Objectives
- Attestation Statement

We are also required to determine the effectiveness of the CME. In order to comply with this requirement,

we've begun to add pre- and post-course questions to the CME courses. The pre-course questions should be answered based on your current knowledge of the material; the identical post-course questions should be answered based on your knowledge gained after completing the course. The results of the pre- and post-course questions will not impact the overall course scores. We will analyze the answers to the pre- and post-course questions to determine whether the CME provided was effective.

There may be additional CME revisions from ACCME down the road, but for now, we are in full compliance with the requirements.



TSG Launches Residency Risk & Safety Program

TSG is proud to announce the successful launch of its Residency Risk and Safety Program. This Program offers free access to our risk and safety courses for residency programs that are interested in establishing a risk and safety curriculum. Currently eleven residency programs across the nation are benefiting from this service. If you are interested in implementing our curriculum as the basis of your residency risk program, please contact Chris Ferron at cferron@thesullivangroup.com

ECGs are found to have a baseline of normal, namely no T-wave change, there might have been an indication of some sort of cardiac ischemic disease. He admitted that if a baseline ECG existed that the EP could have had access to, he might have been required under the standard of care to obtain a copy of the previous ECG.

Defense Emergency Medicine Expert #2.

The second defense expert testified that the CK and Troponin levels were normal. The patient complained of having experienced pain all night, so it would be expected that the enzymes would have been abnormal had he been experiencing a cardiac event. The ECG was slightly abnormal and not diagnostic of anything. He admitted that the small T-waves were consistent with possible lateral wall ischemia. The CXR was only borderline, but normal for a 55-year-old hypertensive man. His decreased pain with walking was inconsistent with angina. The expert was supportive of the EP's care, and testified that serial studies were not necessary.

Defense Cardiology Expert. The defense cardiology expert could not provide supportive testimony, so he was never deposed. He believed the patient died from an acute MI. He felt that a hypertensive male who smokes should not have been discharged with an abnormal ECG and one negative Troponin.

He also felt that the patient should have been placed on 12-24 hour observation with serial ECGs and enzymes, and if he had coded while under observation, he likely would have been successfully resuscitated.

- **Plaintiff's Demand: \$14 Million**
- **Settlement: Undisclosed**

Discussion

The main issues in this case were clearly pointed out in the deposition testimony and the summary of the cardiology expert who was involved in the case but unable to testify. It is important to look at this case from several different viewpoints.

First, let's consider litigation management. Both defense experts were "supportive," but both had obvious issues with the care provided. Without an expert, the case must fail as a matter of law. So the defense found experts who could support the process of litigation, but who obviously had some reservations about the case. The cardiologist could not support the emergency physician's care. In sum, the defense recognized that it would be difficult to proceed to trial.

Next, consider the medical facts. The patient had, at a minimum, left arm pain through the night, multiple risk factors, and flipped

T-waves in his lateral leads. What are the possibilities here? Recurrent C-spine pain or an acute coronary artery syndrome? Was it possible to remove acute coronary artery syndrome from the differential diagnosis at the point of discharge?

The plaintiff's case would be strong with regard to the presence of chest pain. Both the wife and the son would testify that the patient had chest pain prior to arrival, and they would obviously have very strong physician expert testimony to bolster their case.



WHAT'S NEW

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Discharge Instructions: A Commitment To Patient Safety And Risk Reduction

➔ [Learn More](#)

Finally, why would a residency trained emergency physician with over 15 years of experience who is respected among his peers fall into the obvious traps in this case?

- There were non-specific changes on the ECG. Risk 101: Order an old ECG for comparison.
- There were multiple risk factors and left arm pain. Consider coronary artery disease until proven otherwise. These are not nuances in emergency medical care.

The answer lies in how physicians think. The issues are very similar to Case #1. The patient fronted his history of cervical disease



and a cervical procedure; even the primary nurse anchored on that diagnosis. Add to that an abnormal ECG and symptoms suggesting the possibility of cardiac pathology, the



diagnostic momentum and anchoring bias caused the EP to close his thought process before he had enough information. Consider the power of the negative bias. It is shortsighted to conclude that this EP or other physicians simply make stupid

mistakes. It is critical that practitioners recognize the tendency to get mentally stuck in any number of ways:

- The triage nurse could cue the physician by choosing a template for neck and arm pain.
- The patient could start the practitioner down the wrong path by indicating that he has a pre-existing problem, and he feels like this is that same old problem.
- The tracking board could read "neck pain," so the physician enters the stretcher space thinking only about the neck. Even in the face of flipped T-waves, the physician is cued to think "neck."

The value in this review is the opportunity to debias:

- Remember to think about anchoring, cueing, and diagnostic momentum.
- Perform a cognitive autopsy on cases like this one at department meet-

ings as a reminder to utilize and think through the differential diagnosis and implement other debiasing techniques.

- Avoid bias through systems. If there is an old ECG, it should be on the chart without a physician having to ask for it. ■

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