بیمارستان قلب شهید رجایی

بررسی نتایج آئورتوپاتی در بیمارانی که طی سال های ۹۸-۸۲ در بیمارستان قلب و عروق شهید رجایی تحت درمان قرار گرفته اند

شناسنامه طرح

کد رهگیری طرح:	۹۸۱۵۳
تاریخ تصویب پیش پروپوزال:	
عنوان طرح:	بررسی نتایج آئورتوپاتی در بیمارانی که طی سال های ۹۸-۸۲ در بیمارستان قلب و عروق شهید رجایی تحت درمان قرار گرفته اند
عنوان لاتین طرح:	The evaluation of outcomes of aortopathies in patients undergoing treatment in Rajaie CMRC between ۱۳۸۲ and ۱۳۹۸
تلفن:	۲۳۹۲۲۱۹۳
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نوع مطالعه:	کوهورت گذشته نگر-Retrospective cohort
تاریخ شروع:	۱۳۹۹/۰۷/۰۱
تاریخ خاتمه:	۱۴۰۱/۰۷/۰۱
محل اجرای طرح:	
محل اجرای طرح:	بیمارستان قلب شهید رجایی
سازمان مجری:	بیمارستان قلب شهید رجایی
سازمان مجری:	
دانشکده/محل خدمت:	Rajaie Cardiovascular Medical and Research Center, Iran University of Medical Sciences
رشته تخصصی:	قلب و عروق- بیماریهای دریچه
توضیحات:	
نوع طرح ها:	

مجری / همکاران

نام و نام‌خانوادگی	سمت در طرح	نوع همکاری	توضیحات
سعید حسینی	مجری اصلی / نویسنده مقاله	ارزیابی بالینی بیماران	

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رده	نوع ارتباط با مرکز
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متون پیشنهاد

آیتم اطلاعات تفضیلی	متن
جدول متغیرها	
جدول زمان بندی	
بیان مسئله	Aortic diseases, or aortopathies, include thoracic aortic aneurysm (TAA) and abdominal aortic aneurysm. The aortic aneurysm is common, accounting for 1-2% of all deaths in industrialized countries. Early theories of the causes of human aneurysm mostly focused on inherited or acquired defects in components of the extracellular matrix in the aorta. Several mutations in the genes encoding extracellular matrix proteins have been recognized.[1] The TAA is a type of aortopathy describing dilation of the proximal aortic dimensions including the aortic root, which is a risk factor for aortic dissection and sudden cardiac death. TAA and other forms of aortopathy (e.g., aortic tortuosity or aortic hypoplasia/stenosis) develop in the presence or absence of additional cardiovascular malformations including bicuspid aortic valve (BAV). The TAA is associated with connective tissue disorders (e.g., Marfan syndrome), and familial clustering has been identified in

a significant proportion of nonsyndromic cases, establishing high heritability.[2, 3] The major pathologies causing and/or associated with aortopathies includes familial TAA, BAV, Marfan syndrome, fibrillinopathy syndromes (e.g., MASS phenotype [Mitral valve prolapse, Aortic dilatation, Skeletal and Skin abnormalities], congenital contractural arachnodactyly [Beals-Hecht syndrome], and Shprintzen-Goldberg craniosynostosis syndrome), LOEYS-DIETZ syndrome, vascular Ehlers-Danlos syndrome, Turner syndrome, and inflammatory condition (such as Takayasu arteritis).[4-6] Aortic disease in Marfan classically manifests as an ascending aortic aneurysm involving the sinuses of Valsalva and the tubular portion of the ascending aorta.[7] Aortic dilation, especially in the ascending aorta, is part of BAV disease. Several studies indicate that 20% to 30% of patients with BAV develop aneurysmal enlargement during a follow-up of 9 to 25 years.[8-10]

Aortic root and ascending aortic dilatation are indicators associated with risk of aortic dissection, which varies according to underlying etiologies, indexed aortic root size, and rate of progression.[5] Therefore, the early diagnosis, family screening, timely surveillance by imaging and physical examinations, medical management, and early elective aortic root replacement to avert a lethal catastrophe should be considered.[3, 5] Only 5% of TAAs are symptomatic, and for the remainder, the diagnosis is made either incidentally on imaging performed for other indications or following the potentially deadly complications of dissection and/or rupture.[11] Once the diagnosis is made, treatment includes medical therapy and risk factor modification to reduce dilation rate and to prevent aortic dissection/rupture, periodic surveillance to monitor rate of dilation, and prophylactic surgical correction in high-risk conditions such as BAV disease with increasing size of aneurysm.[3, 6, 12, 13]

Acute aortic syndrome includes aortic dissection, intramural haematoma (IMH), and symptomatic aortic ulcer. Propagation of the dissection can proceed in anterograde or retrograde fashion from the initial tear involving side branches and causing complications such as malperfusion syndromes, tamponade, or aortic valve insufficiency.[14] Common predisposing factors in the International Registry of Aortic Dissection were hypertension in 72% of cases, followed by atherosclerosis in 31%, and previous cardiac surgery in 18%. Analysis of the young patients with dissection (<40 years of age) revealed that younger patients were less likely to have a history of hypertension (34%) or atherosclerosis (1%), but were more likely to have Marfan syndrome, BAV, and/or prior aortic surgery.[15] Acute dissections involving the ascending aorta required swift repair of the aortic root or reconstruction of the ascending aorta. In contrast, the descending aorta dissections are treated medically unless progression of dissection, intractable pain, organ malperfusion, or extra-aortic blood is demonstrated.[16, 17] The 10-year actuarial survival rate of patients with an aortic dissection who leave the hospital alive ranges from 30% to 60%.[18, 19] The long-term approach is based on understanding that dissection of the aorta is the epitome of systemic aortic media degeneration or defective wall structure, with the entire aorta and its branches. Subsequently, management in these patients includes life-time medical treatment to minimize aortic wall stress, serial imaging to detect signs of dissection progression, re-dissection, or aneurysm formation, and endovascular or surgical intervention when needed. In patients intolerant to b-blockers because of asthma, bradycardia, or signs of heart failure, vasodilators and short acting calcium channel

blockers are valuable options.[16]	
With the rapid advancements of technological facilities, the management of aortic diseases is turning into less-invasive approaches and endovascular modalities. However, surgical and endovascular options can be associated with different results in various settings that need to be tailored to the aortic pathology/anatomy, the experience of operators, and the center facilities. The endovascular aortic repair (EVAR) has been an emerging technique with good early outcomes for thoracic and abdominal aortic aneurysm.[20, 21] Therefore, due to high risk of morbidity and mortality in patients with aortopathies, we sought to evaluate the outcomes of patients with aortopathies who underwent surgical/interventional treatments or received medical management in Rajaie CMRC between 1382 and 1398. Mid- to long-term follow-up of patients in our clinics accompanied by echocardiographic/imaging evaluations would provide us data for identifying the predictors of outcomes and identify the right therapy for right patient and determine those who can benefit more from early intervention.	
Aortic diseases, or aortopathies, include thoracic aortic aneurysm (TAA) and abdominal aortic aneurysm. The aortic aneurysm is common, accounting for 1-2% of all deaths in industrialized countries. TAA and other forms of aortopathy develop in the presence or absence of additional cardiovascular malformations including bicuspid aortic valve (BAV). The TAA is associated with connective tissue disorders (e.g., Marfan syndrome) and familial clustering. Aortic root and ascending aortic dilatation are indicators associated with risk of aortic dissection, which varies according to underlying etiologies, indexed aortic root size, and rate of progression. Therefore, the early diagnosis, family screening, timely surveillance by imaging and physical examinations, medical management, and early elective aortic root replacement to avert a lethal catastrophe should be considered. Acute dissections involving the ascending aorta required swift repair of the aortic root or reconstruction of the ascending aorta. In contrast, the descending aorta dissections are treated medically unless progression of dissection, intractable pain, organ malperfusion, or extra-aortic blood is demonstrated. In patients intolerant to b-blockers, vasodilators and short acting calcium channel blockers are valuable options. The endovascular aortic repair (EVAR) has been an emerging technique with good early outcomes for thoracic and abdominal aortic aneurysm. Therefore, due to high risk of morbidity and mortality in patients with aortopathies, we sought to evaluate the outcomes of patients with aortopathies who underwent surgical/interventional treatments or received medical management in Rajaie CMRC between 1382 and 1398.	ضرورت اجرا
Studies of aortic aneurysm patients have shown that the risk of rupture increases with aortic size; however, aortic size in isolation is not helpful in surgical decision-making. Pape et al[22] examined 591 type A dissection patients enrolled in the International Registry of Acute Aortic Dissection between 1996 and 2005 (mean age, 60.8 years). Maximum aortic diameters averaged 5.3 cm; 349 (59%) patients had aortic diameters <5.5 cm and 229 (40%) patients had aortic diameters <5.0 cm. Independent predictors of dissection at smaller diameters (<5.5 cm) included a history of hypertension (odds ratio, 2.17; 95% confidence interval [CI], 1.03 to 4.57; p=0.04), radiating pain (odds ratio, 2.08; 95% CI, 1.08 to 4.0; p=0.03), and increasing age (odds ratio, 1.03; 95% CI, 1.00 to 1.05; p=0.03). Marfan syndrome patients were more likely to dissect at larger diameters (odds ratio, 14.3; 95% CI, 2.7 to 100; p=0.002). Mortality (27% of patients) was not related to aortic	بررسی متون

size. The majority of patients with acute type A acute aortic dissection present with aortic diameters <5.5 cm and thus do not fall within current guidelines for elective aneurysm surgery. Methods other than size measurement of the ascending aorta are needed to identify patients at risk for dissection.

The natural history of aortopathies is different among patients with or without BAV. Davies et al[23] reviewed clinical characteristics of 514 patients (326 male, 188 female) with unrepaired ascending aortic aneurysms followed from 1985 to 2005. Seventy patients (13.4%) diagnosed with BAV form group A; the remaining 445 patients form group B. Growth rates and risk factors for complications were assessed. Patients in group A had a lower incidence of hypertension (p = 0.018), carotid artery disease, and stroke (p = 0.018), and presented at an earlier age (49.0 versus 64.2 years, p <0.001). Group A also had a higher rate of aortic growth (0.19 versus 0.13 cm/year, p = 0.010). The incidence of rupture and dissection were similar. Overall survival was better among patients with BAV (p <0.001). Among patients with BAV, those with aortic stenosis had a higher risk of rupture, dissection, or death before operative repair than did those with normally functioning valves (odds ratio 10.475, 95% CI 1.15 to 95.15). Based on this study, despite the faster rates of growth, however, patients with BAV have similar rates of aortic rupture, dissection, and death and improved long-term survival.

Despite effective treatment of aortic root disease, cardiovascular morbidity remains high among Marfan syndrome due to arrhythmia, heart failure, complications at distal sites of the aorta, and valvular dysfunction. Without aortic root surgical therapy for progressive aortopathy, Marfan patients rarely survive their 40s.[24] Beta-blocker therapy, angiotensin-converting enzyme inhibitors, and angiotensin receptor blockers are the most studied drug treatment in the management of Marfan aortopathy.[25-27] Yetman et al[26] examined the effects of enalapril versus β-blocker therapy for prevention of aortic dilation in patients with the Marfan syndrome. They found an improved aortic distensibility (3.0±0.3 vs. 1.9±0.4 cm2 dynes−1; p <0.02) and a reduced aortic stiffness index (8.0±2.9 vs. 18.4±3.8; p <0.05) in patients receiving enalapril compared with those receiving β blockers. These favorable hemodynamic changes were associated with a smaller increase in aortic root diameter (0.1±1.0 vs. 5.8±5.2 mm) and fewer clinical end points during follow-up. In addition, Ladouceur et al [25] evaluated the evolution of aortic diameter at the level of the sinuses of Valsalva in 155 children (82 males, 73 females) aged <12 years who had been diagnosed with Marfan syndrome. They compared affected children treated by β blockade ≥1 time during their lives (n = 77, mean age at diagnosis 6.1 ± 3.2 years) with affected children who had never received β blockers (n = 78; 42 males, mean age 7.4 ± 5.2 years). A mean delay of 1.3 years was observed between diagnosis and the initiation of β blockade in the treated group (mean age at initiation 7.5 years). At the time of diagnosis, aortic diameters were similar in the 2 groups, but after 1.3 years, aortic diameters were greater in the group of children in whom β blockers had been initiated. On multivariate analysis, treatment and age remained significant determinants of aortic diameter. Beta blockade significantly decreased the rate of aortic dilatation at the level of the sinuses of Valsalva by a mean of 0.16 mm/year (p <0.05), an effect that increased with treatment duration. A trend toward lower cardiac mortality, decreased need for preventive aortic surgery, and less dissection was observed.

Genetic aortopathy (GA) underlies TAA in younger adults. Comparative survival and predictors of outcomes in nonsyndromic TAA (NS-TAA) are incompletely defined compared to Marfan syndrome and BAV. Sherrah et al [28] compared survival and clinical outcomes for individuals with NS-TAA, Marfan syndrome, and BAV. From 1988 to 2014, all patients presenting with GA 16 to 60 years of age were enrolled in a prospective study of clinical outcomes. Risk factors for death and aortic dissection were identified. Diagnosis of GA was made for 760 patients (age 36.9 ± 13.6 years, 26.8% female; NS-TAA, n = 311; Marfan syndrome, n = 221; BAV, n = 228). Marfan syndrome patients were younger than NS-TAA and BAV. Presentation with aortic dissection was more common for NS-TAA than Marfan syndrome or BAV. The 687 patients surviving >30 days after presentation were followed for a median of 7 years. Calculated 10-year mortality was 7.8% for NS-TAA, 8.7% for Marfan syndrome, and 3.5% for BAV (NS-TAA and Marfan syndrome vs. BAV $p < 0.05$). Factors associated with all-cause mortality were Marfan syndrome ($p = 0.04$), age at presentation, and family history of dissection. Accordingly, they concluded that clinical outcomes for Marfan syndrome and NS-TAA are similar but worse than BAV. Independent predictors of mortality, including family history of aortic dissection and age, can be included in an Aortopathy Mortality Risk Score to predict survival. Management of NS-TAA, including surgical intervention, should be similar to that of Marfan syndrome.

Borger et al[12] conducted a study to find that the replacement of the ascending aorta should be performed at which diameter in patients with BAV. They reviewed all patients with BAVs undergoing aortic valve replacement from 1979 through 1993 (n = 201). Patients undergoing concomitant replacement of the ascending aorta were excluded. Follow-up was obtained on 98% of patients and was 10.3 ± 3.8 years. The average patient age was 56 ± 15 years, and 76% were male. The ascending aorta was normal (<4.0 cm) in 115 (57%) patients, mildly dilated (4.0-4.4 cm) in 64 (32%) patients, and moderately dilated (4.5-4.9 cm) in 22 (11%) patients. All patients with bicuspid aortic valves with marked dilation (>5.0 cm) underwent replacement of the ascending aorta and were therefore excluded. Fifteen-year survival was 67%. During follow-up, 44 patients required reoperation, predominantly for aortic valve prosthesis failure. Twenty-two patients had long-term complications related to the ascending aorta: 18 required an operative procedure to replace the ascending aorta (for aortic aneurysm), 1 had aortic dissection, and 3 experienced sudden cardiac death. Fifteen-year freedom from ascending aorta-related complications was 86%, 81%, and 43% in patients with an aortic diameter of less than 4.0 cm, 4.0 to 4.4 cm, and 4.5 to 4.9 cm, respectively ($p < 0.001$). Accordingly, they concluded that patients undergoing operations for BAV disease should be considered for concomitant replacement of the ascending aorta if the diameter is 4.5 cm or greater.

A prospective population-based study of incidence and outcome of acute aortic dissection was conducted in Oxfordshire. Howard et al[29] determined incidence and outcomes of all acute aortic dissections in a population of 92,728 in Oxfordshire, United Kingdom, from 2002 to 2012. Among 155 patients with 174 acute aortic events, 54 patients had 59 thoracoabdominal aortic dissections (52 incident events: 6/100,000, 95% CI 4–7; 37 Stanford type A, 15 Stanford type B; 31 men,

mean age=72.0 years). Among patients with type A incident events, 18 (48.6%) died before hospital assessment (61.1% women). The 30-day fatality rate was 47.4% for patients with type A dissections who survived to hospital admission and 13.3% for patients with type B dissections, although subsequent 5-year survival rates were high (85.7% for type A; 83.3% for type B). Even though 67.3% of patients were on antihypertensive drugs, 46.0% of all patients had at least 1 systolic BP ≥180 mm Hg in their primary care records over the preceding 5 years, and the proportion of blood pressures in the hypertensive range (>140/90 mm Hg) averaged 56.0%. Premorbid blood pressure was higher in patients with type A dissections that were immediately fatal than in those who survived to admission (mean/standard deviation pre-event systolic blood pressure=151.2/19.3 versus 137.9/17.9; p <0.001). They concluded that uncontrolled hypertension remains the most significant treatable risk factor for acute aortic dissection. Prospective population-based ascertainment showed that hospital-based registries will underestimate not only .incidence and case fatality, but also the association with premorbid hypertension

In a multi-central study, Lederle et al[21] randomly assigned 881 patients with asymptomatic abdominal aortic aneurysms to either endovascular repair (n = 444) or open repair (n = 437) of the aneurysm. Patients were followed for up to 14 years. A total of 302 patients (68.0%) in the endovascular-repair group and 306 (70.0%) in the open-repair group died (hazard ratio, 0.96; 95% confidence interval [CI], 0.82 to 1.13). During the first 4 years of follow-up, overall survival appeared to be higher with endovascular repair than with open repair; from year 4 through year 8, overall survival was higher in the open-repair group; and after 8 years, overall survival was once again higher in the endovascular-repair group (hazard ratio for death, 0.94; 95% CI, 0.74 to 1.18). None of these trends were significant. There were 12 aneurysm-related deaths (2.7%) in the endovascular-repair group and 16 (3.7%) in the open-repair group (between-group difference, −1.0 percentage point; 95% CI, −3.3 to 1.4); most deaths occurred during the perioperative period. Aneurysm rupture occurred in 7 patients (1.6%) in the endovascular-repair group, and rupture of a thoracic aneurysm occurred in 1 patient (0.2%) in the open-repair group (between-group difference, 1.3 percentage points; 95% CI, 0.1 to 2.6). Death from chronic obstructive lung disease was just over 50% more common with open repair (5.4% of patients in the endovascular-repair group and 8.2% in the open-repair group died from chronic obstructive lung disease; between-group difference, −2.8 percentage points; 95% CI, −6.2 to 0.5). More patients in the endovascular-repair group underwent secondary procedures. Long-term overall survival was similar among patients who underwent endovascular repair and those who underwent open repair. A difference between groups was noted in the number of patients who underwent secondary therapeutic procedures.[21]

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اهداف: هدف اصلی، اهداف اختصاصی، هدف کاربردی

اهداف (خروجی ها) اصلی طرح[8]:

To evaluate mid- to long-term outcomes of aortopathies in patients undergoing medical and/or surgical treatments

اهداف (خروجی ها) اختصاصی طرح[9] :

۱. Determining the predictors of outcomes of aortopathies in patients undergoing medical or surgical/interventional treatments

۲. Determining the outcomes of aortopathies by the background etiology in patients undergoing medical or surgical/interventional treatments

۳. Determining the outcomes of aortopathies by age at presentation in patients undergoing medical or surgical/interventional treatments

۴. Determining the outcomes of aortic aneurysm by aortic size at presentation in patients undergoing medical or surgical/interventional treatments

۵. Determining the outcomes of aortic dissection by the type of dissection in patients undergoing medical or surgical/interventional treatments

۶. Determining the outcomes of aortic dissection by age at presentation in patients undergoing medical or surgical/interventional treatments

۷. Determining the outcomes of aortic dissection by the presence of hypertension at presentation in patients undergoing medical or surgical/interventional treatments

۸. Determining the outcomes of aortopathies by the presence of history of prior cardiac surgeries in patients undergoing medical or surgical/interventional treatments

۹. Comparing the outcomes of aortic aneurysm undergoing open or endovascular aortic repair

۱۰. Comparing the outcomes of aortic dissection undergoing open or endovascular aortic repair

۱۱. Determining the effect of medical therapy of the progression of aortopathies during follow-up period

اهدف کاربردی طرح[10]:

۱. To identify the predictors of outcomes of aortopathies in our population

۲. To provide an evidence for identifying the appropriate management modality for patients with different aortopathies	
۱. Which variables can predict outcomes of aortopathies in patients undergoing medical or surgical/interventional treatments? ۲. Which etiology (i.e., Marfan syndrome, BAV, or any other connective tissue disorders) is associated with better outcomes of aortopathies in patients undergoing medical or surgical/interventional treatments? ۳. What is the association between age at presentation and the outcomes of aortopathies in patients undergoing medical or surgical/interventional treatments? ۴. What is the association between aortic size at presentation and the outcomes of aortopathies in patients undergoing medical or surgical/interventional treatments? ۵. What is the association between the type of dissection and the outcomes of aortic dissection in patients undergoing medical or surgical/interventional treatments? ۶. What is the association between age at presentation and the outcomes of aortic dissection in patients undergoing medical or surgical/interventional treatments? ۷. What is the association between presence of hypertension at presentation and the outcomes of aortic dissection in patients undergoing medical or surgical/interventional treatments? ۸. What is the association between presence of history of prior cardiac surgeries and the outcomes of aortopathies in patients undergoing medical or surgical/interventional treatments? ۹. What is the difference between outcomes of aortic aneurysm repair among those undergoing open or endovascular repair? ۱۰. What is the difference between outcomes of aortic dissection repair among those undergoing open or endovascular repair? ۱۱. How can medical therapy influence on the progression of aortopathies during follow-up period?	فرضیات یا سوالات پژوهشی
In a retrospective manner, we will review the electronic database of Rajaie CMRC for finding data related to patients with aortic aneurysm and aortic dissection receiving medical therapies or undergoing surgical/interventional management between ۱۳۸۲ and ۱۳۹۸. Data will comprise of baseline demographics, data on details of surgical/interventional modalities, and echocardiographic examinations of patients during visit to echocardiographic laboratory at first presentation to our center and during follow-up period.	روش اجرا

Inclusion criteria include any individuals with aortopathies undergoing medical and/or surgical management in Rajaie CMRC with at least ۶ months follow-up after first visit to our center.

Exclusion criteria include patients without complete data on surgical modalities and echocardiographic examinations as well as the lack of data on echocardiographic examinations during follow-up period after surgical repair.

All extracted data from hospital databases will be assessed and cleaned by a computer science expert using Python language implementation as follows:

Machine learning (ML) for natural language processing (NLP) and text analytics involves using machine learning algorithms and "narrow" artificial intelligence (AI) to understand the meaning of text documents. These documents can be just about anything that contains text: social media comments, online reviews, and survey responses (even financial, medical, legal and regulatory documents). In essence, the role of ML and AI in natural language processing and text analytics is to improve, accelerate and automate the underlying text analytics functions and NLP features that turn this unstructured text into useable data and insights.

To identify echocardiographic variables from notes in the dataset, we searched notes for the different phrases based on predefined study variables such as 'EF', 'MS, 'MR' and using the Regular expressions.

Regular expressions (called REs, or regexes, or regex patterns) are essentially a tiny, highly specialized programming language embedded inside Python and made available through the re module. Using this little language, you specify the rules for the set of possible strings that you want to match. A Regular Expression is a sequence of characters that forms a search pattern. It can help with finding special words within the text and extracting variables from the texts.

Statistical analysis will be as follows:

Comparing continuous variables between subgroups by an independent t-test or Mann-Whitney U test for two groups as well as ANOVA or Kruskal-Wallis test for more than two groups

	Comparing categorical variables by chi-squared test Logistic regression analysis for identifying predictors of outcomes Kaplan-Meier curve for identifying survival Baseline characteristics' missing data will be managed using "Mean of nearby point". However, in the case of missing data for echocardiographic parameters, the case will be excluded from final analysis.
مشخصات ابزار جمع آوری اطلاعات و نحوه جمع آوری آن	All required data will be gathered via electronic database of Rajaie CMRC. All data will be entered into the Excel datasheets after extraction from hospital database, and then those will be transferred into statistical software.
روش محاسبه حجم نمونه و تعدادآن	All available data in the hospital database will be evaluated and patients who underwent evaluations and treatment due to aortopathies associated with sufficient and reliable data will be entered in this study. The sample size I estimated to be around ۴۵۰۰ patients during the study period.
ملاحظات اخلاقی	The study protocol will be reviewed by the local ethics committee of Rajaie CMRC. Due to being retrospective, no consent will be obtained from patients and the final report will be anonymous.
محدودیتهای اجرایی طرح وروش کاهش آنها	The major limitation of this study will be insufficient data on medical management of patients and the history of hypertension among patients at presentation and/or during follow-up period.

	In addition, the lack of complete data on echocardiographic evaluations in our database at presentation and/or during follow-up period will be another limitation which can decrease the availability of predictors of outcomes. In cases with insufficient data, those will be excluded from final analysis.
معیارهای ورود (فقط مربوط به طرحهای کارآزمایی بالینی)	
معیارهای خروج (فقط مربوط به طرحهای کارآزمایی بالینی)	
چگونگی تصادفی سازی و Concealment (فقط مربوط به طرحهای کارآزمایی بالینی)	
تعریف گروه مداخله (فقط مربوط به طرحهای کارآزمایی بالینی)	
تعریف گروه شاهدیامقایسه (فقط مربوط به طرحهای کارآزمایی بالینی)	
چگونگی کورسازی (Blinding) (فقط مربوط به طرحهای کارآزمایی بالینی)	
پیامدها اولیه (primary) ثانویه (secondary) ایمنی (Safety) (فقط مربوط به طرحهای کارآزمایی بالینی)	
پیگیری (follow up) (فقط مربوط به طرحهای کارآزمایی بالینی)	

جدول متغیرها

نام متغیر	نقش متغیر	نوع متغیر	نوع متغیر کمی – پیوسته است؟	نوع متغیر کمی – گسسته است؟	نوع متغیر کیفی – رتبه ای است؟	نوع متغیر کیفی – اسمی است؟	واحد اندازه گیری	تعریف کاربردی	نحوه اندازه گیری
Age	مستقل	کمی	☑	☐	☐	☐	Year	The years of life	History in database
Sex	مستقل	کیفی	☐	☐	☐	☑	Male/Female	Phenotype	History in database
Weight	مستقل	کمی	☑	☐	☐	☐	Kg	Weight of body	History in database
Height	مستقل	کمی	☑	☐	☐	☐	Meter	Height of body	History in database
Body mass	مستقل	کمی	☑	☐	☐	☐	Kg/m۲	Body mass index	History in

database									index
History in database	Defined based on guidelines appropriate for age groups and it is mentioned in hospital database in echocardiographic evaluations	Yes/No	☑	☐	☐	☐	کیفی	مستقل	Congenital heart disease
Echocardiography at baseline and follow-up echocardiography	The pathology of AV that is mentioned in echocardiographic report and diagnosis of patient, including BAV, aortic stenosis, and insufficiency as an isolated or concomitant with any structural heart diseases	Yes/No	☑	☐	☐	☐	کیفی	مستقل	AV pathology
History and PH/Ex in database	The presence of Marfan syndrome, fibrillinopathy syndromes, Loeys-Dietz syndrome, vascular Ehlers-Danlos syndrome, and Turner syndrome which has been identified in patients	Yes/No	☑	☐	☐	☐	کیفی	مستقل	Connective tissue disorders
History in database	Drugs used for preventing progression of aortopathies, including beta-blockers, angiotensin-converting enzyme inhibitors, and angiotensin-receptor blocker	Yes/No	☑	☐	☐	☐	کیفی	مستقل	Medical therapy
History in database	The presence of blood pressure higher than ۱۴۰/۹۰ mm Hg	Yes/No	☑	☐	☐	☐	کیفی	مستقل	Hypertension
History in database	The aorta diseases include aneurysm, dissections, and anatomical distortion such ad tortuosity	Yes/No	☑	☐	☐	☐	کیفی	مستقل	Aortopathy
History in	The surgical	Yes/No	☑	☐	☐	☐	کیفی	مستقل	Surgical

repair		کیفی						modality used for the repair of aortopathies, including	database
Endovascular repair	مستقل	کیفی	☐	☐	☐	☑	Yes/No	The endovascular repair of aortopathies	History in database
Re-operation	وابسته	کیفی	☐	☐	☐	☑	Yes/No	The re-operation of patients during follow-up period	History in database
Death	وابسته	کیفی	☐	☐	☐	☑	Yes/No	Mortality of patients during follow-up period as in-hospital or late mortality	Database
Progression of aortopathies	وابسته	کیفی	☐	☐	☐	☑	Yes/No	The progression of dissection size and aneurysmal section in patients during follow-up period	History in database

زمانبندی و مراحل اجرا

شرح مختصر مرحله	درصد مرحله	مدت اجرا – ماه	از تاریخ	تا تاریخ
Database review and data collection		۲		
Data cleaning and data handling		۶		
Report		۴		

ملاحظات اخلاقی

شما اجازه مشاهده این فرم را ندارید

هزینه وسایل و مواد مورد نیاز

نوع	نام دستگاه/ وسیله/ مواد	تعداد مورد نیاز	قیمت دستگاه/ وسیله/ مواد – ریال	کشور سازنده	شرکت سازنده	شرکت فروشنده	محل تامین اعتبار	جمع کل هزینه به ریال

هزینه پرسنلی

نام و نام خانوادگی	توصیف دقیق فعالیتی که فرد در این تحقیق باید انجام دهد	کل حق‌الزحمه – ریال
صدیقه قربانی(۱۸۱۲)	جمع آوری دیتا	۱۵,۰۰۰,۰۰۰
بهاره کاظم برجی(۸۵۱)	جمع آوری دیتا	۱۵,۰۰۰,۰۰۰

بهاره کاظم برجی(۸۵۱)	وارد کردن دیتا	۳۰,۰۰۰,۰۰۰
پیمان طباطبایی(۸۵۰)	همکاری از بخش کامپیوتر	۲۰,۰۰۰,۰۰۰
سید مصطفی موسوی زاده احمدآبادی(۱۸۹۳)	نوشتن مقاله	۲۰,۰۰۰,۰۰۰
شایان نقشبندی(۱۹۵۳)	آنالیز	۱۰,۰۰۰,۰۰۰
سیده مریم حسینی(۱۹۵۴)	جمع آوری دیتا	۱۵,۰۰۰,۰۰۰

جمع کل – ریال : ۱۲۵,۰۰۰,۰۰۰

هزینه آزمایشات و خدمات تخصصی

نام خدمت	نام مؤسسه ارائه کننده	تعداد یا مقدار لازم	قیمت واحد – ریال	قیمت کل – ریال
رکوردی یافت نشد				

هزینه مسافرت

مقصد	تعداد مسافرت در مدت اجرای طرح و منظور آن	نوع وسیله نقلیه	تعداد مسافرت	مبلغ
رکوردی یافت نشد				

هزینه کتب، نشریات و مقالات

نوع هزینه	توضیحات	مبلغ – ریال
رکوردی یافت نشد		

سایر هزینه ها

نوع هزینه	مبلغ – ریال
رکوردی یافت نشد	

کل اعتبار درخواست شده

هزینه پرسنلی (هیات علمی و غیر هیات علمی)	هزینه مواد مصرفی	هزینه مواد غیر مصرفی	هزینه تجهیزات،موادوخدمات موجوددر مرکز	هزینه مسافرت	هزینه چاپ و تکثیر	سایر هزینه ها	جمع کل هزینه – ریال
۱۲۵,۰۰۰,۰۰۰							۱۲۵,۰۰۰,۰۰۰