Quality of History Taking in Patients With Aortic Dissection

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Study objectives: Aortic dissection generally is an acute catastrophe. Rapid diagnosis is critical. We hypothesized that the quality of history taking contributes to the accuracy of diagnosis in patients with dissection.

Design: Retrospective chart review of 83 patients, whose diagnosis of aortic dissection was confirmed by autopsy, surgery, CT scan, echocardiogram, or angiogram. The quality of the initial history was reviewed using predetermined criteria. The physicians' initial clinical impressions were recorded.

Results: The examining physician correctly suspected aortic dissection after the initial clinical evaluation in 54 of 83 patients (65%). Only 33 of 78 patients with symptoms (42%) were asked about the quality, location, and onset of their pain, the three descriptors identified a priori as important. In 19 patients (24%), only zero or one descriptor was recorded. When all three questions were asked, dissection was suspected in 30 of 33 patients (91%); when zero, one, or two questions were asked, dissection was suspected in 22 of 45 patients (49%).

Conclusion: Despite important advances in diagnostic imaging, accurate diagnosis of aortic dissection requires an accurate history. In our series, the quality of initial history was associated with the accuracy of the initial clinical impression in patients with aortic dissection.

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Key words: aortic dissection; chest pain; clinical history; accuracy

A man . . . was seized with a pain of the right arm and soon after of the left, . . . after these there appeared a tumor on the upper part of the sternum . . . . He was ordered to think seriously and piously of his departure from this mortal life, which was very near at hand and inevitable.” Morgagni,1 in 1761, was the first to describe aortic dissection and to link the clinical presentation with prognostic and pathologic findings.

Acute aortic dissection is the most common fatal condition involving the aorta. Introduction of effective surgery in 1955 by DeBakey et al2 and medical therapy in 1965 by Wheat et al3 was followed by major advances in the diagnostic techniques of angiography, CT scanning, echocardiography, and MRI.4-7 Aortic dissection’s catastrophic presentation leading to an early death makes rapid diagnosis critical.

Despite a distinctive presentation and the existence of excellent diagnostic modalities, aortic dissection is suspected after initial clinical presentation in only 60% of patients and diagnosed premortem in <90%.8,9

We sought to test the hypothesis that the quality of history taking contributes to the accuracy of diagnosis in patients with aortic dissection.

MATERIALS AND METHODS

We reviewed the medical records of 83 patients diagnosed as having aortic dissection between January 1985 and December 1994. The diagnosis of dissection was confirmed by autopsy in 4 patients, by surgery in 38 patients or by CT scan, echocardiogram and/or angiogram in 41 patients.

The history obtained at the initial clinical evaluation was reviewed for inquiries concerning the following three descriptions of pain: quality, rather than just presence; radiation; and sudden intensity at onset. A score of 1, 2, or 3 was recorded. For example, Morgagni’s citation would have scored 1 as he related pain radiation but did not describe the pain quality or intensity at onset.

Dissections were characterized as proximal (type A) or distal (type B) utilizing the Stanford classification.10 The physicians’ initial clinical impressions were retrieved from the medical record.

RESULTS

Demographics and Predisposing Factors

More women than men were affected with average age near 60 years in both proximal and distal...
dissections (Table 1). Hypertension was the most common risk factor present in most patients with both proximal and distal dissection. Connective tissue disease, including Marfan’s syndrome, trauma, bicuspid aortic valve, and prior surgery to the aorta were more common in patients with proximal dissection.

**Methods of Diagnosis**

After completion of the initial history, physical examination, ECG, and chest radiograph, the examining physician recorded a suspicion in 54 of the 83 patients (65%). The diagnosis was made incidentally in 23 patients (28%), where, for example, CT scan for suspected aneurysm or angiogram for suspected coronary ischemia revealed the dissection. Dissection was first discovered at postmortem examination or surgery in six patients (7%).

**Quality of Initial History**

Of the 83 patients with aortic dissection, 78 (94%) presented with chest and/or abdominal pain, 3 (4%) were asymptomatic, and 2 (2%) were comatose (Table 2). Only 33 of the 78 patients presenting with pain (42%) were asked all three questions about the quality, radiation, and intensity at onset of their pain. In 19 patients (24%), either zero or one feature of the pain was queried.

The quality of the history was associated with the suspicion of dissection after the initial evaluation. When all three essential questions were asked, the physician correctly suspected aortic dissection in 30 of 33 patients (91%). When the interviewing physician asked only 0, 1, or 2 of the questions, the correct diagnosis of aortic dissection was initially suspected in only 22 of 45 patients (49%) (p<0.0001).

Furthermore, the patient’s chief complaint influenced the subsequent history. Of 34 patients with distal dissection, 8 (24%) presented predominantly with abdominal or leg pain. The initial diagnosis was incorrect in all eight. An abdominal catastrophe (ulcer, hepatitis, mesenteric infarct, pancreatitis) was suspected in six and claudication in two. None of those eight patients were asked if the pain was intense at onset.

**DISCUSSION**

Aortic dissection has a distinctive clinical presentation. It is a catastrophic disorder with rapid death if untreated. Diagnosis can often be made readily with noninvasive techniques. Treatment is of proven benefit. Therefore, it is critical that the initial history be of sufficient quality to raise suspicion of dissection.

Prior to the advent of therapy for dissection and prior to the development of excellent noninvasive modalities for diagnosis, clinicians routinely took meticulous histories. The distinctive clinical presentation of aortic dissection was well described in the 18th and 19th centuries.

![Image](http://journal.publications.chestnet.org/pdfaccess.ashx?url=/data/journals/chest/21828/ on 04/07/2017)
Although premortem diagnosis in the current era has been estimated at 90%, Spittell et al.\textsuperscript{9} in a recent superb study, reported that aortic dissection was suspected after the initial history, physical examination, chest radiograph, and ECG in only 62% of 159 patients presenting without prior diagnosis. Even these estimates are high as patients with aortic dissection who die with undiagnosed conditions cannot, of course, be included in any published series.

When patients present to a physician with a catastrophic event, rapid diagnosis and therapy are critical. There is a tendency to quickly turn to technology in the hope of making a certain diagnosis. In this dramatic setting, the initial clinical evaluation can be inadequate. We hypothesized that physicians confronted with desperately ill patients would take a superficial history often insufficient to suspect dissection.

The results confirmed our hypothesis, as less than half of our patients were asked the three crucial questions about the quality, radiation, and intensity at onset of their pain. The diagnosis of acute dissection was made premortem in >90\% of the patients in our series. However, similar to Spittell et al.,\textsuperscript{9} dissection was suspected after the initial clinical evaluation in only 65\%. We found an association between the quality of the history and the accuracy of the initial clinical diagnosis.

This study has several limitations. First, our assessment of the quality of the history and presumptive diagnoses was based on written notes evaluated by chart review. This reflects what was documented rather than the actual impression of the responsible physicians. We assume a correlation but have not proved it. Second, the diagnosis of aortic dissection was confirmed at surgery or postmortem in 42 patients, but by less definitive techniques in 41. The latter group may include patients with incorrect diagnoses, but this is unlikely as the subsequent clinical course and the high-tech tests were in agreement. Recent literature does suggest that a CT scan, angiogram, MRI, and tranesophageal echocardiogram all have sensitivities \( \geq 85\% \) and specificities >90\%.\textsuperscript{14,15}

**Conclusion**

Despite important advances in diagnostic imaging for aortic dissection, accurate diagnosis still requires an accurate history. The selection of tests, their interpretation, and subsequent therapy necessarily rely on the initial clinical suspicion generated in large part by a carefully elicited history.

**References**