

RESEARCH ARTICLES

ANALYSIS OF ACUTE AORTIC DISEASES NEWLY DIAGNOSED IN AN EMERGENCY DEPARTMENT

ACİL SERVİSTE YENİ TANI KONMUŞ AKUT AORT HASTALIĞI OLAN HASTALARIN ANALİZİ

Cuma YILDIRIM, M.D., Yusuf YÜRÜMEZ*, M.D., Yücel YAVUZ*, M.D., İbrahim İKİZCELİ**, M.D., Levent AVŞAROĞULLARI**, M.D., Nurullah GÜNAY, M.D., Erdoğan M**, SÖZÜER M.D.

Gaziantep University Medical School, Department of Emergency Medicine, Gaziantep, Turkey
Afyon Kocatepe University Medical School, Department of Emergency Medicine*, Afyon, Turkey
Erciyes University Medical School, Department of Emergency Medicine**, Kayseri, Turkey
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ABSTRACT

Purpose: Emergency physicians are frequently the initial physicians to evaluate patients with symptoms of acute aortic diseases and therefore they are in a unique position to prevent morbidity and mortality through an early diagnosis. The aim of this retrospective study is to analyze diagnostic parameters and clinical findings in patients with acute aortic diseases newly diagnosed in an emergency department. **Methods:** This retrospective study includes 24 patients with acute aortic diseases admitted to an emergency department between January 1, 1998, and December 31, 2001. The patients' demographic findings, clinical information, laboratory and radiographic documents, and other information were obtained from the hospital archives. **Results:** The charts of 24 patients diagnosed with acute aortic disease during the four-year period were obtained. The median age was 58.2 years (range, 29-85). Chest and/or back pain was the most frequent symptom bringing the patients to the emergency department (62.5%). Ten patients (41.7%) had had a prior diagnosis of hypertension. The most frequent electrocardiographic findings were ST-T changes (20.8%). Mediastinal widening was seen in the chest x-rays of 10 patients (41.7%). Fourteen patients (58.3%) with aneurysm, six patients (25.0%) with dissection and four patients (18.2%) with dissecting aneurysm were detected. **Conclusion:** The diagnosis of AAD is of utmost importance for an emergency department. A missed or delayed diagnosis may result in high mortality and morbidity. If a patient with abdominal or thoracic pain is admitted to an emergency department, acute aortic diseases or their complications must be investigated.

Key Words: Aorta, Aortic Disease, Aneurysm, Emergency Medicine, Patient Care Management.

INTRODUCTION

Emergency physicians are frequently the

ÖZET

Amaç: Acil doktorları genellikle akut aort hastalığı semptomları olan hastaları ilk değerlendiren doktorlardır ve bu yüzden de mortalite ve morbiditeyi önlemede önemli bir pozisyonadurlar. Bu çalışmanın amacı acil serviste yeni tanı alan akut aort hastalığının tanısal parametrelerini ve klinik bulgularını analiz etmektir. **Metod:** Bu geriye dönük çalışma 1 Ocak 1998 ve 31 Aralık 2001 tarihleri arasında acil servise başvurup yeni tanı konulan akut aort hastalığı olan 24 hastayı kapsamaktadır. Hastaların demografik bulguları, klinik bilgileri, laboratuvar ve radyolojik dokümanları ve diğer bilgileri hastane arşivinden elde edildi. **Bulgular:** Dört yıl süresince akut aort hastalığı olarak tanı alan 24 hastanın da dosyalarına ulaşılabildi. Ortalama yaş 58,2 (29-85) idi. Acil servise hastaların en sık başvuru sebebi göğüs ve/veya sırt ağrısı (%62,5) idi. On hasta (%41,7) önceden hipertansiyon tanısı almıştı. En sık görülen EKG bulgusu ST-T değişikliği idi (%20,8). Mediastinal genişleme akciğer grafisinde on hastada (%41,7) görüldü. On dört hastada anevrizma (%58,3), altı hastada (%25,0) disseksiyon ve dört hastada (%18,2) dissekan anevrizma tespit edildi. **Sonuç:** Akut aort hastalıklarının tanısı bir acil servis için son derece önemlidir. Yanlış veya gecikmiş tanı yüksek oranda morbidite ve mortalite ile sonuçlanabilir. Eğer acil servisteki bir hastada karın veya göğüs ağrısı mevcut ise akut aort hastalıkları ve onun komplikasyonları mutlaka değerlendirilmelidir.

Anahtar Kelimeler: Aort, Aort Hastalığı, Anevrizma, Acil Tıp, Hasta Bakım Yönetimi.

initial physicians to evaluate patients with symptoms of acute aortic diseases (AADs), which means aortic aneurysm and/or aortic

dissection (1). The diagnosis of AAD is of utmost importance for an emergency department (ED). An emergency physician can suspect AAD in most cases from a complete history and physical examination. A missed or delayed diagnosis may result in high mortality and morbidity (2).

The differential diagnosis for AAD includes the following causes: syncope, abdominal pain, back pain, and shock. The presentation of syncope with back pain or shock strongly suggests aortic disease. However, the diagnosis is difficult to make unless the shock or syncope is accompanied by a significant complaint of pain. Other cardiac, abdominal, and retroperitoneal diseases need to be considered, including renal disorders, hepatobiliary disorders, and pancreatic disease. Unfortunately, some patients may appear well enough to receive benign diagnoses such as musculoskeletal back pain or enteritis, and be discharged from the ED (3).

The aim of this retrospective study is to analyze diagnostic parameters and clinical findings in patients with AAD newly diagnosed in an ED.

MATERIALS AND METHODS

This retrospective study was conducted at the Emergency Medicine Department of Erciyes University Medical School, Kayseri, Turkey. The ED records and hospital archives were searched for patients with newly diagnosed AAD between January 1, 1998, and December 31, 2001. Their demographic findings, clinical information, and laboratory and radiographic documents were recorded.

The diagnosis of AAD was based on patients' complaints, history of prior diseases, vital signs, electrocardiographic (ECG) changes and results of other diagnostic studies, namely chest x-ray (CXR), computerized tomography (CT), abdominal ultrasonography (USG), magnetic resonance imaging (MRI), and transesophageal echocardiography (TEE) or a combinations of these methods.

A mediastinal widening of 5 cm or more on CXR was considered significant (5). The detection of a flap or a false lumen on CT, abdominal USG, MRI, and TEE was considered positive. The dissections were classified according to the Stanford Classification.

RESULTS

The charts of 24 patients diagnosed with acute aortic disease during the four-year period were obtained. Twenty-one of the patients were male (87.5%) and three female (12.5%). The median age was 58.2 years (range, 29-85). Chest and/or back pain was the most frequent symptom bringing the patients to the ED (15 patients, 62.5%) (Table 1).

Table - 1: Presenting complaints.

Complaint	n	%
Chest and/or back pain	15	62.5
Abdominal pain	7	29.2
Shortness of breath	1	4.2
Syncope	1	4.2
Total	24	100

Sixteen of the patients (66.7%) had priorly diagnosed diseases. The most frequent prior diagnosis was hypertension (41.7%). Eight patients (33.3%) had no priorly diagnosed diseases (Table 2).

Table - 2: Priorly diagnosed diseases of the patients.

Disease	n	%
Hypertension	10	41.7
Coronary artery disease	1	4.2
Hypertension + coronary artery disease	2	8.3
Operation	3	12.5
No prior disease	8	33.3
Total	24	100

The systolic blood pressures (SBPs) of eleven patients (45.8%) on arrival were within normal ranges (90-139 mmHg). Ten patients (41.7%) had a SBP value over 140 mmHg. Three patients (12.5%) had no arterial pulsation and their SBP values were zero.

All the patients had ECG changes on arrival at the ED (Table 3). The most frequent pathological ECG findings were nonspecific ST-T changes (20.8%). A CXR was obtained in 22 patients (91.7%). Mediastinal widening was seen in the CXR of 10 patients (45.5%). The other CXR findings were as follows: prominent aortic knob (6 patients, 27.3%), consolidation (1 patient, 4.5%), and normal (5 patients, 22.7%). Twenty-two patients had a CT scan (91.7%). MRI was performed in one patient (4.2%) to make the diagnosis clearer. Three patients (12.5%) underwent a TEE procedure (Table 4).

Table - 3: ECG findings.

ECG Findings	n	%
ST changes	5	20.8
Sinus tachycardia or bradycardia	2	8.3
Normal sinus rhythm	13	54.2
Left ventricular hypertrophy	1	4.2
Right or left bundle branch block	3	12.5
Total	24	100

Table - 4: Diagnostic tools.

	n	%
Chest X-ray	22	91.7
CT	22	91.7
Abdominal USG	7	29.2
MRI	1	4.2

Nine patients (37.5%) with thoracic aortic aneurysm, five patients (20.8%) with abdominal aortic aneurysm, six patients (25.0%) with dissection and four patients (16.7%) with dissecting aneurysm (i.e. a total of 10 patients with dissection) were detected. Nine of the dissections were Stanford type A, and one was type B.

DISCUSSION

Emergency physicians are frequently the initial physicians to evaluate patients with symptoms of AAD and are therefore in a unique position to prevent morbidity and mortality through an early diagnosis and intervention (1).

AAD is more frequently seen in men than in women, similar to the gender distribution in our series (4). In the literature, AAD is frequently seen in the 40-70 age group (5,6). In our series, mean age was 58.2 years and eleven patients were older than 60 years.

AAD is an important consideration in the evaluation of patients with chest pain. Chest and abdominal pain can be a manifestation of AAD and must be considered in any patient with a history of chest trauma, hypertension, atherosclerotic disease, smoking, connective tissue disorder, Marfan's syndrome and Ehlers-Danlos syndrome (7).

The location of pain correlates with the aortic segment involved, with chest pain more often seen in ascending processes, whereas back pain is more common with a descending aortic pathology (7). Most of the complaints in our patients were chest and back pain.

In a hypertensive patient older than 50 presenting with a sudden onset and severe chest or abdominal pain not relieved by analgesics, AAD must be included in the differential diagnosis (8). In our study, ten of the 24 patients with AAD (41.7%) had priorly diagnosed hypertension.

Acute ECG changes are not uncommon in patients with acute aortic dissection. It was suggested that acute ECG changes in aortic dissection resulted from at least 1 of the following 3 mechanisms: (1) involvement of the ostium of the coronary artery; (2) shock state, especially tamponade; and (3) preexisting coronary artery disease (9). Ventricular fibrillation, complete atrioventricular block, and asystoli may be seen (9,10). In our study, the most frequent ECG findings were ST-T changes (22.7%).

A CXR should be obtained in the initial evaluation of patients with chest discomfort. A CXR is of limited value for diagnosing the acute aortic syndrome, particularly for conditions confined to the ascending aorta (11,12). Findings suggestive of AAD include mediastinal widening, blurring of the aortic knob, and tracheal displacement (5). Mediastinal widening was the most common sign in the CXRs in our study (45.5%).

New imaging techniques (TEE, MRI or helical CT) allow a better and earlier diagnosis of aortic diseases, even in emergency situations (13,14). CT is very important in the emergency diagnosis of AAD because it gives the physician the advantage of detecting the type and location of the lesion, extent of the disease, and surgical treatment plan. Small aneurysms, intramural hemorrhages, and penetrating ulcers can also be seen by means of CT (6,13-15). Bedside USG in the ED setting can be a useful tool for the early diagnosis or exclusion of AAD in patients at risk (16). We used the CT scans (91.7%) and bedside USG (29.2%) in the ED. USG supported the diagnosis in five patients but not in two patients (8.3%).

AAD, especially thoracic aortic dissection, is the most frequent cause of aortic emergencies, and, unless it is rapidly diagnosed and treated, the result is death (13). Unstable patients usually require medical or surgical intensive care unit admission for careful hemodynamic monitoring.

All patients with AAD require cardiovascular surgery consultation immediately.

It is concluded that the diagnosis of AAD is of utmost importance for an emergency department. A missed or delayed diagnosis may result in high mortality and morbidity. AAD must be considered and investigated in the differential diagnosis for either specific or non-specific clinical pictures.

Correspondence to: Cuma Yıldırım, M.D.
Güneykent Mahallesi Cag Sitesi
5/A Blok No: 14
27310 GAZİANTEP-TURKIYE
Tel: 342 - 360 26 36
Fax: 342 - 338 84 81
E-mail: yildirimca@hotmail.com

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