Follow-up of Acute Aortic Dissection

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Introduction. Aortic dissection is a tear in the wall of the aorta. It is a medical emergency. If left untreated the mortality rate is extremely high. Aortic dissection is divided into two types, A and B. Primary, because of low suspicion the diagnosis can delay. The natural history is poorly understood. Objectives. Our objectives were to improve diagnosis of aortic dissection. To encourage use of trans esophageal echo cardiography in emergency room. To clarify the role of prompt treatment in prognosis of aortic dissection.

Methods. This study was approved by the Committee of Ethics. All of the patients signed a informed consent. Clinical evaluation was performed by expert cardiologists, using different modalities. A complete medical history and physical examination were performed. The follow-up time of patients was 24 months. Results. Eleven patients were included in this study. Male/female ratio was 2.7:1. Type A was present in 7 patients, hypertension in 9. All patients were symptomatic. Three patients died, two in the emergency center, one after surgery. Surgery was performed in five patients, all with type A dissection. Four survived patients after operation and all patients with type B dissection survived follow-up time of 24 months. Conclusion. Most crucial step in aortic dissection diagnosis remain clinical suspicion. It should be confirmed rapidly since it is lifesaving. We want to emphasize that the trans esophageal echo cardiography is very useful exam to make the diagnosis which is the key for correct treatment and for follow-up. It must be widely available in the emergency centre. Key words: aorta, aortic dissection, type A dissection.

1. INTRODUCTION
Aortic dissection is caused by an intimal tear within an abnormal, weakened vessel wall. This leads to blood entering the wall, with subsequent propagation in the media both proximally and distally, displacing the intima inward. The two well-known classification systems, De Bakey and Stanford, are based on two parameters: the origin of the intimal tear and the extent of involvement of the aorta. The Stanford system classifies aortic dissection into two types, A and B. Type A involves the ascending aorta (regardless of the origin of the intimal tear), with or without involvement of descending aorta. Surgical intervention is required for type A dissection. In contrast, type B affects only the descending aorta and generally requires only conservative medical treatment. The estimated incidence of aortic dissection is 5 to 30 cases per million people per year (2, 3, 4, 5). Men are more frequently affected by aortic dissection, and a male/female ratio ranging from 2:1 to 5:1 has been reported in different studies (6, 7). The peak-age for the occurrence of proximal dissection is between 50 and 55 years, and that of distal dissection is between 60 and 70 years. Chronic systemic hypertension is the most common factor predisposing the aorta to dissection and has been present in 62 to 78% of patients with aortic dissection (2, 3, 8). The natural history of aortic dissection is poorly understood. Earlier information on aortic dissection was gained mostly from autopsy studies, while newer clinical or pathologic studies came from large referral centers and were based on selected nonconsecutive cases (2). According to the results of the study by Meszaros et al (9) based on the epidemiology and clinicopathology of aortic dissection, 21% of patients with aortic dissections die before hospital admission. The mortality rate for patients with untreated proximal aortic dissections has been reported to increase by 1 to 3% per hour after presentation and is approximately 25% during the first 24 h after the initial presentation, 70% during the first week, and 80% at 2 weeks (7, 10). Less than 10% of untreated patients with proximal aortic dissections live for 1 year, and almost all patients die within 10 years (9). Most of these deaths occur within the first
3 months. Earlier data (collected from six studies) reported by Anagnostopou-los et al. (11) on 963 untreated patients with aortic dissections, 90% died within 3 months of presentation with the condition. Death is usually caused by acute aortic regurgitation, major branch vessel obstruction, or aortic rupture. The risk of the fatal aortic rupture in patients with untreated proximal aortic dissections is around 90%, and 75% of these ruptures take place in the pericardium, the left pleural cavity, and the mediastinum (12). The 10-year actuarial survival rate of patients with an aortic dissection who leave the hospital alive ranges from 30% to 60% (13,14,15,16). Thus, prompt diagnosis is critical. When aortic dissection is suspected clinically, urgent cross-sectional imaging is required. CT (computed tomography), MRI (magnetic resonance imaging), and TEE (trans esophageal echo cardiology) have been shown to be equally reliable for confirming or excluding the diagnosis of dissection (17).

In summary, surgical therapy is the treatment of choice for type A aortic dissection. For type B aortic dissection, patients with no complications are present treated conservatively, with the main objective to control blood pressure (18).

2. METHODS

This study was approved of by the Committee of Ethics of the Internal Clinic. All of the patients signed a Term of Free Informed Consent. We studied 11 patients. Clinical Evaluation was performed by expert cardiologists using clinical criteria, Chest radiography, TTE (transthoracic echo cardiology), TEE and CT of the chest. A complete medical history and physical examination were performed, and heart rate, systolic blood pressure, diastolic blood pressure, and ECG were recorded. All of the procedures were performed by an expert echocardiographer using PHILIPS iE33 equipment attached to a multi frequency 2.5 to 3.5 MHz for TTE and 7.0 MHz for TEE multi plane transducer. The echo cardiograms were performed with the patients in left decubitus and the upper left limb slightly flexed beneath the head. For TEE examination patients were advised previously to maintain a 4-hour fast, and were submitted to oropharyngeal anesthesia with lidocaine spray. The transducer was introduced through the mouth and into the esophagus and gastric cavity for visualization of the cardiac and aorta structures. The images were obtained according to the recommendations of the American Society of Echo cardiology. Systolic and diastolic left ventricular (LV) dimensions, and systolic and diastolic function indexes were obtained. Aorta was presented almost entirely (ascending, arch and descending part). The results were analyzed by a standard method of descriptive statistics using Excel Office 2007.

3. RESULTS

Eleven (11) patients were included in this study. Average age of all patients was 58 years (58±4). Eight (8) of them were men of the average age of 56.5 years (56.5 ± 3.12); three (3) were women of average age of 62 years (62 ± 3.46). Male/female ratio was 2.7 : 1. Type A dissection was present in seven cases (7) or 63.64%, while four (4) were type B (Table 1). The average age of patients with type A dissection was 57.57 ± 4.39 years and for type B, the average age was 58.75 ± 3.59, Table 2. All patients were symptomatic. Hypertension was present in nine (9) patients or 82% of patients (Table 1). Five (5) patients with hypertension had type A dissection. Diabetes was present in 3 cases, 2 of them of dissection type A. The dissection was fatal for three (3) patients or 27.8% of cases. All three were type A (Table 3). Two died in the emergency center. The diagnosis was delayed. One of the patients died after the surgery (the operation was done after a few days, because of the inability of this kind operation at our center). Surgery was performed in five patients, all with type A dissection. One patient with type B dissection had ischemic heart disease. Patients were followed for 24 months. Four (4) patients with type A dissection who survived surgery, survived also the period of 24 months. All had regular control and their blood pressure was strictly controlled. Also, all the patients with type B dissection survived for 24 months. They were under strict regular medical control. TEE was performed regularly (every 6 months). Two patients developed an aneurysm in the area of dissection, but below the criteria for surgery. Two patients in repeated TEE examinations had no signs of dissection, considered as the healed dissection.

4. DISCUSSION

The study included 11 patients who were followed for at least 24 months.
Males were more affected than females. Male/female ratio was 2.7:1. The average age of patients with dissection type A was 57.57 years which does not differ significantly from the reported average age of 50-55 years. For type B dissection the average age was 58.75 years which also does not differ significantly from the reported age of 60-70 years. Hypertension was present in 82% of cases, which is similar to values reported in other studies (2, 3, 8). Seven patients had type A dissection. Three patients died; two of them in the Emergency Center, after a significant delay in diagnosis. The first was initially suspected to suffer from hypertension and acute coronary syndrome and the other from abdominal pain of an unknown nature, possibly pancreatitis. Diagnosis was established after a delay of several hours. According to Hagan et al. and Kodolitsch et al., up to 30% of patients later found to have aortic dissection are initially suspected to have other conditions, such as acute coronary syndromes, non dissecting aneurysms, pericarditis, pulmonary embolism, aortic stenosis, or even cholecystitis (2, 10). A routine chest x-ray is abnormal in 60% to 90% of cases of suspected aortic dissection. However, acute dissection (especially type A) can present with a normal chest film, and this may distract physicians from pursuing further imaging (2, 19). ECG analysis may also be misleading because it may be normal in dissection or very abnormal when ascending dissection causes coronary compromise. In our study, with the exception of patients with ischemic heart disease, no others have had specific ECG changes to confirm diagnosis. In our study the diagnosis was always made just after suspicions for the problem so a high index of suspicion is more important than the type of test used (20). Each institution, depending on their capabilities, should establish pathways for diagnosis, early treatment, and eventual transfer to definitive care as soon as possible. The diagnosis of dissection is complex, primarily because of atypical symptoms and signs and because of low suspicion of it. On the contrary, in the case of suspected dissection the diagnosis can be done easily and very quickly, either with CT or TEE. This shows that TEE and CT should be routinely used in emergency centers for such cases. TEE can be performed safely even at the bedside. Possible complications of TEE are very rare. In our study we followed patients for at least 24 months during which we did not have any complications in repeated TEE (every 6 months).

5. CONCLUSION
The aortic dissection is a relatively rare but very serious process. Since it may occur anywhere in the aorta, the clinical spectrum of presentation is broad and unpredictable. We want to emphasize that the most crucial step in aortic dissection diagnosis remain clinical suspicion which should be considered for patients with hypertension and other cardiovascular risk factors who present with chest pain. Furthermore, TEE and CT are very high-performance exams to make the diagnosis which is the key for successful treatment and for correct follow-up. So they must be widely available in the emergency center. The diagnosis should be confirmed rapidly and accurately since it is lifesaving.

REFERENCES