



When in Doubt, Think Abdominal Aortic Aneurysm



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The diagnosis and management of abdominal aortic aneurysms (AAAs) can be a challenge. Even when we make the correct diagnosis in a symptomatic patient that reaches the hospital, only 50 percent of the patients will survive. Those AAA patients we inadvertently send home with musculoskeletal back pain or renal colic are a real problem, for themselves and our malpractice insurance carriers.

Abdominal aortic aneurysms are prevalent in two to four percent of the population over age 50. Risk factors for AAA include: male gender, advancing age, hypertension, COPD, cigarette smoking, atherosclerosis and a family history of aneurysms. An infrarenal aorta diameter greater than three cm can also define AAA. Average growth is 0.2 to 0.5 cm per year, although the rate of expansion is highly variable and unpredictable. Any aneurysm can rupture, and risk of rupture increases dramatically with increased aneurysm size. Most AAA rupture occurs into the retroperitoneum, which may be temporarily contained by clotting and tamponade. Up to 30 percent of patients may have free intraperitoneal rupture, which is often rapidly fatal.

The eyes only see what is in the mind. You must think of AAA in any older patient you see with abdominal, back or lower extremity complaints. Common misdiagnoses are renal colic, musculoskeletal back pain, pancreatitis, diverticulitis, cholecystitis, appendicitis, perforated viscous, intestinal ischemia, or an acute MI. I teach residents to have a little AAA mantra in their head anytime they entertain the above diagnoses in older patients. The medical record should reflect cardiovascular, family and social risk factors, with a review of

symptoms addressing any subtle associated symptomatology such as radiation of pain or associated lower extremity complaints. The physical exam must always mention a careful abdominal examination to determine the presence or absence of tenderness, masses, or bruits, and quality of the femoral pulses.

Patients in extremis with AAA high in their differential diagnosis need at least two large bore IV sites, CBC, type and crossmatch, urinalysis, creatinine, coagulation studies, appropriate (not too aggressive) fluid resuscitation, and a vascular surgeon in an OR suite. Unstable patients with an unclear diagnosis who are AAA candidates require bedside surgical consultation and abdominal sonography. Abdominal ultrasound, while operator dependent, is essentially 100 percent sensitive for unruptured AAA, and with intraperitoneal rupture, free fluid in the abdomen can be seen. Stable patients may undergo CT of the abdomen with IV contrast, which has a very high sensitivity for AAA, as well as its surgical anatomy, dissection, and extent of rupture. And abdominal x-rays, with cross table lateral abdominal picture, may show you the aneurysm if there is calcification of the aorta, which has at times been my initial clue for AAA when evaluating a patient for abdominal pain.

Renal colic patients deserve special mention, because this is the most common misdiagnosis in AAA and aortic dissection. **Be very careful about sending an older patient home with renal colic, even when they have hematuria and a benign exam.** I have a very low threshold to image these patients. The abdominal ultrasound will see the AAA or intraperitoneal fluid, and also any significant hydronephrosis, and occasionally

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even the ureteral stone. Many emergency physicians are acquiring the knowledge and skills to perform screening ultrasound exams, as this wonderful tool is finding its way to the bedside of many of our diverse patients in the emergency department. Renal protocol spiral CT scanning has been a great new diagnostic modality, replacing the IVP in many institutions. Spiral CT is fast, does not require IV contrast, and visualizes the abdominal and retroperitoneal structures with high accuracy.

While this technology is more expensive than ultrasound or IVP, it provides a depth of evaluation that, while not 100 percent sensitive, is very comforting in older patients. All of the above tests may overlook a dissecting aneurysm, so IV contrast abdominal CT (or aortography) should be utilized if dissection is high in your differential diagnosis.

In summary, do your patients a favor and think the worst for them! Think AAA! ●

CLOSED CLAIM ABSTRACT

Missed Diagnosis of Abdominal Aortic Aneurysm

by Victoria Kennedy, R.N., Senior Risk Management Consultant

CLINICAL SEQUENCE

A 61-year-old, Caucasian male presented to the emergency department, complaining of an acute onset of low back pain radiating into his right groin. This was followed by nausea, vomiting and diaphoresis. Upon presentation, he was pale, diaphoretic and his skin was cold and clammy. His vital signs were B/P 100/67, P 47, R 20, T 94.6.

The patient had a history of a heart attack 20 years previous to this visit and had been taking Tenormin 50 mg every day for five years to reduce hypertension. He smoked one to one and a half packs of cigarettes per day. Due to hypotensive episodes with sinus bradycardia, his family-practice physician admitted him into the hospital in ICU with a differential diagnosis of a myocardial infarction or a kidney stone. Laboratory tests, cardiac enzymes and urine tests were being done and a surgical consultation was requested to rule out an acute abdomen.

The surgeon's differential diagnosis was similar to the family physician's and included ureteral stone, urinary tract infection, atypical appendicitis and diverticulitis. He also agreed with the recommendation by the family physician that an IVP should be done to rule out a ureteral stone, and if that was negative to follow with a CT scan of the abdomen and pelvis to rule out retro-cecal appendicitis.

The medical record reflected that cardiac enzymes were drawn at the time of admission and again eight hours later, and they were within normal limits. CBC showed the patient's WBC increased to 17,300, hemoglobin and hematocrit remained in the acceptable range on admission. The next morning the hemoglobin and hematocrit remained stable, but the WBC had increased to 20,600. His EKG showed regular sinus rhythm and no acute ST change. At that time, it was noted that the patient was thought to be stable. He continued to have a dull aching pain in the right lower quadrant of his abdomen and to

the right side of his groin, but it was noted that the patient stated the pain had improved.

At approximately 2:00 p.m. the day after admission, the patient went into cardiopulmonary arrest. CPR was initiated but was unsuccessful, and he was pronounced dead at 3:17 p.m. An autopsy was done, and the patient had a huge rupture of his abdominal aorta and coronary artery disease.

CLAIM SEQUENCE

The patient's wife filed a medical malpractice lawsuit against the family physician and the consultant surgeon. The surgeon was later dismissed from the lawsuit because while there were still allegations that the surgeon was negligent in failing to diagnose the patient's condition, the plaintiff attorney claimed that his negligence did not have an effect on the patient's ultimate demise.

The main allegations against the family physician were that he had every opportunity to properly and timely diagnose the patient's condition. He should have transferred him to a facility where they could have performed surgery to save his life.

DISPOSITION

The case was tried for four days and resulted in a **defense verdict**.

Plaintiff Expert Opinions

The specific criticisms raised by the plaintiff's experts were the following:

1. Failure to consider, in the differential diagnosis, cardiovascular causes of low back pain such as abdominal aortic aneurysm.
2. Failure to recognize that the patient's hypotensive crisis needed other medical or surgical specialty attention in addition to the general surgical consult.
3. The untimely or inappropriate diagnosis or treatment of the patient, which led to his demise.

INFORMATION ON ABDOMINAL AORTIC ANEURYSMS

According to statistics, ruptured abdominal aortic aneurysm is the 13th-leading cause of death in the U.S., causing an estimated 15,000 deaths per year. The incidence of AAA is two to four percent in the adult population; 11 percent of cases in that subset occur in males older than 65 years.

White males have the highest incidence of AAA; males are affected seven times more often than females and more than three-fourths of patients are over 60 years old.

RISK MANAGEMENT DISCUSSION POINTS Delay in Obtaining Medical Treatment by the Patient

According to a study done by the Department of Vascular Surgery, Belfast City Hospital, UK, the delay between rupture, diagnosis and repair of AAAs can significantly affect the outcome. The study showed that delays in management occur for numerous reasons. This study involved 30 patients who ultimately underwent surgery with a diagnosis of ruptured AAA.

Of the 30 patients:

- 21 had seen their general practitioner (GP)
- Only eight (38 percent) were correctly diagnosed before they went to the hospital
- The most common misdiagnosis (24 percent) was renal colic
- Patients were referred to the vascular service at a median of eight hours (range of one to 125 hours) from the onset of new symptoms
- Surgery began at a median of 9.2 (range of 1.66 to 125 hours) from the onset of symptoms

The delays ranged from:

- The onset of the symptoms
- Getting the patient to call the GP
- Getting the patient to see the GP
- Arriving at the hospital
- Referral of the vascular surgeon
- Being seen by the vascular surgeon
- Commencement of anesthesia

The diagnosis of a ruptured AAA is difficult because the typical presentation of back pain, pulsatile mass and hypotension is not invariably present. In the study mentioned above, only 38 percent of the patients were correctly diagnosed by their GP at the initial visit, and the other 24 percent were initially diagnosed with renal colic.

Atypical Presentation

The symptoms that are associated with abdominal aortic aneurysms may vary tremendously; therefore, misdiagnosis is common. AAAs are often asymptomatic until they expand or rupture. “Patients may experience unimpressive back, flank, abdomi-

nal or groin pain for some time prior to rupture. Isolated groin pain is a particularly insidious presentation. This occurs with retroperitoneal expansion and pressure on either the right or the left femoral nerve. There may be no other findings associated with this symptom, and a high index of suspicion is necessary to make the diagnosis.”¹

It is possible for patients to have normal vital signs in the presence of a ruptured AAA because of the retroperitoneal containment of the hematoma. “Misdiagnosis is fairly common because the classic presentation of pain associated with hypotension, tachycardia and a pulsatile abdominal mass is present in fewer than 30 to 50 percent of cases. **The leading misdiagnosis is renal colic, as dissection of the renal artery may produce flank pain and hematuria.**”² (This was the diagnosis in the closed claim abstract.) It is important to emphasize the danger of diagnosing an elderly patient with renal colic. This often leads to delays in early diagnosis of the ruptured AAA due to unnecessary investigations that may be inappropriate.

Since delays in surgery for ruptured AAA are undesirable, the article, *Prospective Study on Factors Delaying Surgery in Ruptured Abdominal Aortic Aneurysms*, recommends “it cannot be overstated that sudden, severe back and abdominal pain in an elderly patient should be considered as a ruptured AAA until proven otherwise.”³

Delay/High Level of Suspicion/Differential Diagnosis

“Abdominal, back or flank pain of sudden onset is characteristic of a rapidly expanding or ruptured AAA. The diagnosis should be entertained whenever a patient older than 50 presents with abdominal pain, particularly when pain is associated with syncope or signs of hemorrhagic shock.”⁴

According to an article in *American Family Physician* titled “Diagnosis and Treatment of Abdominal Aortic Aneurysms,” the diffuse and non-specific nature of asymptomatic abdominal aortic aneurysm may lead to errors and delays in diagnosis. The authors opined that most diagnostic errors were due to a failure to palpate the pulsatile abdominal mass.⁵ According to the e-medicine article, if there is suspicion of the patient having an AAA, palpation is important and if present, this mandates immediate surgical intervention.

Documentation

Appropriate documentation should be considered a diary of significant medical information. With AAA, time is of the essence in order to succinctly reconstruct the events that took place. The most common allegation associated with an AAA lawsuit is

that there was a delay in treatment, and that delay in treatment had a significant impact on the outcome of the patient. If we have documentation in the record that is **timed**, dated and signed by the person writing the entry, we are able to eliminate confusion about the sequence of events and have documentation to show that the patient was cared for in a timely manner. For example, in the closed claim abstract, we were able to support the defense of the case with a medical record that reflected that the patient was cared for in a timely manner. While there was a bad outcome, the jury felt that the physician had taken the appropriate steps in order to determine a diagnosis.

Breach of the Standard of Care/Causation/Damages Issues

The plaintiff must prove that the doctor was negligent in violating the standard of care (i.e., that he acted in a manner that a reasonable and prudent doctor would not have under the same circumstances). In addition to showing that the doctor was negligent, the plaintiff must also show the doctor's negligence caused the injury or death.

Generally, the reason people go to the doctor is because they are sick. Even with the best medical treatment, the patient still may not improve. Therefore, the plaintiff has to prove that IF the doctor had not been negligent, the patient would have gotten better or would not have been injured. In medical malpractice cases, a poor result or unfortunate outcome does not give rise to the presumption of negligence. The plaintiff must prove a negligent act or an omission actually occurred and caused the damage.

In the case cited above, the plaintiffs were not able to prove that there had been a breach in the standard of care. There was also expert testimony and statistics that clearly indicated that even if there had been a definitive diagnosis of AAA earlier and the patient had been transferred to another facility for surgical intervention, the outcome would have

still been the same. Therefore, the jury awarded the case a **defense verdict**.

SUMMARY

Clearly, abdominal aortic aneurysms are often difficult to diagnose. The presenting symptoms may be atypical of an AAA or may resemble symptoms that appear with other medical conditions as well. The patient may initially have stable vital signs. For this reason, it is incumbent upon the physician to maintain a high index of suspicion for AAA and to include this in the differential diagnosis when it has not been ruled out. When defending a malpractice case, magical strategies cannot be taken out of the air. To build an appropriate defense, the medical record is an important piece of evidence that illustrates the sequence of events and the thought process of the physician in making his/her diagnosis. When the clinical notes are complete and cover the entire time span leading up to the event, the content of the record will serve as a building block for defending the physician's state of mind and his clinical judgment process. And finally, physicians involved in diagnosis-related claims focus on the methods that caused them to be delayed in reaching the diagnosis. Equally important, however, is what difference the delay made in the outcome. To have a proper case, the plaintiff must prove that the physician failed to adhere to a standard of care for an average practitioner in that particular field of medicine and that an earlier diagnosis would have led to a better outcome. A defense verdict was given in the case outlined in the closed claim abstract because everything that could possibly have been done for the patient was done. ●

- 1 www.emedicine.com/emerg/topic27.htm
- 2 www.emedicine.com/emerg/topic27.htm
- 3 www.journal.rcsed.ac.uk/4330010.htm
- 4 www.emedicine.com/emerg/topic27.htm
- 5 www.aafp.org/afp/970915ap/santilli.html

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