

Failure to Diagnose Aortic Dissections: Six Common Defenses

By: *Nursine S. Jackson, M.S.N., R.N.*

There is a condition called aortic dissection, where blood forces its way between the layers of the walls of the aorta in the chest, through a tear in the inner lining of this three-layer vessel. As the force of the blood dissects the layers apart forming a false lumen, it creates an imminently life threatening situation. The signs and symptoms resulting from this dissection vary, depending on where in the thoracic aorta this tear occurs, and which off-branching vessels are disrupted. In spite of all we know and the technologies we have available, most of these dissections are misdiagnosed. Following are defenses physicians will give when they are confronted with failing to make the diagnosis, along with some discussion to help the plaintiff's attorney determine whether these defenses hold water:

DEFENSE #1: Aortic dissection is so obscure a diagnosis that it did not deserve to be included on the differential tree (the "zebra #1" defense):

Fifty percent of patients with dissecting aortas die within 24 hours of their hospital admissions, nonetheless, as many as 85% of the patients presenting do not receive immediate appropriate medical treatment¹. It is estimated that more than 90% of the dissections should be diagnosable if currently available diagnostic modalities are performed. Does this mean that this pathology is a "zebra," or does this mean that the caregivers don't look? Certainly, if the diagnostician does not maintain an index of suspicion, he will overlook signs and symptoms that should have otherwise yielded either a correct diagnosis, or at least waved a red flag that something was terribly wrong and warranted further investigation. The answer to the "zebra defense" is always to evaluate where you hear the hoof beats. If you are in the plains of Oklahoma, a zebra is less likely than when you are in the Serengeti. If the patient has a history of chest pain with signs and symptoms of a dissection, then you are in the Serengeti, and the defendants cannot say a zebra is not expected.

Defense #2: Your client/decendent did not have any risk factors, so defendant doctor had no reason to include dissection within his differential diagnoses (the "zebra #2" defense):

Risk factors are not readily apparent in many patients suffering dissections, so it is unacceptable to dismiss this diagnosis from the differential diagnoses considered, when a patient presents with signs and symptoms that may be related to dissection, but risk factors do not jump

out. Dissections most commonly occur in males around the age of 63 with a history of hypertension², suggesting that the most common risk factors are: male sex, older age, hypertension and arteriosclerosis. Other known risk factors include connective tissue disorders, such as cystic medial necrosis, and syndromes, such as Marfan's, Noonan's, Ehlers-Danlos, and Turner's. Third trimester pregnancy poses a known risk, as does prior instrumentation of the aorta, e.g., aortic cross clamping, surgical replacement of the aortic valve, and prior use of cardiopulmonary bypass, or intra-aortic balloon pumps.

Patients without identifiable risk factors have presented with a new onset of symptoms of dissection after having exerted great physical efforts, presumably where they generated markedly increased intra-thoracic pressures from bearing down to exert effort³. In 1760 King Henry II died sitting on the commode, providing us with our first historic example of dissection, most likely a result of bearing down during a bowel movement⁴.

Subtle, quiescent aortic injuries (as well as not-so-subtle complete transections with immediate death) have occurred with trauma, particularly where rapid deceleration occurs, e.g., car crashes, when the aorta, which is loosely suspended within the chest, continues its forward movement despite the sudden arrest of the rest of the body. This sort of traumatic injury to the aorta that may have happened years ago, and is long forgotten, would not have been provided in a history, and therefore would not be identified as the risk factor that it is.

In summary, even if his patient doesn't have a readily apparent risk, a defendant doctor should not be permitted to conclude that the patient did not have risk factors, therefore should not have dissection included in his differential work-up.

DEFENSE #3: The presenting signs and symptoms were atypical for a dissection, so the physician had no reason to entertain the diagnosis of dissection in his work-up.

Some signs are subtle, so if the diagnostician does not look for them, he will not see them. Further, the constellation of presenting signs and symptoms may be noteworthy, whereas each individual sign or symptom in isolation may be unremarkable. Examples of potentially overlooked, but significant findings include:

- a pain description where there is a sudden onset of "sharp" pain (sometimes scaling 10 on a scale of 10), of maximum intensity at it onset, then improving, located in the chest, back and/or abdomen [One study showed that if physicians asked 3 basic questions about their pain (quality, radiation, intensity at onset) that thoracic aortic dissection was correctly diagnosed in 91% of the patients⁶];
- syncope (occurred in more than 12% of patients with Type A dissections, and 2.2% of these did not have pain)⁶
- new onset murmurs of aortic regurgitation (which are present in 44%⁷ to 50% of dissections even when the aortic valve isn't directly involved in the dissection⁸);
- pulse deficits (which mean a pulse in one extremity is weaker on palpation when compared to another, or the blood pressures are significantly different between arms, is reported in up to 50% of patients with type A dissections⁹);
- chest x-ray findings (which show abnormalities ~90% of the time¹⁰, including widened mediastinums (37.4% of Type A's) or abnormal aortic contour¹¹);
- EKG changes occur frequently and are generally non-specific, though 10-20% show evidence of myocardial infarction. The absence of myocardial infarct favors the diagnosis of dissection; the presence of myocardial infarct confounds the diagnosis¹².

[Beware: The defense will also find literature saying that there is no reliable laboratory finding, which justifies cost cutting by selectively omitting studies based on clinical judgments.]

Did defendant doctor perform the assessment for chest pain as guided by American College of Emergency Physicians¹³, the American College of Cardiology / American Heart Association¹⁴, or the chest pain protocols of defendant institution? (These guidelines usually recommend EKG, chest x-ray, serial serum cardiac markers, pulse oximetry and cardiac monitoring as the baseline, then provide an algorithm to direct additional studies as guided by the results of this baseline study.) While the use of clinical judgment may seem to be preferable to the unthinking implementation of guidelines, so many variables arise that confound the quality of the clinical judgment that it is arguable that the safety of blind reliance on the guidelines should prevail. The clinical guidelines and algorithms provide the plaintiff's lawyer with certainty, a standard of care with which the defendant's doctor can be measured and found wanting. The defense will argue that these guidelines are only that – guidelines, but do not rise to the standard of care. They will argue therefore that clinical judgment should supersede these written guidelines, thereby allowing the defendant to slip through an amor-

phous "question of judgment" defense, even when demonstrably violative of published guidelines or algorithms. The question of judgment defense is always the defendant's playground in that there is no malpractice that cannot be excused if dressed up as an appropriate exercise of clinical judgment.

DEFENSE #4: He had two simultaneous problems so that his [fill in the blank ___ myocardial infarction, stroke, gastroenteritis . . .] obscured the dissection.

This is problematic. A person CAN have two conditions simultaneously superimposed. If a patient presents with a myocardial infarction, that may or may not excuse the diagnostician from failing to note that he concurrently had a dissection, or that the myocardial infarction was caused because the dissection obstructed a coronary artery or caused profound hypotension that lead to the infarct. Of course, the practitioner should not just grab at the first easy diagnosis to the exclusion of other possibilities; however diagnosing dissections is genuinely difficult, and when there is a concurrent morbidity confounding the diagnostic process, this may be enough of a defense to make the case undesirable to pursue.

DEFENSE #5: His aorta ruptured so they wouldn't have been able to save him anyway.

Whether the patient survives or not, is dependent to a large degree on how readily caretakers respond to emergencies (like malignant hypertension where intravascular pressures, if not controlled, may actually cause a blow-out of the weakened vessel; hence vigilant blood pressure management is recognized as the most important component of therapy¹⁵) Clearly, the speed with which they make this diagnosis and intervene, if that is possible in the specific scenario, is critical to both survival and long-term morbidity. Free rupture resulting in sudden death is the common lay perception of the way aneurysms go, so it is the burden of the plaintiff's attorney to illustrate how aortic dissections are different, i.e., that there is often time for life-saving interventions if the diagnosis is made in a timely way, especially if the patient is properly medically managed. The job of the plaintiff's lawyer is to get the jurors to understand the difference between rupture and dissection, so that they can appreciate that the latter may be curable.

Free rupture is more likely in a patient with pre-existing aneurysmal disease, which may have been detectable, and perhaps, should have been detected, for years before the crisis at hand. Even if there is no case because the patient's sudden death might not have been averted in the E.R.,

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there might be a case for the prior non-diagnosis of a long-standing problem that resulted in the sudden death.

DEFENSE #6: The case isn't worth much anyway because had he lived, he would have had an extremely shortened life expectancy and the rest of his life would have been full of morbidity requiring expensive medical care.

Most studies citing morbidity and mortality statistics of chronic dissections, or of patients following repairs of dissections, base their statistics on a sample of elderly patients with multiple co-morbidities. If your client/decendent was a young healthy person, it is likely that these statistics do not apply to him. Further, there is no study that states that the serious morbidity or early death follows a dissection 100% of the time^{16 17 18 19}. Use the authoritative resources and logic to your benefit to demonstrate that your client had a significant opportunity for life or life without constant morbidity, had the diagnosis been made in a timely manner.

1. Meszaros, I. (May 2000). Epidemiology and clinicopathology of aortic dissection: a population-based study over 27 years. *Chest*, 116 (5), 1271.
2. Hagan, P.G. et al. (February 16, 2000). The international registry of acute aortic dissection (IRAD). *JAMA*, 283 (7), 4.
3. Viljanen, T. (1986). Diagnostic difficulties in aortic dissection. *Annals Chirurgiae et Gynaecologiae*, 75, 331.

4. Leonard, J.C. (1979). Thomas Beville Peacock and the early history of dissecting aneurysm. *BMJ*, 2, 260-262.
5. Klompas, M. (May 1, 2002). Does this patient have an acute thoracic aortic dissection? *JAMA*, 287 (17), 2264.
6. Hagan, p. 1.
7. Hagan, 6.
8. Meszaros, 1276.
9. Titinalli, J.E. Dissecting aortic aneurysms. *Emergency Medicine* (5th ed.). New York: McGraw-Hill, 414.
10. Klompas, 2269.
11. Hagan, 6.
12. *Glenn's Thoracic and Cardiovascular Surgery*, (6th ed.). (1991) Stamford, CT: Appleton & Lang, 2278.
13. American College of Emergency Physicians: Clinical policy for the initial approach to adults presenting with a chief complaint of chest pain, with no history of trauma. *Ann Emerg Med*, 1995; 25, 274-299
14. Gibbons, et al. (June 1999). ACC/AHA/ACP-ASIM guidelines for the management of patients with chronic stable angina. *JACC*, 33 (7), 2029-197.
15. Finkelmeier, B.A. (September 1997). Dissection of the aorta: a clinical update. *Journal of Vascular Nursing*, 9(9).
16. Kouchoykos, N.T. *Kirklin/Barratt-Boyes Cardiac Surgery* (3rd ed.). (1992). Salt Lake: Churchill Livingstone; City, 1827 & 1839-42.
17. *Glenn's Thoracic and Cardiovascular Surgery*, 2291-4.
18. Crawford, F.S. (November 21, 1990). Clinical Cardiology: the diagnosis and management of aortic dissection. *JAMA*, 264 (19), 2541.
19. Hagan, p. 5.

Nursine S. Jackson, MSN, RN is a Master's prepared cardiovascular clinical specialist with 27 years of nursing experience, Predominantly in vascular surgery and critical care. She has assisted Plaintiff's attorneys in developing medical-legal cases since the mid-1980's.

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