



SAVING LIVES - REDUCING RISK

From The Editor

This quarter's newsletter is squarely focused on the failure to diagnose Thoracic Aortic Dissection (TAD). The 'failure to diagnose' is the single most common malpractice allegation against emergency physicians, and the failure to diagnose dissection is usually a significant part of the loss profile. It is a critical patient safety and medical error issue. This is underscored by the

national development of a TAD Coalition, the publication of the "Ritter Rules," the creation of TAD-related foundations, and other national efforts focused on early recognition and treatment of this deadly disease.

Enjoy! Please give us feedback on both this and Dr. Zimmermann's new Pediatric Quarterly newsletter, [Peds EM News](#). Our contact information is available at the end of the document.

The 'failure to diagnose' is the single most common malpractice allegation...

Failure To Diagnose Thoracic Aortic Dissection (TAD)

At 1700 Mr. White's family called 911, moments after he experienced an acute onset of substernal chest pain. Mr. White was a 43-year-old male with no significant past medical history. The paramedics arrived at 1720, and found the patient complaining of chest pain; he was on no meds and had no allergies.

The paramedics' note includes the following in the Chief Complaint section: "Acute onset sharp chest pain radiating to the back. Patient rates it as a 10 on a scale of 10. No prior history of same."

In the history section of their note, they wrote: "Approximately 1 hour ago chest started hurting through to

In This Issue...

Failure To Diagnose Thoracic Aortic Dissection (TAD)	Page 1
New Triage Fundamentals Series Courses	Page 6
TSG Upcoming Lectures	Page 7



his back. Also says there is pain in his stomach. Is nauseated and has multiple episodes of vomiting and many episodes of diarrhea.”



In their examination, the paramedics wrote that there was pain with movement, and the chest pain increased with

palpation. The initial blood pressure was 120/104, pulse 76, resp rate 30. Glasgow Coma Score was 15. Pulse Ox was 98% on room air.

HEENT was normal. Next to “Chest,” they documented: “Sudden onset, 10/10 sharp chest pain, radiating to his back with SOB for 3 hours. On Back exam, they documented: “Pain in the mid back coming from the chest.” The Abdominal exam note said: “Tender and painful with nausea, vomiting and diarrhea.” Extremity exam was: “Distal pulse, motor and sensory function intact.”

During transport to the hospital, the “pain decreased to 8/10 with NTG X 3 and ASA.”

The key point in this case is how a disease entity looks and changes over time; how it looks when the EMTs see the case, when the triage nurse sees the patient, and finally when the emergency physician sees the patient. The fascinating part of this case is the analysis of the EMTs’ data. The answers are all there and available for the healthcare team. Now take a look at the presentation to the emergency department and how the patient looked to the ED nurse and physician.

On arrival to the emergency department (ED), the staff immediately obtained an ECG. There was a normal sinus rhythm and no ST or T wave changes. Although the ECG was of poor quality, there were no apparent abnormalities.

The Triage Nurse documented the following relevant information:

Time: 1752

Chief Complaint	Chest and abdominal pain
Vital Signs	BP 170/82; HR 90; RR 20; Temp 99°F (37.2°C) oral
History	Chest pain, sharp, radiating to abd and upper and lower back
Physical Assessment	Alert, anxious, oriented. Respirations normal, NSR noted. Pulses normal. Abdomen soft. Cap refill normal. No edema. Well hydrated. Skin warm and dry.



The emergency physician saw this patient at 1830. His report was dictated.

The relevant portion of the HPI reads as follows: "... patient presents to the ED because of acute onset of intense epigastric and back pain. Has associated nausea, vomiting and diarrhea. No history of gallbladder disease. Family has a cardiac history. Improved on the way to the hospital with NTG and aspirin but continues to have significant abdominal pain. No cardiac risk factors."

On physical exam:

General	Patient in intense pain
Vital Signs	Reviewed nursing vitals
HEENT	PERL, EOM normal; throat clear
Neck	Supple
CV	Normal heart sounds
Lungs	Clear
Abdomen/GI	Mild tenderness in the epigastric area; no guarding or rebound; BS normal
Back	No CVA tenderness
Extremities	No edema
Neuro	Non-focal
Psychiatric	Oriented X 3

In his "Diagnostic Testing" section, the physician noted that labs were obtained related to the upper abdominal pain. ECG was nor-

mal. White count was mildly elevated with no left shift. Glucose was elevated at 163. Troponin and myoglobin were normal.

The physician noted in his decision-making section that his initial concern was biliary colic related to the abdominal pain with radiation to the back.

With his focus on abdominal pain, the EP ordered an ultrasound of the gallbladder. The patient was



transported for the ultrasound 25 minutes after the physician examination at 1855. He returned from imaging at 1920. The nurse described the patient as in good condition with a significant reduction in pain on return from ultrasound.

The ultrasound result returned negative for biliary disease, so the physician ordered a CT of the abdomen with IV and oral contrast. The patient was not transported to CT until 2130, more than 2 hours after his return from ultrasound and over 4 hours after arrival in the ED.

Although the order was for CT of the abdomen and pelvis, the radiologist identified a



thoracic and abdominal aortic dissection. The dissection extended through the abdomen and into both common iliac arteries. The CT was extended into the chest; the radiologist identified a 5.8 cm aneurysmal dilatation of the ascending thoracic aorta.

The aortic arch was not included on the exam, and the radiologist recommended a follow-up CT chest with contrast. The radiologist communicated his findings by phone to the emergency physician.

The emergency physician did not communicate the results of the CT to the attending physician nor did he call a cardiologist or cardiovascular surgeon; he ordered the CT chest as recommended by the radiologist.

The patient was transported back to CT at 2215 for the chest examination. Prior to the initiation of that exam, the patient became agonal in the CT suite; advanced life support was initiated. The physician was not able to resuscitate the patient.



Discussion

Failure to diagnose is the most common cause of allegations of medical malpractice in emergency medicine.ⁱ Most analyses of the emergency medicine legal literature place that number at 50% or higher; a recent analysis of over 500 EM malpractice cases by a large insurance company found failure to diagnose as the underlying cause in 67% of cases.ⁱⁱ Clearly, efforts focused on minimizing medical errors and litigation in EM must be focused on failure to diagnose.

Data from several large healthcare organizations (TSG clients) indicates that the failure to diagnose thoracic aortic dissection is a common allegation in emergency medicine malpractice litigation. It consistently makes up a significant percentage of the incidence of failure to diagnose.

Significant issues in this case include the following:

1. **Communication with the team.** As mentioned, the paramedic run sheet contains a classic description of TAD. The patient had a sudden onset of pain in

ⁱ PIAA Report: Emergency Medicine 1986 – 2006

ⁱⁱ Source and data to be shared at ASHRM 2012 and published thereafter



the chest radiating to the back followed by pain in the abdomen and low back. If the emergency physician had an awareness of those facts, he would have considered thoracic disease, including acute coronary syndrome and TAD.

What went wrong? The paramedic run sheet was computer-generated and was in the medical record. A careful analysis of that document or a discussion with the paramedics could have resulted in a completely different initial approach and evaluation of the patient.



The EP failed to take advantage of critical information from the paramedics. That was a medical error and was deemed by the hospital and malpractice insurer to be unreasonable under the circumstances (a breach in a standard of care).

Key Point: *The paramedics are a critical part of the patient's healthcare team.*

2. **Movement or migration of chest pain.** This may be the most important message in this case presentation. The presence of movement or migration of chest pain is a

clear indication of aortic disease. Is this historical element in your chest pain template? Is there a reminder to consider the issue of movement of pain and thus consider TAD? Probably not. Location and radiation of pain is probably there, but not movement of pain.

Pain that starts in the chest and then **moves** to the low back or abdomen is a critical clue to the presence of a dissection. This is too often confused with or referred to as radiation. In acute coronary syndrome, pain does not radiate from the chest to the low back, and rarely radiates to the abdomen. In TAD, pain often moves or migrates from the chest to the abdomen or from the chest to the back.

Key Point: *Create a systems approach that builds this critical indicator into your chest pain template or consider it when performing an HPI on a chest pain patient.*

3. **Change in condition over time.** The analysis of change over time is extremely important in evaluating a patient for aortic disease. The paramedics' HPI contains chest and abdominal pain as does the HPI from the triage nurse. By the time

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the emergency physician saw the patient, he wasn't complaining of chest pain at all; he told the physician he had abdominal pain.

The emergency physician then focused on the abdomen and never included the

chest pain symptoms from earlier in the evening. Clearly, if the patient had mentioned chest pain, the EP would have taken a radically different approach.

Key Point: *The signs and symptoms of TAD can change dramatically over time. If the complaints include chest and then belly, consider TAD.*

4. **Anchoring.** Human beings have a tendency to gather facts, anchor on a particular focus, and prematurely close the relevant and continuing thought process. We are all victims of this human bias of anchoring. The analysis of this and other biases is part of the study of heuristics.

In this case, the EP heard the complaint of abdominal pain with radiation to the back and anchored on acute biliary disease, thus prematurely closing the clinical thought process. Other critical facts were available, which in retrospect feel and seem so obvious. That is the power of human bias, and it is exacerbated by the emergency physician's need for speed and the incredible frequency of decision-making required by the specialty.

The systems approach to avoiding this trap is an awareness of bias and the implementation of debiasing techniques such as creating an immediate availability of a differential diagnosis or a formal hand-off or sign-off related to communication with paramedics or other prior providers.

NEW Triage Fundamentals Series Courses

Triage Fundamentals begins with an e-Learning course based on the popular live presentation by Shelley Cohen, RN, MSN, CEN, *The Risky Business of Triage*.

Click on course name to see course description.

- Triage Fundamentals #01: The Risky Business of Triage
- Triage Fundamentals #02: Triage Practice Standards
- Triage Fundamentals #03: Triage Assessment & Documentation
- Triage Fundamentals #04: Triage Policies, Procedures & Guidelines
- Triage Fundamentals #05: Special Considerations at Triage

SEE WHAT CLIENTS ARE SAYING:

<http://www.hru.net/hru-movie.html>



5. **The many faces of TAD.** This can be an extraordinarily difficult diagnosis. Dissection can hit the carotids and cause visual problems; hit the brachiocephalic artery and cause upper extremity vascular issues; hit a spinal artery and cause mesenteric ischemia and severe gastrointestinal symptoms; or impair lower extremity circulation. Transient monocular blindness and diarrhea could be the presentation of a dissection!

Obviously TAD would be extraordinarily difficult to diagnose. This case demonstrates many of the faces of TAD and is an excellent teaching case.

6. **Get Help.** At what point in the patient evaluation was it time to call for help? Given the delay for evaluation of biliary disease, at what point in the workup following that should the EP have called the attending and a CV surgeon or considered transfer?

It would seem the correct time would have been immediately after the radiologist reported dissection of the thoracic and abdominal aorta. At that point, the patient's blood pressure was skyrocketing and the EP had ordered nipride. In retrospect, the EP was inappropriately influenced by the radiologist's suggestion of performing another CT for the purpose of clarifying the extent of the thoracic dis-

TSG Upcoming Lectures

ASHRM Conference

- 1** **EM Trends: Claims & Risk Mgmt.**
Mon., Oct. 8 @ 10:15 a.m.

ACEP Scientific Assembly

- 1** **Medical-Legal Risks in Times of Everyday Crisis**
Wed., Oct. 10 @ 1:30 p.m.
- 2** **Case-Based High-Risk Bounce Backs**
Wed., Oct. 10 @ 5:00 p.m.
- 3** **Medical Liability in the Age of Electronic Health Records**
Thur., Oct. 11 @ 8:00 a.m.

Cerner Health Conference

- 1** **PowerNoteED as a Tool for Risk Reduction in the ED**
Mon., Oct. 8 @ TBD



section. The additional CT may have been appropriate, but only after someone was driving to the hospital to prepare the OR or calls were initiated for transfer.

after 2215. He was in the ED for 4½ hours before he arrested. Rapid action based upon the paramedics' report and the EP's careful analysis of the patient's symptoms over time may have altered the outcome in this case.

toms change over time. From paramedic to triage nurse to emergency physician, the presentation can change dramatically. ■

The hospital, insurance company and emergency physician were all on board with early settlement of the case. This would have been a very difficult case to litigate. The ultimate amount of the settlement was not disclosed.

Thank You



Ultimately, the delay for the chest CT probably had no impact on the case, as the patient expired before he could have reached the OR or be transferred.

Failure to diagnose TAD remains a significant issue in the practice of emergency medicine. System solutions are available, and hospitals and emergency physician groups should take advantage of them. One significant opportunity is building clinical decision support into electronic medical records. In addition, the paramedics should be considered part of the team; communication of patient events prior to arrival is critical.

Summary

Given all the facts of the case, the patient may have been saved by early recognition of the dissection and immediate communication with the CV team or transfer to a tertiary care facility. The initial physician evaluation occurred at 1730; the patient expired sometime

Finally, remember that TAD is unique in its many presentations and in the way symp-

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