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Assessment of Patients Diagnosed With Aortic Dissection in Our Emergency Department During the Past Five Years

Ali Gür MD[1], Hakan Oğuztürk[2], Barış Akça MD[3], Muhammet Gökhan Turtay[2], Kasım Turgut MD[4], Şükrü Gürbüz[2], Taner Güven MD[5], Nevzat Erdil MD[3], Sedat Özbay MD[6]

[1]Van Educuation and Research Hospital Van, Turkey
[2]University of Inonu, Faculty of Medicine, Department of Emergency Medicine, Malatya, Turkey
[3]University of Inonu, Faculty of Medicine, Department of Cardiovasculer surgery Medicine, Malatya, Turkey
[4]Educuation and Research Hospital, Adıyaman Turkey
[5]Educuation and Research Hospital, Malatya, Turkey
[6]Educuation and Research Hospital Sivas, Turkey

Abstract

Background: The aortic dissection is a cardiovascular emergency with a high mortality rate which needs emergent rapid diagnosis and treatment. The patients admitted to ED who have been diagnosed as aortic dissection discussed in this retrospective study aiming demonstration of demographic features.

Material and Methods: Between August 2010 - August 2015 about 40 patients who admitted to Inonu university hospital ED have been diagnosed as aortic dissection discussed in this retrospective study. Patients files evaluated; the age, sex, past medical history, chief complaints, the duration between onset of complaint and admission to ED, blood pressure and other vital signs, echocardiographic changes, and whether there was aortic insufficiency or not were evaluated

Results: All patients' chief complaint was chest pain. About 75% of patients were admitted to emergency department within first 24 hour of onset of chest pain De Bakey type1, type 2 and type 3 were discussed as 70 %, 22.5%, and 7.5% respectively. 20% patients were hypertensive and 17.5% were hypotensive. 35% of patient's blood urea level were elevated. 95% of all these patients' undergone surgical operation, and reminder 5% patients medically followed up. At the end 82.5% of patients discharged with a full recovery while 17.5% died.

Conclusions: Aortic dissection is highly mortal cardiovascular emergency in our country which requires rapid diagnosis and evaluation by ED physician in order to decide the appropriate treatment options without time loss.

Keywords: Emergency Department, Aortic Dissection, Diagnosis, Mortality

Introduction

The aortic dissection is defined as separation of lamina media along the long axis from lamina intima of the aorta. It is with a high mortality rate cardiovascular emergency which needs emergent, rapid diagnosis and management[1]. The incidence is about 5.2/1million. 1-2% is determined at coronary autopsies. Although all age groups can be affected it's mainly seen between ages 40-70 in about 75% it is 3 folds more common in males than females[2]. Despite of the aortic dissection is rarely seen condition a missed or delayed diagnosis or management increases the rate of mortality and morbidity. The mortality rate despite of accurate management is about 10%[3].

There is no single well-known cause of aortic dissection, many etiologic factors like hypertension, connective tissue diseases, medial degeneration medial necrosis, atherosclerosis, aortic coarctation, past history of aortic surgery, iatrogenic, and traumatic factors have been determined[4].

Patients mostly presented with sudden tearing like chest pain. They also may present with syncope, neurological symptoms like hemiplegia, paraplegia and myocardial infarction, renal colic, dysphagia symptoms[5].

Aortic dissection diagnostic methods are computed tomography (CT) scan, echocardiography, magnetic resonance imaging (MRI) or aortography. The gold Standard of diagnosis remains the wide clinical suspicion of aorta dissection.

Corresponding Author: Hakan Oğuztürk **e-mail:** oguzturk@hotmail.com
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In our research patients admitted to emergency department (ED) with aortic dissection studied retrospectively for demographic characteristics demonstration.

Material and Methods

This study was approved by Inonu University ethics committee. Forty patients who admitted to ED of Inonu University hospital between August 2010- August 2015 and have been diagnosed with aortic dissection were discussed in this retrospective study. Patients files evaluated; the age, sex, past medical history, chief complaints, the duration between onset of complaint and admission to ED, blood pressure and other vital signs, echocardiographic changes and whether there were aortic insufficiency or not.

Dissection types classified as De Bakey type 1, type 2 and type 3. Type1 dissection which involves the whole aorta, type 2 which affecting only the ascending aorta and type 3 which affecting only descending aorta. CT scan done for all patients and radio-opaque material given during the procedure for best evaluation of dissection and its localization. After the confirmation of diagnosis the cardiovascular surgery consultation has been asked and the patients, their relatives have been informed about the problem and its prognosis. After the relative's approval some of patients directly from ED sent to operation room while others admitted to cardiovascular intensive care unit where they prepared for surgical operation.

After appropriate surgical management patients who discharged and those who died within hospital have been recorded.

SPSS 17.7 programed has been used for statistical analysis. Quantitative average data's, standard deviations, qualitative data's measured as frequency and percentage.

Results

Between August 2010 - August 2015, 14 females and 26 males of a total 40 patients evaluated in this study. Average age was 58±20. 33 of patients (82.5%) had medical history of coronary artery disease (CAD), 9 patients (72.5%) were with history of diabetes mellitus (DM),

All patients' chief complaint were chest pain. About 30 of (75%) patients were admitted to ED within first 24 hour of onset of chest pain. 4 of them (10%) presented with onset of pain 24-48 h duration and the reminder of patients 6 (15%) presented with onset of pain longer than 48 h duration. Concerning the echocardiographic findings in 23 (57.5%) patients there was flep appearance while 17 (42.5%) patients echocardiographic findings were completely normal. Regarding the aortic insufficiency in echocardiography in 27 patients (67.5%) there was severe aortic insufficiency and in 13 (32.5%) patient's echocardiography was normal. In 28 (70%) patients De Bakey type 1, in 9 (22.5%) patients De Bakey type 2, and in 3 7.5(%) patients De Bakey type 3 dissection was present.

Regarding the blood pressure evaluation 7 (17.5%) patients were hypotensive (<120/80), 25 (62.5%) patients were normotensive (>120/80, <180/110) and 8 (20%) patients were hypertensive (>180/110). According the blood urea level estimation results was; 26 (65%) patients' BUN<28mg/dl, 14 (35%) patients' BUN>28mg/dl. Among these 40 patients with dissecting aortic aneurysm 38 (95%) patients, surgical operation decided for them and approval received. Only 2 (5%) patients followed up without any surgical intervention. 33 (82.5%) of them after appropriate treatment discharged with complete recovery while 7 (17.5%) patients died. Clinical and demographic data's shown in table below;

Table 1. Patients' clinical &demographic data (CAD: Coronary artery disease, DM: Diabetes mellitus).

Patients characteristics		No	Percentage
Sex	Male	26	65
	Female	14	35
History	CAD	33	82.5
	DM	29	72.5
Chief complaint	Chest pain	40	100
Duration of symptoms	First 24 h	30	75
	24-48 h	4	10
	More than 48 h	6	15
Echocardiographic findings	Flep	23	57.5
	Aortic insufficiency	27	67.5
De Bakey classes	Type1	28	70
	Type2	9	22.5
	Type3	3	7.5
Blood pressure	Hypotensive	7	17.5
	Normotensive	25	62.5
	Hypertensive	8	20
BUN levels	Upper 28 mg/dl	14	35
	Under 28 mg/dl	26	65
Type of treatment	Surgery	38	95
	Medical treatment	2	5
Result	discharge	33	85.5
	Ex	7	17.5

Discussion

At the present time physician's wide clinical suspicion and improved facilities in diagnostic methods making diagnosis of aortic dissection easier than past. Aortic dissection main-

ly seen in hypertensive patients after age of 40. The hypertension is believed to be the main risk factor in etiology. Aortic dissection is 2-3 times more prevalent in males than females[6]. In our study 65% of patients was male and 35% was female, and the male/female ratio was 2. The mean age of patients was 58 and 20% above forty years had hypertension in these patients and these data are consistent with the literature. In one of studies among the patients diagnosed with aortic dissection about 15.9% of them were with DM history and 76% of them were with CAD history[7]. While in our study 82.5% of patients were with CAD and 72.5% were with DM history. Therefore patients with DM history were more in our study than other studies.

The most common symptom of aortic dissection is the sudden onset of chest and back pain which is predatory in character. Mainly the pain starting in anterior chest then radiating along dissecting aorta. Patients may also presented with neck ache or interscapular pain. Other than that, patients may presented with atypical symptoms such as; syncope, hypertension, hemiparesis, dysphasia or leg pain[8, 9]. In our study, nearly all of patients' presentation was the most common symptom of dissecting aneurysm, the chest pain.

Echocardiography is the noninvasive test which should be done in those patients. According to anatomical localization of the pathology, this diagnostic method's sensitivity is nearly 35-80% and specificity is about 39-96%[10]. Beside it shows left ventricular function, it gives idea about aortic insufficiency, aortic flap, and presence of thrombus, pericardial effusion or any ventricular wall abnormalities. Detection of flap support the diagnosis of Type 1 and Type 2 disease, but the absence of it does not exclude the diagnosis. It's important to determine whether there is involvement of the aortic valve and if there is insufficiency of valve present or not. This is mainly needed for planning of treatment and to final decision of aortic valve replacement[11]. In echocardiography done in Açıkalın and et al study[12] in 36.4% of patients there was flap appearance, while in our study this rate was 23 patients (57.5%). In the study done by Borst HG and et al[13] among the patients diagnosed with aortic dissection aortic insufficiency was found in 50% while in our study this ratio was 27 patients (67.5%). The ratio was higher than study done by Borst HG and et al.

In a study there was 6.2% of patients with an elevated blood urea levels[7], while in our study this ratio was 35%. In our study the ratio of patients with high blood urea level was higher than other studies in literature. The cause of this elevated ratio thought to be resulting from renal arteries involvement with aortic dissection[14].

In studies De Bakey Type 1 most often detected, it is followed by dissection Type 3 and Type 2. In a study done by Buket and et al[15], among 14 patients with aortic dissection 13 of them have been diagnosed with type 1 dissection. In our study also there was the same result. The most common type seen in our study was type 1 then followed by type 3 and at least type 2 according De Bakey classification.

In study done by Yeşilaras and et al[16] 89.4% of patients have been admitted, 2.1% died at ED and 8.5% referred to another health center.

The management of type 1 and type 2 dissections is surgical[17]. Acute type 3 dissections with exception of complicated cases can be treated medically or surgically no difference[18]. In our study 38 (95%) of patients managed surgically. In Acute Type 3 dissection in absence of reasons like mesenteric or renal ischemia, extremities ischemia, rupture risk etc. medical treatment should be preferred, because medical management is superior to surgical treatment at an early stage[19]. In about 2 (5%) of patients medical management and follow up preferred and discharged.

Regarding the surgical treatment of Type 1 and Type 2 aortic dissection, technique is difficult has a high mortality[20]. In our study the 7 (17.5%) of the patients who undergo surgical operation have been died in postoperative period. 33 (82.5%) of them discharged with full recovery.

The mortality of acute aortic dissection in an hour is l-3%[21]). Therefore, early admission to emergency room and early management is very important. In our study 75% of patients were admitted to emergency department within first 24 hour of onset of chest pain, 10% within 24-48 h, and 15% after 48 h. Among the patients who died at postop period; 2 of them were within first 24 h, other 2 of them were within 48 h and 3 of them were after 48 h admitted to ED.

Conclusion

Aortic dissection is highly mortal cardiovascular emergency in our country which requires rapid diagnosis and evaluation by ED physicians in order to decide the appropriate treatment options without time loss.

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