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ORIGINAL RESEARCH

Incidence and Outcomes of Aortic Dissection in Tabriz, Iran; a Longitudinal Study of 150 Cases

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Abstract: Introduction: A comprehensive analysis of the epidemiological features of aortic dissections in Azerbaijan Province, Iran, and their influence on patient survival remains unexplored. This study aimed to determine the incidence of aortic dissection and identify the associated factors of mortality in these patients. **Methods:** A retrospective longitudinal study was conducted using hospital records of patients diagnosed with aortic dissection in Tabriz, Iran, between 2017 and 2021. The 3-month mortality was followed up via telephone calls using the contact numbers provided in the patients' records. Then, independently associated factors of mortality were identified using a multivariate stepwise logistic regression analysis. **Results:** Among the 150 cases of aortic dissection identified, 74% (n = 111) were classified as type A, and 26% (n = 39) were classified as type B. The overall incidence proportion of aortic dissections was 2.35 per 100000 population. In type A dissections, 64% (71 out of 111) of patients received surgical treatment, while 21.6% (24 out of 111) received medical treatment. Among type B dissections, only 23.1% (9 out of 39) underwent surgery. The all-cause mortality rate at 3 months was 52.5% (73 out of 139 patients with complete follow-up), 47 male (54%) and 26 female (50%). Multivariate analysis showed that higher age was independently associated with increased mortality (odds ratio [OR] = 1.03; 95% confidence interval [CI]: 1.00-1.06, p = 0.027). In contrast, patients with DeBakey Type III classification (OR = 0.29; 95% CI: 0.01-0.87, p = 0.027), hypothyroidism (OR = 0.12; 95% CI: 0.01-0.99, p = 0.049), and those who received either surgical treatment (OR = 0.19; 95% CI: 0.05-0.76, p = 0.019) or medical treatment (OR = 0.18; 95% CI: 0.04-0.80, p = 0.024) had a lower chance of mortality. Gender was not found to be associated with the outcome. **Conclusion:** The study revealed an annual incidence rate of aortic dissection as 2.35 per 100000 population. Aortic dissection, regardless of type, remains a highly fatal condition, with over half of patients dying within 3 months of the initial event. To reduce the high mortality rates associated with aortic dissections, it is crucial to implement specific measures for the early identification of patients and ensure prompt and appropriate care.

Keywords: Aortic dissection; Aortic surgery; Epidemiology; Population studies

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1. Introduction

Aortic dissection is a rare but potentially life-threatening condition that remains a challenging clinical problem. Acute cases of type A and type B dissection have 5-year survival rates ranging from 55% to 85% (1), with an operating mortality rate as high as 12% (1-3). Without treatment, the mortality rate increases rapidly, reaching 50% by the third day (4). Complications related to aortic dissection continue to pose a risk even after hospital discharge, accounting for a significant proportion of deaths in type B cases (5). Studies have shown a decline in in-hospital mortality for type A cases, but no similar trend has been observed for type B cases (6, 7).

The incidence of aortic dissection varies by age, sex, and underlying medical conditions. Men have a higher incidence rate compared to women, with a male-to-female ratio of approximately 2:1. Conditions such as hypertension, connective tissue disorders, and genetic predisposition further increase the risk of aortic dissection (2). Underlying medical conditions, such as hypertension, connective tissue disorders, and genetic predisposition, also increase the risk of aortic dissection. In individuals with hypertension, the risk of aortic dissection is approximately four times higher than in those without hypertension (8). The overall incidence of aortic dissection ranges between 2.6 and 3.5 cases per 100,000 person-years. However, the incidence varies by age and sex,

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with higher rates observed in men over 60 years old and women over 80 years old. Early diagnosis and prompt treatment play crucial roles in improving outcomes for individuals with aortic dissection (2).

Various types of this disease have been identified based on different genotypes and phenotypes. These can range from complete Marfan syndrome in infancy to Marfanoid or aortic aneurysm phenotype (9). The initiation of aortic dissection can occur when the aortic valve ruptures, leading to hematomas within the inner layer of the aorta and subsequent intimal rupture. Early in the process, serial echocardiography has been used to establish this mechanism, which has generated debate among pathologists (10, 11). Type B ascending aortic dissections and type A distal aortic dissections occurring distal to the left subclavian artery are classified according to the commonly used Stanford categorization system (12). An interdisciplinary team of medical specialists including a cardiologist, pulmonologist, nephrologist, cardiac surgeon, interventional radiologist, and anesthesiologist can improve patient outcomes (13-15).

Much has been written on the development of aortic dissections, their progression over time, optimal intervention timing, various surgical techniques, and outcomes. However, little is known about the epidemiological characteristics of aortic dissection in the region. Therefore, it is necessary to conduct a study that identifies the epidemiological characteristics, risk factors of mortality, and the types of aortic dissection present. With this aim, we conducted a longitudinal study to determine the incidence of aortic dissection in the region, along with the prevalence of different types and potential risk factors for 3-month mortality. Such research would provide a foundation for control and prevention strategies and adapt them to the specific conditions prevailing in the local population.

2. Methods

2.1. Study design and setting

A retrospective analysis of data from the hospitalization records of Shahid Madani Hospital in Tabriz, Iran, allowed the creation of the study database comprising all patients diagnosed with aortic dissection between 2017 and 2021. All the included patients had a confirmed diagnosis with computed tomography angiography (CTA), which is the gold standard for diagnosing aortic dissection, offering 100% sensitivity and 100% specificity (16). Shahid Madani is the only hospital with cardiovascular surgery facilities in Tabriz, serving an average annual population of 1597000 during study recruitment (17). Based on this information, it is possible to infer that the analyses of the study data represent all admissions and mortality related to aortic dissection in Tabriz.

This study was approved by the ethics committee of Tabriz University of Medical Sciences (IR.TBZMED.REC.1402.500).

2.2. Participants

The inclusion criteria encompassed all patients who were admitted to the ED at Shahid Madani Hospital with a final diagnosis of aortic dissection from 2017-2021. This diagnosis was based on the International Classification of Diseases, Tenth Revision (ICD-10) coding system. Any patients for whom an aortic dissection diagnosis could not be confirmed via CTA were excluded.

2.3. Data gathering

The extracted data included age, gender, type, duration, and etiology of aortic dissection, past medical history, social history, risk factors based on the American Heart Association guidelines (diabetes, hypertension, etc.), vital signs, clinical signs and symptoms, connective tissue disease, imaging findings, Electrocardiographic and echocardiographic findings, length of hospital stay and 3-month mortality.

2.4. Classification

Aortic dissections can be categorized using two anatomical classifications. The Stanford system divides dissections into Type A and Type B based on whether the ascending or descending part of the aorta is involved. Type A dissections occur in the ascending aorta, regardless of the location of the initial tear in the inner layer of the aorta. Type B dissections start distal to the left subclavian artery and affect only the descending aorta (18). The DeBakey classification, on the other hand, is based on the site of origin of the dissection. Type 1 originates in the ascending aorta and extends at least to the aortic arch. Type 2 is limited to the ascending aorta. Type 3 begins in the descending aorta and extends distally (18).

2.5. Outcome

The primary outcomes were incidence and 3-month mortality of aortic dissection. The 3-month mortality was followed up via telephone calls using the contact numbers provided in the patients' records. When calls were not answered by the patients or their family members, the patients' subsequent attendance at the clinic was used as an indicator of survival. Follow-up information could not be obtained for 11 (7.3%) patients.

2.6. Statistical Analysis

The statistical analysis was conducted using STATA version 17. Initially, the distribution of the sample was assessed using the Kolmogorov-Smirnov test to determine whether it followed a normal or non-normal distribution. Descriptive analyses were then performed to summarize the data. For univariate analysis, statistical tests were used based on the assumptions and characteristics of the variables. The independent samples t-test was utilized for continuous variables with a normal distribution, while the Mann-Whitney U test was employed for non-normally distributed continuous variables. The chi-square test or Fisher's exact test was used for nominal variables, depending on the expected cell counts.

To identify independent risk or protective factors associated with mortality among aortic dissection patients, a multivariate stepwise logistic regression analysis was conducted. Variables with a p-value less than 0.1 were considered for entry into the model, while variables with a p-value greater than 0.05 were removed from the model. A significance level of p<0.05 was used to determine statistical significance in all analyses.

3. Results

3.1. Overall incidence

A total of 150 patients with aortic dissection were identified in Tabriz from 2017 to 2021, with an average incidence rate of 2.35 per 100,000 population per year. The mean age of the patients was 57.57 years, ranging from 23 to 97 years. Male patients constituted 63.3% of the total population. The majority of cases were classified as type A dissection (74%), while type B dissection accounted for 26% of cases.

3.2. Clinical features and mortality

A significant association was observed between age and survival, with the surviving patients being significantly younger than those who died (p=0.010). A total of 34.7% of the patients deceased in the hospital, with a median time from admission to death recorded as 24 hours (interquartile range: 11-92.25 hours). No significant differences were found between survived and deceased patients in terms of the time from symptom onset to hospital admission, the interval of hospital admission to diagnosis, vital signs, clinical symptoms, gender, duration, etiology, medical history, and other clinical variables (Table 1).

3.3. Paraclinical features and mortality

Regarding electrocardiogram (ECG) findings, 34% of the patients exhibited a normal ECG, while abnormalities were observed in 67.64% of the cases. A statistically significant relationship was found between the patient's heart rhythm and the disease outcome, with higher mortality observed in patients with non-sinus rhythm compared to those with sinus rhythm (81.8% vs. 49.2% mortality, respectively; p=0.038),

3.4. Association of clinical and paraclinical features with types of aortic dissection

Patients with type A dissections more frequently presented with neck pain (15.3% vs 0%, p=0.007), while patients with type B dissections more commonly experienced abdominal pain (41.3% vs 7.2%, p<0.0001) (Table 2). Type A dissections were associated with a higher incidence of ECG abnormalities, particularly ST-T changes (p=0.003). These patients also exhibited more mediastinal widening in their imaging studies (p=0.018). There was no difference in total systolic and diastolic blood pressures among Type A and Type B aortic dissections. The location of the dissection differed significantly between the two types, with type A dissections originating mostly in the ascending aorta and type B dissections occurring predominantly in the thoracic aorta (p<0.0001). Echocardiography proved to be effective in diagnosing type A dissections (p<0.0001), and the interval from diagnosis to treatment was shorter for type B patients (p=0.001).

3.5. Treatment

Among the 150 patients included in the analysis, 80 patients (53.3%) underwent surgical procedures, while 30.7% received medical therapy. There were 15 patients (10%) identified as suitable candidates for surgery but did not receive the intervention, and 9 patients (6.0%) remained untreated. The most frequently performed surgical procedure was Bentall surgery combined with Aortic Valve Replacement (AVR), accounting for 46.2% of the cases. Cardiac arrest emerged as the predominant cause of death (35.21%) among the patient population. Sixty-four percent of patients with type A dissection underwent surgery, whereas medical treatment was more common (66.7%) in patients with type B dissection (p<0.0001). Bentall surgery + AVR was the predominant type of surgery in type A dissections (50.7%), while thoracic endovascular aortic repair (TEVAR) was more common in type B dissections (44.4%) (p<0.0001). No statistically significant relationship was found between the type of dissection and the disease outcome (p=0.128). The type of treatment showed a significant association with the disease outcome, with higher mortality observed in patients who did not receive any treatment (87.5%) or were surgery candidates (83.3%) compared to those who underwent surgical (44.9%) or medical (51.2%) treatment (p=0.015). However, no significant association was found between elective surgery or the type of operation and the disease outcome in patients with aortic dissection (p=0.053 and p=0.470, respectively).

3.6. Independently associated factors of mortality

Multivariate stepwise logistic regression revealed that age has an independent hazardous effect on mortality among aortic dissection patients (Odds ratio [OR] = 1.03 [95% confidence interval: 1.00-1.06], p=0.027). In contrast, patients with DeBakey Type III classification (OR = 0.29; 95% CI: 0.01-0.87, p = 0.027), hypothyroidism (OR = 0.12; 95% CI: 0.01-0.99, p = 0.049), and those who received either surgical treatment (OR = 0.19; 95% CI: 0.05-0.76, p = 0.019) or medical treatment (OR = 0.18; 95% CI: 0.04-0.80, p = 0.024) had a lower chance of mortality (Table 3).

4. Discussion

Accurately quantifying the incidence of aortic dissection presents inherent challenges. The severity and high mortality rates associated with aortic dissections often lead to imprecise out-of-hospital mortality data. Nevertheless, despite these difficulties, it is crucial to make efforts to understand the disease burden as it informs resource allocation and plays a significant role in shaping health policy.

The present study is a retrospective hospital analysis of aortic dissection in the most populated city in the western north of Iran. We report an overall incidence proportion of 2.35 per 100000 for aortic dissection; which parallels the findings of other similar studies (2).

A retrospective nationwide study in Iceland (19), had similar results, reporting an incidence of 2.53 per 100000 for thoracic aortic dissections, with most patients being type A. The study's findings shed light on the clinical features, paraclinical findings, therapeutic outcomes, and 3-month prognosis of aortic dissection patients. With a mean age of 57.57 years, the patients under study had a wide age range. It was also noted that there were more male patients (63.3%) than female patients. According to the Stanford classification, the majority of patients had type A dissection, and according to the DeBakey classification, type I dissection. Six hours was the median amount of time from the start of symptoms to hospital admission, and two hours was the median amount of time from hospital admission to diagnosis. This highlights the importance of early recognition and diagnosis of aortic dissection to improve treatment outcomes. The treatment outcomes varied, with nearly half of the patients dying within three months of diagnosis. Surgery was the most common treatment, with Bentall+AVR being the most frequently performed surgery. The main causes of death were cardiac arrest, dissection, and heart failure/surgery.

Overall, this study underscores the severity of aortic dissection and the need for timely diagnosis and appropriate treatment (20). The findings of this research offer significant new understandings of the clinical and social characteristics of aortic dissection patients and how they relate to the course of their condition. According to the study, age had a major impact on the prognosis of the illness, with patients who passed away being considerably older than those who recovered (21). This emphasizes how crucial early detection and care are for elderly aortic dissection patients. It is interesting to note that there was no significant relationship found between mortality and factors such as gender, aortic dissection Stanford category, length, etiology, medical history, vital signs, and clinical symptoms of aortic dissection patients. Our analysis revealed that hypothyroidism emerged as an unexpected independent protective factor against mortality. It is important to note, however, that this finding was incidental and could potentially be attributed to the limited number of patients with hypothyroidism included in the study (n = 8). Further research with a larger sample size is warranted to validate and better understand this unexpected association.

There is little published data on persons with acute aortic dissection, despite the well-documented gender disparities in the prognosis of acute coronary syndromes (22-24). The research by Nianaber et al. (25) lends credence to the notion that women are more likely than men to have an aortic dissection diagnosis made after four hours compared to immediately. The number of patients with type A or type B dissection was equal, but the results of aortic dissection surgery were poorer in women than in males. Given that hypertension is more common as people age, the notion that it may be the primary role in the pathophysiology of dissection is supported by the higher percentage of women with a history of high blood pressure and due to older age. There was no gender preponderance in this autosomal dominant genetic disorder, as seen by the similar occurrence of dissections linked to Marfan's syndrome in both genders (26). This implies that in patients with aortic dissection, these characteristics might not be accurate indicators of the course of their illness. Nonetheless, a significant relationship was found between the course of the illness and heart rhythm, with non-sinus rhythm being linked to a greater death rate. However, the multivariate analysis did not confirm an independent association which shows that non-sinus rhythm is more of a confounding variable.

For patients with aortic dissection, this emphasizes how crucial it is to monitor heart rhythm and treat any abnormalities immediately to improve outcomes. The study also discovered a strong relationship between the type of treatment received and the outcome of the disease, with patients who had not received any treatment having a greater death rate than those who had medical or surgical care. This emphasizes how crucial prompt and adequate therapy is to help individuals with aortic dissection achieve better results.

Furthermore, the study compared the demographic and clinical features of patients with various forms of aortic dissection; the results indicate that patients with Stanford A and B dissection differ in terms of gender distribution, the frequency of Bentall operations, and the symptoms that they report having. These differences may have implications for diagnosis and treatment strategies for patients with different types of aortic dissection. Overall, this study provides valuable insights into the demographic and clinical characteristics of patients with aortic dissection and their association with disease outcomes. Further research is needed to identify additional factors that may improve outcomes for patients with this serious condition. The results of this study provide important insights into the differences in paraclinical findings and treatment outcomes between patients with Stanford A and B dissections. Abnormal ECG results, positive mediastinal widening, and positive ST segment changes were higher in cases with Stanford A dissection in this study. The spectrum of clinical presentations that can be deceptive associated with aortic dissection is well-documented. Significant variations were also observed between the two forms of dissection in terms of a number of clinical and demographic parameters, including origin, extension, thoracic, ABD branches, iliofemoral, Dx in Echo, origin Echo, time from diagnosis to treatment, and extend and annulus. The diagnosis and course of treatment for patients with various forms of aortic dissection may be affected by these variations. In terms of treatment outcomes, patients with Stanford A underwent surgical treatment more than patients with Stanford

B. While medical treatment was more common in patients with Stanford B dissection. Additionally, the type of surgery performed varied between the two groups, with Bentall+AVR surgery being more common in patients with Stanford A dissection and thoracic endovascular aortic repair (TEVAR) surgery being more common in patients with Stanford B dissection. However, there was no significant relationship between the outcome of the disease and the type of dissection in the studied patients. Overall, these findings suggest that there are important differences in paraclinical findings and treatment outcomes between patients with Stanford A and B dissections. Further research is needed to better understand these differences and to identify optimal diagnostic and treatment strategies for patients with different types of aortic dissection. Regardless of type A or type B, all individuals with acute aortic dissection require medical attention. Beta-blockers help regulate blood pressure, lower heart rate, and blood pressure, and protect the heart muscle from ischemia. Vasodilators such as nitroglycerin or calcium channel blockers may be utilized in emergency settings. The best course of action for type A aortic dissection is surgery because failure to operate will result in a 50% death rate in the first 48 hours. The intimal tear is removed, the entry into the false lumen is sealed, and the aorta is restored using a synthetic graft, either with or without the coronary arteries being reinstalled (16). However, following surgery, problems like chylothorax, mediastinal hemorrhage, stroke, renal failure, spinal cord injury, and mediastinitis might happen (27). Medical care for patients with type B aortic dissection usually consists of hypertension medicine, pain management, and rest. On the other hand, complications like a burst descending aorta or poor peripheral blood flow may necessitate immediate surgery. In order to increase blood flow and reduce organ ischemia, surgical repair aims to reconstruct the dissected descending aorta and remove the main tear. In order to perform this procedure, a thoracotomy with cardiopulmonary bypass and profound hypothermic arrest is used to access the descending aorta. On the other hand, risks from this procedure include severe lung injury, acute renal failure, stroke, and spinal cord ischemia. Recently, a different method for treating complex type B aortic dissection has emerged: TEVAR (28). The current study compared the clinical and paraclinical characteristics, treatment, and outcomes of patients with aortic dissection. The results showed significant differences in gender distribution, Bentall operation, neck pain, abdominal pain, ECG results, Mediastinal Widening, and several paraclinical variables between the two types of dissection. Our findings highlight the importance of accurate diagnosis and appropriate treatment for patients with aortic dissection, as well as the need for further research to better understand the factors that contribute to these differences.

4.1. Limitations

One limitation of this study is that it was conducted in a single center, which may limit the generalizability of the findings to other populations. Additionally, the sample size of patients with aortic dissection was relatively small, which may limit the statistical power of the study. Moreover, the study was retrospective in nature, which may introduce bias and limit the ability to establish causality between variables. Enhancing the understanding of this critical illness through additional research will result in advancements in both diagnosis and treatment.

5. Conclusions

The study revealed an annual incidence rate of aortic dissection as 2.35 per 100000 population. Aortic dissection, regardless of type, remained a highly fatal condition, with over half of patients dying within 3 months of the initial event. Most patients had type A dissection according to the Stanford classification, and type I dissection according to the DeBakey classification. ECG results were abnormal in two-thirds of patients. The treatment outcomes varied, with nearly half of the patients dying within three months of diagnosis. Surgery was the most common treatment option, with Bentall+AVR being the most frequently performed surgery. To reduce the high mortality rates associated with aortic dissections, it is crucial to implement specific measures for early identification of patients and ensure prompt and appropriate care. Considering the retrospective nature of this study, which may introduce bias and limit the ability to establish causality between variables, and for enhancing the understanding of this critical illness, additional research will result in advancements in both diagnosis and treatment.

6. Declarations

6.1. Acknowledgments

None.

6.2. Conflict of interest

The authors declare no conflicts of interests.

6.3. Funding

This study did not receive any grants.

6.4. Authors' contribution

Study design and conceptualization: GF
Data gathering: GF, NF, KF
Analysis: HZ, MY
Interpreting the results: HZ, MY
Drafting: All authors
Critically revised: All authors
Read and approved the final version: All authors

6.5. Using artificial intelligence chatbots

None.

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Table 1: Clinical characteristics of patients diagnosed with aortic dissection and their association with 3-month mortality in Tabriz, Iran (2017-2021)

Characteristic	Total n = 150	Died n = 73	Survived n = 66	P-value
Age (year)				
Mean ± SD	57.57 ± 15.51	61.31 ± 16.76	54.5 ± 13.84	0.010
Sex				
Male	95 (63.3)	47 (54)	40 (46)	0.646
Female	55 (36.7)	26 (50)	26 (50)	
Standford classification				
A	111 (74)	59 (56.2)	46 (43.8)	0.128
B	39 (26)	14 (41.2)	20 (58.8)	
DeBakey classification				
1	55 (36.7)	30 (58.8)	21 (41.2)	0.072
2	68 (45.3)	35 (55.6)	28 (44.4)	
3	27 (18)	8 (32)	17 (68)	
Duration				
Acute	147 (98)	71 (52.2)	65 (47.8)	>0.999
Chronic	3 (2)	2 (66.7)	1 (33.3)	
Etiology				
Spontaneous	147 (98)	70 (51.5)	66 (48.5)	0.498
Trauma	2 (1.3)	2 (100)	0 (0)	
Iatrogenic	1 (0.7)	1 (100)	0 (0)	
Underlying disease				
DM	18 (12)	10 (58.8)	7 (41.2)	0.578
HTN	98 (65.3)	50 (54.3)	42 (45.7)	0.546
IHD	31 (20.7)	15 (50)	15 (50)	0.755
Marfan	8 (5.3)	3 (37.5)	5 (62.5)	0.477
HLP	6 (4)	6 (42.9)	8 (57.1)	0.445
VHD	6 (4)	3 (60)	2 (40)	>0.999
HF	4 (2.7)	2 (50)	2 (50)	>0.999
CVA	7 (4.7)	5 (71.4)	2 (28.6)	0.445
COPD	9 (6)	4 (44.4)	4 (44.4)	>0.999
CKD	9 (6)	4 (44.4)	5 (55.6)	0.736
Hypothyroidism	8 (5.3)	1 (12.5)	7 (87.5)	0.027
AF	4 (2.7)	3 (75)	1 (25)	0.621
Aneurysm history	12 (8)	9 (75)	3 (25)	0.103
History of Dissection	9 (6)	5 (55.6)	4 (44.4)	>0.999
History of Bentall operation	5 (3.3)	3 (60)	2 (40)	>0.999
Alcohol consumption	2 (1.3)	0 (0)	2 (100)	0.224
Smoking	56 (37.7)	23 (41.1)	25 (44.6)	0.430
Use of illicit drugs	12 (8)	5 (41.7)	6 (50)	0.625
Vital signs				
SBP.t (n = 108)	135.28 ± 27.60	131.98 ± 32.42	138.48 ± 22.61	0.256
DBP.t (n = 108)	79.99 ± 18.76	78.04 ± 21.56	80.93 ± 15.42	0.449
PR (n = 146)	82.64 ± 19.75	83 ± 22.88	82.48 ± 15.64	0.880
Clinical signs and symptoms				
Arm Pain	15 (10)	31 (49.2)	32 (50.8)	0.477
Backache	70 (46.7)	2 (100)	0 (0)	0.498
Chest Pain	113 (75.3)	7 (50)	7 (50)	0.842
Neck Pain	17 (11.3)	8 (53.3)	7 (46.7)	0.947
Shoulder Pain	2 (1.3)	9 (50)	9 (50)	0.819
Abdominal pain	24 (16)	55 (53.4)	48 (46.6)	0.725
Quality				0.299
Stabbing	57 (45.2)	26 (53.1)	23 (46.9)	
Crushing	54 (42.9)	30 (58.8)	21 (41.2)	
Burning	9 (7.1)	2 (22.2)	7 (77.8)	
Tearing	3 (2.4)	1 (33.3)	2 (66.7)	
Dull	3 (2.4)	2 (66.7)	1 (33.3)	

Table 1: Clinical characteristics of patients diagnosed with aortic dissection and their association with 3-month mortality in Tabriz, Iran (2017-2021) (continued)

Characteristic	**Total n = 150**	**Died n = 73**	**Survived n = 66**	**P-value**
Presentation				
Syncope	9 (6)	6 (75)	2 (25)	0.280
Pulselessness	6 (4)	4 (66.7)	2 (33.3)	0.683
Neurological symptoms	11 (7.3)	7 (70)	3 (30)	0.332
Palpitation	3 (2)	2 (66.7)	1 (33.3)	>0.999
Sweating	21 (14)	9 (45)	11 (55)	0.467
Dyspnea	28 (18.7)	10 (35.7)	18 (64.3)	0.046
Nausea or vomiting	25 (16.8)	11 (45.8)	13 (54.2)	0.494
Malaise	17 (11.3)	12 (75)	4 (25)	0.056
Severity				0.390
Mild	1 (0.8)	1 (100)	0 (0)	
Moderate	32 (25.4)	13 (44.8)	16 (55.2)	
Severe	93 (73.8)	47 (55.3)	38 (44.7)	
Symptom onset to hospital arrival interval (hours)				
Mean ± SD	73.36 ± 206.82	57.80 ± 123.73	101.73 ± 276.41	0.246
Hospital admission to diagnosis interval (hours)				
Mean ± SD	9.26 ± 23.01	6.59 ± 1.95	11.87 ± 3.81	0.222
Diagnosis to treatment interval (hours)				
Mean ± SD	13.77 ± 38.34	10.39 ± 20.26	18.29 ± 52.18	0.295
Hospital admission to death interval (hours)				
Mean ± SD	87.42 ± 133.44	—	—	—

Data are presented as mean ± SD, or frequency (percentage). DM: diabetes mellites; HTN: hypertension; IHD: ischemic heart disease; HLP: hyperlipidemia; VHD: valvular heart disease; HF: heart failure; CVA: cerebrovascular accident; COPD: chronic obstructive pulmonary disease; CKD: chronic kidney disease; AF: atrial fibrillation; SBP.L: systolic blood pressure of the left brachial artery; SBP.t: systolic blood pressure in total; DBP.t: diastolic blood pressure in total; PR: pulse rate.

Table 2: Comparison of Demographic Characteristics, Medical History, Vital Signs, and Symptoms by Dissection Type in Aortic Dissection Patients)

Variable	Stanford A (n = 111)	Stanford B (n = 39)	P-value
Age (year)			
Mean ± SD	57.91 ± 15.86	56.61 ± 14.63	0.655
Sex			
Male	64 (57.7)	31 (79.5)	0.015
Female	47 (42.3)	8 (20.5)	
Duration			
Acute	108 (97.3)	39 (100)	0.568
Chronic	3 (2.7)	0 (0)	
Etiology			
Spontaneous	110 (99.1)	37 (94.9)	0.066
Trauma	0 (0)	2 (5.1)	
Iatrogenic	1 (0.9)	0 (0)	
PMH	88 (79.3)	30 (76.9)	0.757
HTN	75 (67.6)	23 (59.0)	0.332
IHD	26 (23.4)	5 (12.8)	0.160
Marfan syndrome	5 (4.5)	3 (7.7)	0.429
HLP	11 (9.9)	3 (7.7)	>0.999
VHD	4 (3.6)	2 (5.1)	0.650
HF	2 (1.80)	2 (5.13)	0.277
CVA	4 (3.6)	3 (7.7)	0.377
Aneurysm history	10 (9)	2 (5.1)	0.732
Dissection	6 (5.4)	3 (7.7)	0.697
Bentall operation	1 (0.9)	4 (10.3)	0.016
Presentation			
Chest Pain	84 (75.7)	29 (74.4)	0.870
Backache	47 (42.3)	23 (59)	0.073
Shoulder Pain	2 (1.8)	0 (0)	—
Neck Pain	17 (15.3)	0 (0)	0.007
Arm Pain	11 (9.9)	4 (10.3)	>0.999
Abdominal pain	8 (7.2)	16 (41.3)	<0.0001
Syncope	9 (8.1)	0 (0)	0.112
Pulselessness	5 (4.5)	1 (2.6)	—
Neurological symptoms	10 (9)	1 (2.6)	0.290
Sweating	15 (13.5)	6 (15.4)	0.772
Dyspnea	21 (18.9)	7 (17.9)	0.894
Nausea vomiting	34 (87.2)	5 (12.8)	0.441
Malaise	16 (14.4)	1 (2.6)	0.074
Severity			
Mild	1 (1.1)	0 (0)	0.470
Moderate	20 (22.2)	12 (33.3)	
Severe	69 (76.7)	24 (66.7)	

Aata are presented as N (%) or mean ± standard deviation (SD).

Table 3: Independent Predictors of Mortality in Aortic Dissection Identified by Multivariate Logistic Regression

Variable	coefficient	P-value	Odds Ratio	95% CI for Odds Ratio	
				Lower	Upper
Age	0.03	0.027	1.03	1.00	1.06
Elective surgery	-2.04	0.075	0.13	0.01	1.23
Debakey type III	-1.23	0.027	0.29	0.01	0.87
Hypothyroidism	-2.16	0.049	0.12	0.01	0.99
Treatment					
Untreated (Reference group)					
Surgery	-1.64	0.019	0.19	0.05	0.76
Medical	-1.70	0.024	0.18	0.04	0.80