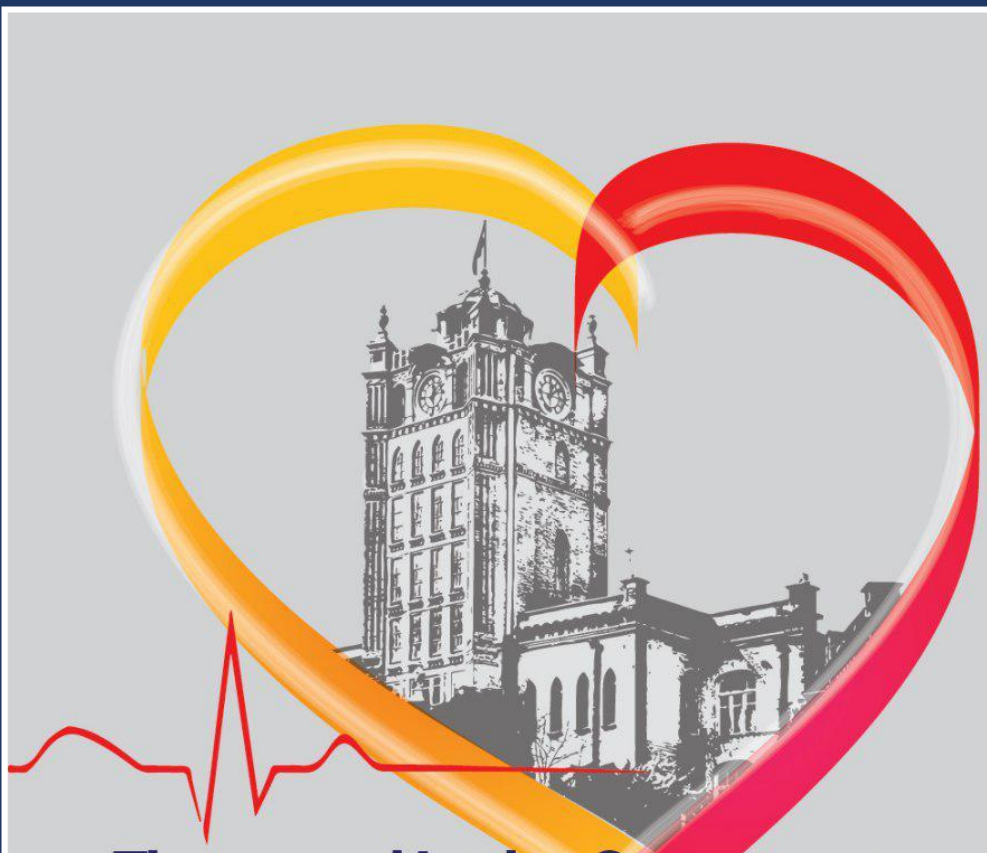
In the Name of

GOD

the Compassionate,
the Merciful



The second Iranian Congress on Acute Coronary Syndromes

(ICACS-2018)

June 27-29, 2018
Tabriz - Iran

دومین کنگره بین المللی سندروم های کرونری حاد ایران

۶-۸ تیرماه ۱۳۹۷
تبریز - ایران

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سرشناسه : کنگره بین المللی سندروم های کرونری حاد ایران (دومین ، ۱۳۹۷- تبریز)
عنوان و نام پدیدآور : دومین کنگره بین المللی سندروم های کرونری حاد ایران ۶ الی ۸ تیر ماه ۱۳۹۷، تبریز- ایران / به کوشش : محمد رضا آشتیانی.
مشخصات نشر : تهران : انتشارات رسانه تخصصی، ۱۳۹۷ . .
مشخصات ظاهری : ۱۱۶ص.
شابک : ۷-۳۷۳-۲۹۳-۶۰۰-۹۷۸
وضعیت فهرست‌نویسی : فیپای مختصر
یادداشت : فهرست نویسی کامل این اثر در نشانی http://opac.nlai.ir قابل دسترسی است.
شناسه افزوده : آشتیانی، محمد رضا، ۱۳۴۵ -

The Second Iranian Congress on Acute Coronary Syndromes

Collector : **Mohammad Reza Ashtiani**
Executive and Business Affairs: **Hamid Reza Eskandari**
Designer and Layout : **Farzaneh Vahdat Behrouty**
Printing turn : **First /2018 (1397)**
ISBN: 978-600-293-373-7
Circulation :1000

This book is freely available for congress participants and related companies.

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Welcome Message

Dear Respective Attendees

Join us in beautiful and historical city of Tabriz for the second Iranian Congress on Acute Coronary Syndromes (ICACS-2018) hold on June 27-29,2018. This is a three - day multidisciplinary congress aiming toward the continued medical education on diagnosis and management of patients with acute coronary Syndromes. The target audience includes all physicians from the following clinical specialties: General and Interventional Cardiology, Cardiovascular Surgery, Emergency and Internal Medicine, Cardiac Imaging, basic science researchers and clinical Nurses and Paramedics. The congress includes general lectures,small group discussions, challenging case presentations with problem based learning discussion and workshops.

If you have never been to Tabriz before, this will be your lifetime opportunity to visit this ancient city of northern west Iran. Despite its drastic modernization and industrialization, the rich history of Tabriz is easily appreciated by its visitors. There are a lot to see and a lot to do in this old capital of Iran. One may choose to visit historic places and museums,spend a day in grand bazaar (UNESCO World Heritage site in 2010), or enjoy a quite day visiting the surrounding nature. The city is built in the outskirts of the volcanic cone of Sahand and Einali mountains. We sincerely hope that the blend of pleasant weather, warm hospitality and high value scientific program will make 2nd ICACS a memorable congress.

J. Samadikhah	N. Aslanabadi	S. Ghaffari
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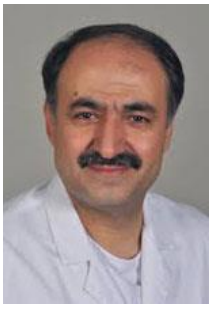

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The Second Iranian Congress on Acute Coronary Syndromes (ICACS-2018)

June 27-29, 2018
Tabriz – Iran

Organizers

- **Cardio Vascular Research Center**
  Tabriz University of Medical Sciences

CONGRESS TOPICS

- **Anticoagulant therapy in ACS**
- **Antiplatelet therapy in ACS**
- **Thrombolytic therapy in ACS**
- **Electrical complication of ACS**
- **Mechanical Complication of ACS**
- **Cardiogenic shock in ACS**
- **Imaging in ACS**
- **Biomarkers in ACS**
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- **Heart surgery in ACS**

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Scientific Program

The Second Iranian Congress on Acute Coronary Syndromes

Wednesday. 27 June (2018) \ Laleh Hall

8:30-10:00	**Opening Ceremony**	
10:00-10:30	**Break/ Poster Presentation**	
Session 1		
Panelists: Dr. Nouhi/ Dr. Aminian/ Dr. Samadikhah/ Dr. Ghasemi/ Dr. Maleki/ Dr. Nematipoor		
10:30-10:45	Approach to patients with Chest Pain in ED	Aminian B
10:45-11:00	ACS in patients with NECA or Non-obstructive CAD	Varasteravan HR
11:00-11:15	Updates in the management of UA/NSTEMI	Salarifar M
Session 2		
Panelists: Dr. Şahin/ Dr. Baghdadchi/ Dr. Mohebi/ Dr. Basiri/ Dr. Aslanabadi/ Dr. Peighambari		
11:15-11:30	Updates in the assessment of biomarkers in ACS	Ozer N (Turkey)
11:30-11:45	The role of echocardiography in approach to acute chest pain in ED	Khademvatan K
11:45-12:00	Management of ACS in pregnancy	Salehi R
12:00-12:15	Coronary artery ectasia and diffuse slow flow Coronary arteries	Sajjadieh A
12:15-12:30	Ethical aspects of management of patients with ACS	Aslanabadi N
12:30-14:00	Pray / Lunch / Exhibition Visit	

Thursday. 28 June (2018) \ Laleh Hall

Session 1		
Panelists: Dr. Pedrazzini/ Dr. Sanei/ Dr. Hashemian/ Dr. Garachemani/ Dr. Firuzi **Dr. Poormoghadas**		
8:00-8:15	The Holy Quran	
8:15-8:35	Updates in the management of STEMI	Alipour Parsa S
8:35-8:50	Emergency CABG in the setting of STEMI	Kalantar Motamed MH
8:50-9:05	Cardiogenic shock	Pedrazzini G (Switzerland)
9:05-9:20	Stent thrombosis: predictors and prevention	Gori T (Germany)
9:20-9:35	Mechanical support and assist devices in high risk PCI	Jamshidi P (Switzerland)
9:35- 9:50	Radial approach and clinical outcome in Primary PCI	Garachemani A (Switzerland)
9:50-10:00	Questions & Answers	
10:00-10:30	Break / Poster Presentation / Exhibition Visit	

Thursday. 28 June (2018) \ Laleh Hall

Session 2 STEMI Management (case based presentation)		
Panelists: Dr. Aminian/ Dr. Jamshidi/ Dr. Sarabipoor/ Dr. Ostovan/ Dr. Salarifar/ Dr. Amin **Moderator: Dr. Ghaffari**		
10:30-10:40	Case presentation and panel discussion	
10:40-10:55	Pre-hospital and ED Management	Rahmani F (ED)
10:55-11:05	Case Presentation (continued) and panel discussion	
11:05-11-20	Selection of reperfusion strategy in STEMI	Ostovan MA
11:20-11:35	Updates on thrombolytic therapy and pre hospital thrombolysis	Chinikar M
11:35-11:45	Case Presentation (continued) and panel discussion	
11:45-12:00	Treatment of acute HF in the setting of AMI	Amin A
12:00-12:10	Case Presentation (continued) and panel discussion	
12:10-12:25	Updates on rescue PCI & Pharmaco-invasive intervention	Separham A
12:25-12:30	Case Presentation (continued) and panel discussion	

Friday 29 June (2018) \ Laleh Hall

Session 1		
Panelists: Dr. Hashemian/ Dr. Samadi/ Dr. Oraei/ Dr. Vafali/ Dr. Şahin/ Dr. Sadr Bafghi		
8:00-8:05	The Holy Quran	
8:05-8:20	Anticoagulant therapy in ACS	Naghsh Tabrizi B
8:20-8:35	Antiplatelet therapy in ACS	Baris N (Turkey)
8:35-8:50	New generations of antiplatelet agents	Samadi AR (France)
8:50-9:05	DOAC`s in ACS (TAT)	Ghanavati R
9:05-9:20	Updates of lipid management in ACS	Mohamadifar A
9:20-9:35	Bradyarrhythmias and device therapy after AMI	Javadzadegan H
9:35-9:50	Tachyarrhythmia in ACS/ especial focus on VT storm	Oraei S
9:50-10:00	Questions and Panel discussion	Panelists
10:00-10:30	Break / Poster Presentation / Exhibition Visit	

Session 2 Main Hall		
Panelists: Dr. Garechemani/ Dr. Moosavi/ Dr. Hakim/ Dr. Tavasoli/ Dr. Ghasemi/ Dr. Nouhi		
10:30-10:45	Lessons learned from 40 years of PCI	Meier B (Switzerland)
10:45-11:00	Postgraduate learning/ focusing on "Powerpoint" presentation and sensory learning media	Marco J (France)
11:00-12:45	**Surgery or PCI in ACS complex scenarios** Pezeshkian M/ Afrasiabi A/ Marzban M/ Kalantar Motamed MH/ Kojouri J Ghasemi M/ Mohebi B/ Sohrabi B/ Toofan M **Moderator: Parvizi R**	
12:45-13:00	**Closing Ceremony**	

Interventional Cardiology Sessions on ICACS-2 (27-28th June 2018)

Wednesday 27 June; 2-4 pm \ Shahryar Hall

Panel 1: LM	
Dr. Pedrazzini/ Dr. Aslanabadi/ Dr. Ghaffari / Dr. Jamshidi	
Case Presentation	
Primary PCI for LM- ACS (Tip & Tricks)	Pedrazzini G
Case Presentation	
IIb-IIIa inhibitors in ACS	Ghaffari S
Case Presentation	
Stent selection in PPCI	Jamshidi P
Case Presentation	

Wednesday 27 June; 4-6 pm / Shahryar Hall

Panel 2: SVG and massive thrombotic lesion	
Dr. Chinikar/ Dr. Ghasemi/ Dr. Aminian/ Dr. Shahin	
Case Presentation	
Late breaking Clinical trials in Interventional Cardiology	Aminian B
Case Presentation	
Management of massive thrombotic lesions in STEMI patients	Toluei M
Case Presentation	
Thrombus aspiration catheters & protection devices	Alian H
Case Presentation	
Anticoagulant therapy in PPCI	Mirblook F

Thursday 28 June; 2-4 PM \ Shahryar Hall

Panel 1: Complex lesions	
Dr. Ghofraniha/ Dr. Nowrouzi/ Dr. Sohrabi/ Dr. Gori	
Case Presentation	Gori T
Approach to complex bifurcation lesions in Primary PCI	Ostovan MA
Case Presentation	
Technical aspects of Trans radial angiography and angioplasty	Hashemi Fard O
Case Presentation	
Non cardiac complications of PPCI	Jalali F
Case Presentation	
Multivessel or Culprit vessel PCI in PPCI	Eshragi A

Thursday 28 June; 4-6 PM \ Shahryar Hall

Panel 2: Complications	
Dr. Garechemani/ Dr. Farshidi/ Dr. Marco/ Dr. Saafi	
Case Presentation	Samadi (France)
Coronary Perforation in PCI	Kedev S (Macedonia)
Case Presentation	Saafi M
Deferred stenting	Golmohammadi A
Case Presentation	

Anesthesiology Panel

Wednesday. 27 June (2018) \ Hafez Hall

Session 1		
Panelists: Dr. Negargar/ Dr. Rahimi Panahi/ Dr. Mirinezhad/ Dr. Jahangiri Fard/ Dr. Totonchi		
14:00-14:15	Preoperative evaluation in ACS patients undergoing cardiac surgery	Naghipoor B
14:15-14:30	ECMO in ACS patients	Jahangiri Fard A
14:30-14:45	Myocardial protection during CPB in ACS patients	Totonchi z
14:45-15:00	Prophylaxis and management of vasoplegic syndrome	Mahoori A
15:00-15:15	Advanced hemodynamic and neurologic monitoring in emergency CABG	Negargar S
15:15-15:30	Cardiac output and perfusion efficiency monitoring	Bilejani E
Session 2		
Panelists: Dr. Negargar/ Dr. Bilejani/ Dr. Mahoori/ Dr. Naghipoor		
15:45-16:15	Coagulation management in emergency CABG	Totonchi z
16:15-16:30	Preoperative Renal protection and management of post operative ARF	Mahmoodpoor A
16:30-16:45	Management of non cardiac emergency surgery in ACS patients	Mirinezhad M
16:45-17:00	Peri-operative care to reduce major adverse cardiac events in non cardiac procedures	Hassanzadeh A
17:00-17:15	Post operative care in emergency CABG	Bilejani E

Electrophysiology Panel

Wednesday. 27 June (2018) \ Parvin Hall

Session 1		
Panelists: Dr. Akbarzadeh/ Dr. Oraei/ Dr. Hajahmadi		
14:00-14:30	Atrial Fibrillation Anticoagulation in acute and chronic ischemic syndromes	Madadi SH
14:30-15:00	Surgical treatment of atrial fibrillation during cardiac surgeries	Yamini Sharif A
15:00-15:30	Comparison results of catheter based atrial fibrillation ablation versus drug therapy	Taherpour M
15:30-16:00	Medical Treatment of Ventricular storm during acute coronary syndromes	Hajhamadi
Session 2		
Panelists : Dr. Abbasnezhad/ Dr. Javadzadegan/ Dr. Dehghani/ Dr. Yamini Sharif		
16:15-16:45	Premature ventricular beats/ its importance/ diagnosis and treatment in coronary artery disease	Ghorbani Sharif A
16:45-17:30	Interesting Electrophysiology cases in acute ischemic coronary syndromes	Madadi SH
17:30-18:00	Free discussion Yes/No Atrial fibrillation ablation in chronic AF	Dehghani M Akbarzadeh F

Cardiovascular Surgery Panel

Thursday. 28 June (2018) \ Parvin Hall

Session 1		
Panelists: Dr. Yosefnia/ Dr.Mandeghar/ Dr. Pezeshkian/ Dr. Babazadeh/ Dr. Omrani /Dr. Zarrabi		
14:00-14:20	CABG in ACS	Afrasiabirad A
14:20-14:40	A.C.S in Anomalous Coronary Arteries	Zarrabi KH
14:40-15:00	Post MI VSD in ACS	Marzban M
15:00-15:20	Hybrid Operation In A.C.S	Parvizi R
Session 2		
Panelists: Dr. Karemi/ Dr. Safaie/ Dr. Marzban/ Dr. Farhanghi		
15:45-16:00	Intra-operative TEE in Ischemic MR	Toufan M
16:00-16:20	Surgical Challenges in Ischemic MR	Alizadeh-Ghavidel A
16:20-16:40	Timing of Surgery in Ischemic MR	Hoseini S
16:40-17:00	Repair or Replacement in Ischemic MR	Ahmadi z

Imaging Panel

Thursday. 28 June (2018) \ Hafez Hall

Session 1		
Panelist: Dr. Pouraliakbar/ Dr. Toufan/ Dr. Alizade Sani/ Dr. Sahebjam/ Dr. Ozer		
14:00-14:15	CT Angiography for Safe discharge of Patients with Possible ACS	Pouraliakbar H
14:15-14:30	Role of Stress Echocardiography with or Without Contrast in ACS Patient	Toufan M
14:30-14:45	Diagnostic/ Prognostic nuclear cardiology in ACS Patients	Abbasi M
14:45-15:00	Multimodality Imaging in Differentiating Possible ACS Patients	Sattarzadeh R
15:00-15:15	Role of MRI in the Setting of ACS	Alizadehsani Z
15:15-15:30	Multimodality imaging in Spontaneous Coronary Artery Dissection in Women	Samiei N
Session 2		
Panelist: Dr Parsaee/ Dr Toufan/ Dr Samiei/ Dr Sattarzadeh/ Dr Abbasi		
15:45-16:00	Acute Ischemic MR /Definition and Review	Salehi R
16:00-16:15	Role of Interventional Echocardiography in Mechanical Complication in ACS	Sahebjam M
16:15-16:30	Acute Coronary Syndrome or Myocarditis? The Role of multimodality imaging	Khezerlou N
16:30-16:45	Impact of IO TEE in mortality in CABGs	Toufan M
16:45-17:30	Case presentation (5-6 cases)	Moderator: Dr Parsaee

General Practitioners Panel

Wednesday. 28 June (2018)

Panelists: Dr. Namdar/ Dr.Behnemon/ Dr. Mashayekhi		
14:00- 14:30	Approach to Chest pain in Emergency room	Ebrahimi H
14:30- 15:00	ECG Changes in ACS	Abbasnezhad M
15:00- 15:30	Medical Treatment in ACS	Mashayekhi S
15:45- 16:15	Thrombolytic therapy in STEMI	Behnemon M
16:15- 16:45	Dual Anti platelet therapy in ACS	Boudagh H
16:45- 17:15	Secondary prevention in ACS	Namdar H

Thursday. 27 June (2018)

Panelists: Dr. Akbarzadeh/ Dr. Dehghani/ Dr. Taban		
14:00- 14:30	Primary PCI in STEMI	Zamani B
14:30- 15:00	Approach to Atrial Arrhythmia in ACS	Akbarzadeh F
15:00- 15:30	Approach to Ventricular Arrhythmia in ACS	Dehghani
15:45- 16:15	Approach to Acute Pulmonary Edema in ACS	Enamzadeh E
16:15- 16:45	Approach to HTN crises in ACS	Taban MR

CONTENTS

Oral Presentation

Congenital Coronary Anomaly & ACS

Poster Presentation

Oral Presentation

The Second Iranian Congress on Acute Coronary Syndromes

Myocardial perfusion SPEC imaging for diagnosis CAD and evaluation of prognosis in patients with acute coronary syndrome

Abbasi, M

Department of Nuclear Medicine, Valiasr Hospital, Tehran University of Medical Sciences, Tehran, Iran

Myocardial cell hypo-perfusion is considered the direct consequence of coronary artery disease (CAD). Myocardial perfusion has been assessed by myocardial perfusion SPECT (MPS) for years. In the advent of sophisticated functional procedures including fractional flow reserve assessment, PET imaging, and delicate anatomic imaging modalities, diagnostic performance of MPS has been under appraisal. Albeit, the diagnostic accuracy of MPS for detection of CAD, particularly in moderate risk populations and post revascularization patients, and assessment of prognosis and efficacy of medical treatment has kept the MPS yet alive among the armamentariums for the evaluation of CAD. MPS has attracting practical application for evaluation of patients with acute coronary syndrome(ACS) even at the emergency departments when the patient is admitted for chest pain. As its major drawback, MPS imposes patients into radiation twice the radiation a usual person receives from cosmic rays annually; nevertheless, it is reasonably acceptable due to reduced cost and side effects of excessive medical care due to saved ACS downstream diagnostic and therapeutic procedures. Considering that the procedure would encounter remarkable changes, due to the technologic and technical advancements, in term of reduced injection doses and required time in near future, MPS would continue to clinically serve patients with ACS.

Emergency Coronary Artery Bypass Graft Surgery for Acute Coronary Syndrome

Afrasiabirad, A

Madani Heart Hospital,Tabriz University of Medical Sciences, Tabriz, Iran

Timing and protection of the heart during coronary artery bypass(CABG) for acute coronary syndrome(ACS) are challenging and important. Although prompt surgical revascularization may minimize myocardial loss and decrease reinfarction, early reperfusion has been theorized to result in peri-infarct hemorrhage, edema, and necrosis, according to experimental models. In a systematic review of the literature as well as our experiences we are addressing the timing of CABG and protection of the heart in ACS. With the advent of systemic thrombolysis and percutaneous coronary interventions (PCI), a lower volume of coronary anatomy not suitable for PCI will continue to CABG . The timing of CABG after an acute MI is a debatable topic. The time by itself is an unreliable criterion to decide on surgical revascularization, but the acuity of illness is a major determinant of outcomes. Delaying surgical revascularization may be reasonable if reversal of the acuity of illness is expected. Elevated troponin levels carry a higher operative risk that has to be balanced with the risk of progression of myocardial injury with further delay in revascularization. Strategies for myocardial protection in ACS is being intensively debated at present. Overall, routine patients may achieve an excellent outcome with either type of protection procedure but there are varying results from different studies comparing beating and arrested heart coronary artery bypass graft procedures in ACS. Patients with evolving acute coronary syndrome , defined as continuum from unstable angina (UA) to non–ST-segment elevation MI (NSTEMI) to ST-segment elevation MI (STEMI) display a high-risk entity in CABG surgery. In presence of refractory symptoms and hemodynamic alterations, emergency surgical therapy within the first hours is indicated. It can be speculated that preserving native coronary blood flow during operation to reduce reperfusion injury or “no reflow” phenomenon . We analyze the impact of preserved native coronary blood flow and kind of protection during emergency treatment for ACS for better outcomes.

Approach to Atrial Arrhythmias in ACS

Akbarzadeh, F

Madani Heart Center, Faculty of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran

Atrial arrhythmias are frequent during and after acute coronary syndromes (ACS) and usually complicate the course of disease. Occurrence of some of these arrhythmias is a sign of poor prognosis. If we don't consider sinus tachycardia and bradycardia as atrial disturbances, atrial fibrillation (AF) is the most prevalent of supraventricular arrhythmia in ACS. Its incidence is reported to be 2.3 – 21% after myocardial infarction (MI). Important considerations and approaches regarding to AF are its diagnosis, treatment strategies, anticoagulation and lifelong stoke prevention. Although atrial premature beats are prevalent during ACS but their occurrence don't have important prognostic implications. Other supraventricular disturbances during ACS are conduction disorders. Atrioventricular conduction disturbances are well-known complications of acute MI which need prompt attention. Myocardial ischemia or necrosis may cause bundle branch block. Atrioventricular node artery originates in 90% from right coronary artery (RCA). Septal branches of left anterior descending coronary artery (LAD) supplies right bundle branch and left anterior fascicle of left bundle branch in 90% of cases. Posterior fascicle of left bundle branch supplies from conus branch of RCA. Therefore, occlusion of LAD may cause right bundle branch block or left anterior fascicular block. Atrioventricular block in inferior MI is above His bundle in more than 90% of cases with narrow QRS, junctional scape rhythm and moderate bradycardia. In anterior MI there are necrosis of bundle branches and is located down to bundle of His. In this type block QRS has RBBB morphology and extreme axis deviation. Prompt assessment for temporary or permanent pacemaker implantation is mandatory.

Key Words: Acute coronary syndrome, Atrial arrhythmias, Electrical Complications

Atrial Fibrillation Ablation in chronic AF / No

Akbarzadeh, F

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Atrial fibrillation (AF) is one of the most frequent cardiac arrhythmias. There are many treatment strategies for its treatment included drug therapies (rhythm and rate control) and catheter based therapies like as radiofrequency and crayoablation. Although results of catheter ablation for paroxysmal AF is satisfying there are controversies about it results in chronic and persistent AF. Approximately one-third of AF ablation procedures are currently performed in patients with persistent or long-standing persistent AF. The success rate for persistent and long standing persistent AF ablation are 27 and 42.9% without antiarrhythmic drugs respectively. Amiodarone and other antiarrhythmic drug's efficacy in maintaining sinus rhythm after external cardioversion were 70 and 50% in persistent AF respectively. Because of advanced remodeling of atria in persistent or long standing AF, current approaches in catheter based may be less effective. By definition persistent AF lasts more than 7 days and longer durations of AF even up to 1 year included in this definition. AF begets AF and longer durations of AF causes severe and complicated changes in electromechanical characteristics of atria. Therefore, it is not surprising that common approaches of AF ablations are not successful enough to suggest this kind of therapy for all patients with persistent. Further studies will clarify appropriate criteria for AF ablation in patients with persistent AF. So we don't recommend RF ablation of persistent AF for all patients.

Key words: AF Ablation, Persistent AF, Atrial fibrillation

Thrombus Aspiration Catheters and Protective Devices

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Prevalence of Thrombus containing lesions differ in various types of clinical settings, from 5-17% in Stable angina to 75-90% in ACS and 100% in ST elevation MI. Thrombus needs be cleared away to restore flow by Fibrinolytic agents, thrombus dislodgement in percutaneous Intervention and Thrombectomy.

Thrombectomy intuitively was attractive based on well defined pathophysiology which prevent distal embolization and no reflow and reducing thrombotic burden and routine use of Aspiration Thrombectomy was class IIa till 2012 and TAPAS and other Trials showed clinical benefits , while then other larger trials such as TASTE,INFUSE-AMI ,TOTAL and TATORT and some others havenot shown clinical benefits and cause more Stroke and these trial changed the mention and guidelines of routine Aspiration thrombectomy as class III in Primary PCI.

Embolic protective Devices (EPDs) is classified as Filter – based, Proximal occlusion and Distal occlusion devices and their use in STEMI as routine isn't suitable and increase stent thrombosis and TVR and TLR , But EPDs is class I for old SVGs.

Updates in the management of STEMI

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Since the previous guidelines for the management of acute myocardial infarction in patients presenting with ST-segment elevation published in 2012, various evidence-based changes have been made in them based on multiple studies such as MATRIX trial, COMFORTABLE AMI, EXAMINATION, PRAMI, CVLPRIT, DANAMI-3-PRIMULTI, Compare Acute, TASTE trial, TOTAL trial, HEAT PPCI, ATOLL, AVOID, DETO2X and STREAM leading to development of the new guidelines released in 2017 by ESC task force.

The main focus of these new guidelines was on the changes made in the class of recommendations (COR) that were already present in the previous guidelines. The first change was raise in COR of using radial access over femoral access from class IIa to class I recommendation. The second one was preference of using DES over BMS in this setting with COR-I. The next change was the more tendency to do complete revascularization in the index hospitalization with class IIa instead of class III recommendation. Opposite to these forward changes, recommendation for thrombus aspiration was regressed two steps back from class IIa to class III due to the potential hazards inherent in this procedure and routine use of bivalirudin was also rolled back from class I to class IIa recommendation. On the other hand, routine use of enoxaparin as well as early discharge after primary PCI were reinforced from class IIb to class IIa recommendation.

Finally, a new concept is the routine use of deferred stenting in primary PCI which is a class III recommendation.

Surgical Challenges in Ischemic Mitral Regurgitation

Alizadeh Ghavidel, A

The optimal surgical management of ischemic mitral regurgitation (IMR) seems to have remained a controversial issue due to contradictory outcomes of various relevant studies. In case surgical interventions are considered for a patient with ischemic MVR, the surgeon would face two distinct controversies for treatment. Firstly there's the controversy of treating moderate ischemia with a concomitant CABG or CABG alone to the ischemic myocardium in order to contribute to adverse remodeling of LV and consequently restoration of subvalvular geometry and reduce regurgitation. There are obviously no debates over the decision of valvular intervention in the setting of severe ischemic mitral regurgitation. So the second controversial issue for a surgeon could be whether repair or replacement is the best treatment method. There are certain echocardiographic and surgical findings that suggest long term results for mitral repair could not be satisfying and they often require other interventional procedures for their residual MR in mid-term follow up. However since reoperation for such patients with patent grafts and some degrees of LV dysfunction could be challenging and may negatively affect the patient's surgical outcome and quality of life, some authors recommend replacement instead of repair based on patient's individual characteristics. This presentation aims to investigate various management modalities and provide answers for controversies according to data from the latest clinical trials, recent guidelines and other relevant meta-analysis.

Late Breaking Clinical Trials in Interventional Cardiology

Aminian, B

With more than 6 million emergency department visits annually in the US and reported 2% rate of missed diagnosis of ACS in discharged patients, the optimal management of ACS in the ED is an important dilemma faced by many clinicians. Risk stratification with accelerated diagnstic protocol (ADP) that is based upon history taking, physical exam, ECG, and troponin measurement is essential in the triage process. For patients who are at low to intermediate risk for short term events (death and MI), the first goal is to identify patients who can be safely discharg from the ED after an observational period. For achieving this goal Pre-discharge confirmatory tests such as stress test or CCTA is needed in some but not all patients. With the advent of high-sensitivity troponins (hsTn), that is game changer, the ability to rule out MI in the ED has improved. however the second goal of evaluation of patients with chest pain in ED is risk stratification for future events. although low to intermediate risk patients are generally at exceedingly low risk in terms of short-term death and MI, but low risk is not no risk. This second goal is addressed by BEACON (better evaluation of acute chest pain with coronary computed tomography angiography) trial. AUC endorsed by ACC/AHA for non-invasive tests in these patients is as follows:
(test selection should be based upon the expertise, resources and experience of any given center) For patients suspected to NSTEMI/ACS with negative results of ECG and troponin, Exercise ECG with NPV >99% is an appropriate test. If initial diagnosis of NSTEMI/ACS is equivocal, either because ischemic symptoms were resolved several days before testing or because of equivocal initial troponin result or just because of single troponin rise without additional evidences of ACS, CCTA is appropriate.
Another scenario with appropriateness for CCTA, is low/intermediate likelihood of initial diagnosis of NSTEMI/ACS either in those patients with TIMI risk score of 0, early hsTrop negative or in those with normal or non-ischemic findings on initial ECG and normal initial troponin.
Three landmark trials that validated utilization of CCTA in ED, with its strength of high sensitivity and NPV of>99% are ACIRN (American College of Radiology Network) trial, CT-STAT trial that compared CCTA vs Nuclear imaging in terms of Time to diagnosis and Total ED costs, and ROMICAT || Rule Out Myocardial Infarction Using Computer Assisted Tomography) trial. The strength of CCTA for detection high risk plaques is also discussed.

Approach to patients with chest pain in ED

Aminian, B

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Thrombolytic therapy in STEMI

Behnemoon, M

The care of patients with ST elavation myocardial infarction (STEMI) had transformed in conjunction with major shifts in the approach to reperfusion therapy from primarily pharmacologic to catheter-based strategies. With simultanous advance in medical therapy, the case fatality rate for patients with STEMI has continued to decline.

When performed rapidly after arrival at an experienced center, primary PCI is superior to pharmacologic reperfusion therapy. However, randomized data showes that very early fibrinolysis may be at least as effective as primary PCI. Consequently decision making for individual patient remains complex regarding the optimum form of reperfusion therapy, specially when a delay until PCI is anticipated.

This presentation offer basic information about indications,contraindications, efficacy and complications of fibrinolytic therapy and how to select reperfusion strategy as well as choice of the agent according to the ease of dosing, cost and local health care system protocols. The presentation is structured as follows:

1. General concepts of reperfusion therapies
2. Pathophysiology of myocardial reperfusion
3. Assesment of reperfusion
4. Selection of reperfusion strategy
5. Effects of fibrinolysis on mortality and LV function
6. Comparison of fibrinolytic agents
7. Complications of fibrinolytic therapy
8. Recommendation for fibrinolytic therapy (indications,contraindications and adjunctive therpay to support reperfusion with fibrinolytic therapy) according to newest ACC/AHA guidelines)

Cardiac Output and Perfusion Efficacy Monitoring

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After an urgent surgical revascularization, the patient is often hemodynamically unstable and is in life-threatening clinical situations. Circulation efficacy is monitored as macrocirculation and microcirculation (tissue perfusion). Traditionally macrocirculation monitoring focused on clinical examination, arterial blood pressure, urine output, serum lactate and base deficit measurements, cardiac output, and mixed venous oxygen saturation. However, several studies have shown that there is a discrepancy between macrocirculation and microcirculation in critically ill patients and macrocirculation cannot always guaranty the adequacy of tissue perfusion. New techniques that allow direct monitoring the microcirculation had being incorporated into the clinical management. Cardiac output (CO) monitoring plays an essential role in macrocirculation monitoring and it can be measured or estimated by many clinical methods. Patient status dictates the type of required CO monitoring. Tissue microcirculation can be explored by monitoring the end result of perfusion, tissue oxygenation, metabolic markers, and tissue blood flow. Global oxygenation and respiration (CO2 a by-product of cellular respiration) can be monitored globally in blood, either intermittently through blood gas analysis, or continuously with specialized catheters. Tissue oxygenation can be directly monitored locally through invasive electrodes or non-invasively using light absorbance. Likewise, CO2 and PCO2 can be measured locally in accessible mucosal tissues (sublingual, gastric) by tonometry. Increasing PCO2 gradients, either tissue-to-arterial or venous-to-arterial, are due to inadequate perfusion. Metabolically, the oxidoreductive status of mitochondria can be assessed locally through NADH fluorescence, which increases in situations of inadequate oxygenation/ perfusion. Finally, local tissue blood flow may be measured by laser-Doppler or visualized through microscopic imaging.

Postoperative Care of the Emergency Coronary Artery Bypass Surgery

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Urgent surgical revascularization often is indicated for life-threatening clinical situations clinical situations, such as cardiogenic shock, severe mitral valve regurgitation, repair of post-infarction ventricular septal defects, and unstable angina those do not respond to medical therapy or non-surgical intervention is not possible. The technical aspects of the surgical procedure differ little from those used in elective CABG; however anesthetic and postoperative management differ majorly from those used in elective CABG. Usually the patients are very unstable and the care should be well-organized. Invasive hemodynamic monitoring must be carried out continuously during patient transition from operating room to intensive care unit and hemodynamic support should be maintained or increased if needed. Transferring the care of a cardiac patient to the ICU staff must be done in an orderly and methodical fashion. Full support ventilation should be set considering patients hemodynamic in order to reduce work of breathing. Fast tracking is not recommended and weaning typically should be postponed to help cardiac recovery. Homodynamic support should be optimized using valid data such as invasive BP, cardiac output, SVR, ventricular and valvular function, ABG, TEE, laboratory tests. It is encouraged to prevent any event that can increase metabolic demand (or cardiac work demand); sedating the patient, decreasing work of breathing, preventing infection, optimizing volume status. Also a variety of techniques can be used; often an IV infusion of narcotic agonist agent and benzodiazepine cocktail is the best pain management method. Because most of organs are at risk of the postoperative dysfunction; any effort must be directed to reduce organ demand and increase organ supply. Postoperative complications should be expected, prevented, early diagnosed and managed promptly. Patient management always should be run multidisciplinary with close co-working.

Prehospital fibrinolysis

Chinikar, M

Accessibility of PPCI if anticipated FMC-device is ≤ 120 minutes in primary care settings is limited In a meta-analysis of 6434 patients, Laurie Morrison et al., showed prehospital fibrinolysis (PHF) compared with in-hospital treatment results in 58-minute reduction in time to treatment(104 versus 162 minutes), highlighted the ability of prehospital therapy to achieve treatment within 2 hours in the majority of individuals, 17% relative, 2.0% absolute mortality reduction at 30 days (pooled odds ratio [OR] 0.83, 95% confidence interval [CI] 0.70 to 0.98 ,*P* ,(۰.۰۳=with 1 life saved for every 62 STEMI patients treated with fibrinolytics in the prehospital rather than in-hospital setting.

Recently, Mongkhan P et al., in a meta analysis in patients presented to non PCI-capable settings, compared fibrinolytic injection with no injection before referring patients to PCI-capable settings. The primary outcome was MACEs at 30 days. Of 912 articles, three RCTs and three non-RCTs were included. Based on RCTs fibrinolytic injection before the referral has failed to decrease MACEs compared to non-fibrinolytic injection [relative risk (RR) 1.18; 95% confidence interval (CI), 0.89-1.57 ,$p = 0.237$.[Fibrinolytic injection has also failed to decrease mortality, re-infarction, and ischemic stroke. On the other hand, was associated with a higher risk of major bleeding.

Nonetheless, “one size does not fit all” and the preferred reperfusion strategy will depend to a large extent on geographical and logistical constraints .

Approach to Chest pain in Emergency Ward

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Approximately 6 million patients visit the emergency department each year with complaints of chest pain in the United States. Chest pain is a symptom caused by several life-threatening as well as non- life- threatening disease and has a broad differential diagnosis. Acute coronary syndrome, aortic dissection, pulmonary embolism, pneumothorax, pericarditis with tamponade, and esophageal rupture are potentially catastrophic cause of chest pain.

Because of the indistinct nature of visceral pain, the differential diagnosis of chest pain is broad and includes many of the most critical diagnoses in medicine and many nonemergent conditions. In clinical evaluation of the patient, the initial questions are "Should I intervene now?" and "What are the life-threatening possibilities in this patient?"

The history and physical examination are key to diagnosis. The patient is asked to describe the character of the pain or discomfort, patient's activity at the onset of pain, severity of pain, location of the discomfort, radiation of pain, duration of pain, aggravating or alleviating factors, associated symptoms, prior pain and the diagnosis of that episode and risk factors.

ECG and the chest radiograph are the two most commonly performed studies and an ECG should be performed within 10 minutes of arrival in all patients with chest pain or optional angina equivalent in whom myocardial ischemia is a possibility. Patients with critical diagnoses generally are admitted to the intensive care unit. Patients with emergent diagnoses typically are admitted to the hospital. Patients with nonemergent diagnoses are most frequently treated as outpatients.

Approach to Acute Pulmonary Edema in ACS

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Acute heart failure is a clinical syndrome characterised by the rapid onset and progression of breathlessness and exhaustion. There is usually fluid overload. The more severe presentations of acute heart failure are acute pulmonary edema and cardiogenic shock.

The most common cause of heart failure is impaired myocardial function (cardiomyopathy) secondary to one or more of the following:

- Hypertension(>60%of patients with heart failure)
- Ischemic heart disease(>50%of patients with heart failure) more common in ACS setting
- Idiopathic dilatation(10% of patients with heart failure)
- Diabetes
- Alcohol excess
- Obesity
- Drug toxicity , arrhythmias , valvular dysfunction ,pericardial disease.

Noncardiac causes of heart failure are hypovolaemia (dehydration or haemorrhage), pulmonary embolism and high output states (anaemia, septicaemia and thyrotoxicosis).

The goals of Acute pulmonary edema management are symptom relief, reduction of extracellular fluid excess, improved haemodynamics, improved arterial oxygenation and satisfactory perfusion of the vital organs beside management of acute coronary syndrome and revascularization in indicated patients.

Anti ischemic therapy , diuretics , nitrates , oxygen supplement , respiratory supportive therapy, inotropes in selected patients and ventricular assists devices in resistant patients are commonly used treatments in acute pulmonary edema caused by myocardial infarction and ischemia.

Post acute phase management included life style modification, investigate other comorbidities and treat them, risk factor management and heart failure standard medications(ACEI,BB,MRA,Diuretics,...).

GP IIb/IIIa antagonists in ACS

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By competing with fibrinogen and vWF for GP IIb/IIIa binding, GP IIb/IIIa antagonists inhibit platelet aggregation. Three approved parenteral GP IIb/IIIa antagonists for clinical use are abciximab, eptifibatide, and tirofiban.

In older studies, including the landmark trial of EPIC, in high-risk patients undergoing balloon angioplasty, those randomized to abciximab bolus and infusion, had a 35% lower rate of death, MI, or unplanned urgent revascularization at 30 days. Similarly in the EPILOG trial a significant reduction in the incidence of death or MI in patients treated with abciximab was reported. In the two important randomized trials, EPISTENT and ESPRIT on patients undergoing coronary stenting the superior efficacy of GP IIb/IIIa antagonists were established.

Subsequently, however, it was shown that GP IIb/IIIa inhibitors may no longer benefit patients if they had been pretreated with high-dose clopidogrel, particularly those with stable CAD or in the absence of elevated cardiac enzymes.

In ISAR-REACT and ISAR-SWEET trials GP IIb/IIIa inhibitors had no clinical benefit in low- to intermediate-risk patients pretreated with clopidogrel. However, in the ISAR-REACT 2 trial benefit of GP IIb/IIIa inhibitors in pretreated patients with clopidogrel was detected on those patients who presented with elevated troponin.

In EARLY-ACS trial, upstream IIb-IIIa inhibitors, compared with provisional therapy were associated with similar rate of primary endpoint and higher rate of bleeding complications.

Overall, in the modern era of interventional cardiology using high p2y12 dosing regimens, GP IIb/IIIa inhibition should be reserved for high-risk patients with ACS and elevated cardiac biomarkers only for bailout purposes if there is evidence of no-reflow or a thrombotic complication. (IIa indication in ESC guidelines-2017).

In the large (AIDA-STEMI) trial, intracoronary administration of abciximab was not superior to IV route.

Triple Antithrombotic therapy in acute coronary syndrome

Ghanavati, R

In 2013, cardiovascular disease still accounted for 30.8% (800,937) of all 2,596,993 deaths, or ≈1 of every 3 deaths in the United States. Coronary thrombosis was known as a basic mechanism in acute coronary syndrome in the past century. Despite the significant improvement in procedures and pharmacotherapy in recent decades, patients with acute coronary syndrome have more risk in comparison with the optimal risk.

This “residual risk” has received lots of attention in recent years and a lot of trials has been done to address the issue. Different mechanisms are suspected to be responsible for the residual risk like inflammation, thrombosis and dyslipidemia.

In the recent decade, six trials focused on the effects of direct oral anticoagulant on the residual risk in patients with acute coronary syndrome. The results were promising for some agents and was disappointing as for others.

Recently a systematic review and meta-analysis showed that direct oral anticoagulants are more effective in patients with ST elevation myocardial infarction than patient with Non-ST elevation acute coronary syndrome.

Radial Access for Acute Coronary Syndromes

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Over the last decades much has been done in the treatment of the patients with acute coronary syndromes. An early invasive treatment as well as combined and tailored antithrombotic therapy have contributed to increase the survival and reduce recurrence and adverse events. Potent antithrombotic and antiplatelet medication before, during and after the invasive procedure increase on the other hand the risk of potentially serious bleedings. Bleeding is associated with worse short term and long term outcome. The adverse effect of bleeding could even overcome the beneficial effect of early and invasive strategy and aggressive antithrombotic regimen. Therefore a potential target to further enhance the outcome of new strategies might be reducing intra- and postprocedural bleeding in patients undergoing PCI for acute coronary syndromes. A common site of bleeding is the femoral artery puncture site. Transradial coronary angiography and intervention was first introduced and described many years ago. The first angiography by brachial route was performed by Dr. Jason Sones in the 1958 and Dr. Ferdinand Kimeneji has first made wide use of radial access for PCI in the early 1990's. Because of the technical difficulties and stiff catheters at that time this technique did not find large success and remained available in limited centers. Parallel to the technical refinements and medical progress, the use of radial artery as the preferred access site for coronary interventions during acute coronary syndromes has gained importance. Some large scale randomized trials have pointed out the significant potential of this technic to reduce the access site bleeding as well as the mortality. A comprehensive meta-Analysis of randomized trials comparing femoral vs radial access has been recently published and found that using radial artery as routine access site for PCI reduces all cause mortality by 21%, MACE by 16% and the risk of major bleeding and vascular complications following PCI by 47% and 77% respectively. As a consequence the 2017 ESC Guidelines for the treatment of ACS have changed the radial artery as preferred access site from II to Ia indication. It has to be pointed out that this specific technique has a demanding learning curve and the experience of the operator may play a determinant role in the success and results of the intervention.

Deferred Stenting

Golmohammadi, A

Deferred versus conventional stent implantation in patients with ST-segment elevation myocardial infarction

Timely primary percutaneous coronary intervention (PCI) with balloon dilatation and stent implantation is the standard treatment for patients with ST-segment elevation myocardial infarction (STEMI).

Despite successful treatment of the culprit artery lesion by primary percutaneous coronary intervention (PCI) with stent implantation, thrombotic embolisation occurs in some cases, which impairs the prognosis of patients with ST-segment elevation myocardial infarction.

Eligible patients (aged >18 years) had acute onset symptoms lasting 12 h or less, and ST-segment elevation of 0·1 mV or more in at least two or more contiguous electrocardiographic leads or newly developed left bundle branch block.

composite of all-cause mortality, hospital admission for heart failure, recurrent infarction, and any unplanned revascularisation of the target vessel may differ between two groups.

At one study events comprising the primary endpoint occurred in 109 (18%) patients who had standard PCI and in 105 (17%) patients who had deferred stent implantation (hazard ratio 0·99, 95% CI 0·76–1·29; p=0·92). Procedure-related myocardial infarction, bleeding requiring transfusion or surgery, contrast-induced nephropathy, or stroke occurred in 28 (5%) patients in the conventional PCI group versus 27 (4%) patients in the deferred stent implantation group, with no significant differences between groups.

In patients with STEMI, routine deferred stent implantation did not reduce the occurrence of death, heart failure, myocardial infarction, or repeat revascularization compared with conventional PCI. Results from ongoing randomized trials might shed further light on the concept of deferred stenting in this patient population.

Stent thrombosis: predictors and prevention

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A long list of predictors for coronary stent thrombosis (ST) has Long been known, and this list grown regularly. Despite that, the mechanisms underlying the actual moment of onset of this Major complication, which has a mortality as high as 40% and a recurrence rate as high as 19%, remain often poorly understood . The understanding of These mechanisms has led to important landmarks in the history of percutaneous coronary interventions. Today, it is known that complex interrelations among clinical factors, endothelial biology, hypersensitivity/inflammatory reactions, blood ì s rheology, platelet reactivity, clotting factors, and the stent ì s physical/mechanical properties, including their impact on blood fluid dynamic, all play a role. Although the complexity of many of these concepts makes them poorly accessible for practicing physicians, evidence shows that addressing these mechanisms has profound clinical implications. We will resume the current concepts regarding the predictors and mechanisms of stent and scaffold thrombosis and describe the resulting practical implications for decisions at the time of the procedure and during follow-up.

Ventricular Arrhythmias in Acute Coronary Syndrome Patients:Therapy of Electrical Storm

Hajahmadi, M

SCD due to sustained VA is common in patients suffering from untreated acute coronary syndromes (ACS)

Three or more separate episodes of VT/VF occurring within 24 hours are defined as electrical storm (ES).

ES are the most dangerous heart rhythm disturbance due to high risk of sudden cardiac death (SCD)

The incidence of VA depends on size of ischemic area, magnitude of autonomic imbalance, extend of acute strain as well as prior heart failure, reduced left ventricular function (EF > 30%) and myocardial infarction .

This review summarizes different therapeutic options in patients with ACS and malignant VT/VF .Prompt revascularisation and drug therapy, including anti-platelets, statins, angiotensin converting enzyme (ACE)-inhibitors and betablockers, have markedly reduced the incidence of VA .

As therapeutic options AAD therapy, ICD therapy, RFA, stellate ganglion blockade, and RD are available. The treatment option with AAD is limited due to moderate efficacy. Supplementary drug therapy with ranolazine may be considered in addition to AAD in individual patients. The advantage of ICD therapy for primary or secondary prophylaxis has been well documented. ICD therapy is associated with significant reduction in mortality compared with AAD (mainly amiodarone), with the exception of beta-blockers. RFA, temporary stellate ganglion blockade and RD are therapeutically options for incessant VT or ES.

Placement of a percutaneous LVAD might be required to perform an interventional therapy (mainly RFA) to suppress incessant VA or ES.

Technical aspects of transradial intervention

Hashemifard, O

Transradial access is becomming the default one around the world and it is associated with reduced mortality in the setting of primary PCI in several large studies , However it requires a learning curve and it maynot be that easy especially at the begining. In this lecture we review technical aspects of transradial intervention with emphasis in ACS setting

Extra Corporeal Membrane Oxygenation (ECMO) in Acute Coronary Syndrome

Jahangiri, O

Veno-arterial extracorporeal membrane oxygenation (VA-ECMO) is an established strategy for cardiopulmonary support with increasing use in patients with cardiovascular collapse.

Now it is used in many conditions such as Post-cardiotomy and primary graft failure after heart transplant, bridge to heart transplant , Severe cardiac failure , Cardiac Shock persists to conventional therapy , CPR and some other conditions.

Acute coronary syndrome (ACS) complicated by shock is associated with high mortality despite the use of percutaneous support devices. ECMO offers cardiopulmonary support but its safety and efficacy in the ACS setting is still under investigation.

Cardiogenic shock is an acute emergency, which is classically managed by medical support with inotropes or vasopressors. However, catecholamines are associated with a worse prognosis, and many patients deteriorate despite all efforts. Mechanical circulatory support is increasingly considered to allow for recovery or be a bridge until making a decision or definite treatment. Intra Aortic Baloon Pupm(IABP) can be helpful, but nowadays ECMO is widely used.

In patients with severe shock or refractory ventricular arrhythmias due to ACS, VA-ECMO likely offers an alternative form of biventricular support so there will be time to recovery or other therapies.

Patients who sustain refractory in-hospital cardiac arrest (IHCA) with severe cardiopulmonary compromise in the cardiac catheterization laboratory have an extremely low survival. Despite early revascularization to infarct-related coronary artery, mortality rates vary between 80-90%.VA-ECMO can be lifesaving and is increasingly used in patients with reversible conditions who sustain refractory cardiac arrest or profound cardiogenic shock.

VA-ECMO has also been used during primary PCI in patient's whit ST-elevation myocardial infarction and survival rate and neurological outcome has reported good, even when the patient is admitted with a cardiac arrest.

It seems that ECMO can be life-saving in these situations when no other forms of treatment are likely to be successful but more researches are needed to be carried out in the future.

NON-CARDIAC COMPLICATIONS OF PRIMARY PCI DR

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Non-cardiac complications of PCI and P.PCI are uncommon but may be dramatic.
Here we will discuss about these complications with trend to P.PCI.
In some studies,the abbreviation of "MANE" (Major adverse noncardiac events),is used to explain some of these complications.Bleeding and contrast nephropathy Are the major ones and the others may not be major.the causes of bleeding may be related to use of antiplatelets, antithrombins, and thronbolytics in these patterns.
Contrast nephropathy is the other problem and can be related to amount and type of injected dye,function of kidney and concomitant drug use. Cerebrovascular accident is aonther complication and despite low frequency can have high morbidity and mortality.this problem is mainly due to atheroembolism or thromboembolism,but in very rare condition may be due to hemorrhage. The other problem of P.PCI is vascular complications and can be due to vessel injury,small size of arteries or female sex.

Emergency Cabg In The Setting Of Stemi

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Acute ST-elevation myocardial infarction (STEMI) continues to be a serious health condition all across the world. Despite many significant advances in the treatment of this problem, especially technological progress with percutaneous coronary interventions (PCI), a significant number of patients will still require emergency or urgent coronary artery bypass graft (CABG) surgery.

According to the latest guidelines, urgent or emergency CABG surgery in STEMI should be considered :

- Failed PCI with persistent pain or hemodynamic instability in patients with suitable anatomy for surgery (class I; level of evidence B)
- Persistent or recurrent ischemia refractory to medical therapy in patients not candidates for PCI or lytic therapy with suitable anatomy (class I; B)
- Simultaneous with surgical repair of post-MI VSD or post-MI MR (class I; B)
- Cardiogenic shock in patients < 75 y o within 36 hr of STEMI with severe multi-vessel or left main disease and suitable for revascularization that can be performed < 18 hr of shock (class I; A)
- Life-threatening ventricular arrhythmias in the presence of 50% or more left main stenosis and / or 3VD (class I; B)

Emergency surgery should not be performed in patients with persistent angina and a small area of myocardium at risk if they are hemodynamically stable or after successful PCI with persistent ischemia on the basis of microvascular obstruction (class III; C).

Role of echocardiography in evaluation of the acute chest pain syndrome in the emergency department

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Chest pain is a great concern for the physicians and the patients. Chest pain is a very common presentation with a wide range of differential diagnoses, including life-threatening conditions, which need to be considered, diagnosed and treated urgently. Chest pain or discomfort is a common symptom and accounts for up to 5% of all admissions to the emergency department , and up to 25% of emergency hospital admissions.There are many causes of acute chest pain , not all of which are necessarily cardiovascular in origin. Examples of cardiovascular causes of chest pain include acute coronary syndrome (ACS), myocarditis, pericarditis, hypertrophic cardiomyopathy, aortic stenosis and aortic dissection. Knowledge of global LV systolic function, regional wall motion abnormality(RWMA)and diastolic function by by transthoracic echocardiography is important for diagnosis ,management strategy and definition of prognosis in the patients with CAD. Echocardiography is a valuable non-invasive tool that can help in diagnosing and treating patients presenting with CP. Echocardiography is reproducible,relatively cheap ,no need to radiation and the safe in pregnancy.European Society of Cardiology (ESC) and American Heart Association (AHA) guidelines state that echocardiography can help in the diagnosis of acute coronary syndromes and also in ruling out other serious conditions. There are many novel modalities in echocardiography including TDI,strain,srain rate ,3D echo,contrast echocardiography and speckle tracking that are very useful in diagnosis of the chest pain causes.Stress echocardiography is a valuavble tool for diagnosis of coronary artery disease in emergency department. Sensitivty and specificity of stress echocardiography for obstructive CAD is 86 and 81% , respectively.

Acute Coronary Syndrome or Myocarditis? The Role of Multimodality Imaging

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In patients presenting with chest pain, abnormal ECG and raised troponin to emergency department, myocarditis may be suspected after normal coronary angiography. Currently, no single clinical or imaging modality confirms the diagnosis of myocarditis with absolute certainty. Endomyocardial biopsy is not appropriate in many patients especially in less severe disease. There are different imaging modality to evaluate myocarditis in this condition. Cardiac magnetic resonance (CMR), scintigraphy and echocardiography are the main tools to evaluate myocarditis. During last decade, CMR gained a major role in diagnostic approach of acute and chronic myocarditis and its accuracy and sensitivity especially during acute and chronic phase was evaluated in multiple recent studies. These studies showed that time is an important factor to perform CMR in myocarditis. Furthermore new CMR techniques including T1 and T2 mapping and extracellular volume (ESV) quantification methods increased sensitivity of CMR. Echocardiography is a standard approach to these patients, but it's sensitivity and accuracy to confirm or rule out myocarditis is under question. Newer echocardiography modality such as strain echocardiography which is reflected in few recent studies' is promising. Nowadays Scintigraphy role is decreased and it may be considered only for special condition.

AF anticoagulation in ACS

Madadi, Sh

Patients with mechanical heart valves, a prior systemic thromboembolic event and atrial fibrillation/flutter (AF), often require long-term anticoagulation. About 20% to 30% of these patients have concomitant ischemic heart disease requiring percutaneous coronary intervention and stent implantation (PCI). This would mandate the use of dual antiplatelet therapy (DAPT) (aspirin and an adenosine diphosphate antagonist) for prevention of stent thrombosis and adverse events following PCI. It is often a clinical dilemma, whether to use dual therapy (DT) with either oral anticoagulant (OAC) and single antiplatelet therapy (SAPT) or DAPT or triple therapy (TT) with OAC and DAPT in these patients.

Although primary intent of TT is to decrease the incidence of major adverse cardiac events (MACE), especially stent thrombosis, it has been found to be associated with a high annual risk of bleeding , which in turn is strongly associated with recurrent hospitalization and increased morbidity and mortality . There is also emerging evidence that use of DAPT in these patients is associated with similar outcomes to TT with less bleeding. The efficacy of TT in patients on OAC needing PCI has never been proven. This combination increases bleeding risk, which can result in adverse patients' outcomes. New evidence indicates the great potential of the combination of OAC and clopidogrel without aspirin to improve clinical outcomes in comparison with triple therapy. Therefore, OAC combined with clopidogrel seems to be a reasonable alternative to triple therapy in patients on long-term OAC who undergo PCI.

Prophylaxis and Management of Vasoplegic Syndrome

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The concept of the vasoplegic syndrome, characterized by hypotension associated with profound vasodilation unresponsive to conventional catecholamines or vasopressors, was introduced in association with CPB in the late 1990s by Gomes et al.

cardiac vasoplegia syndrome is a form of vasodilatory shock that occurs in 9% to 44% of patients after cardiopulmonary bypass (CPB) surgery. These patients have profound vasodilation and loss of systemic vascular resistance, resulting in severe hypotension despite high cardiac outputs and adequate fluid resuscitation. This leads to inadequate tissue perfusion and metabolic acidosis.

Cardiac vasoplegia syndrome has become a well recognized complication of cardiac surgery requiring CPB and is characterized by significant hypotension, high or normal cardiac outputs, low systemic vascular resistance and an increased requirement for vasopressors. This syndrome reflects the complex interactions among plasma proteins, leukocytes, platelets and endothelial cells.

Vasoplegia syndrome carries a poor prognosis, especially
norepinephrine- resistant vasoplegia. Catecholamine resistant vasoplegia lasting for more than 36 to 48 hours has a mortality rate as high as 25%.36 Vasoplegia syndrome is also associated with longer hospital stays, prolonged ICU stays, prolonged mechanical ventilation and more sternal infections.

The initial management of patients with vasoplegia requires vasopressors, which do restore the hemodynamic function in most but not all patients; the most frequently used vasopressors are norepinephrine, VP and phenylephrine.

Methylene blue provides an alternative drug for the treatment of
catecholamine refractory vasoplegia.

Anaesthetic Management Of Ihd Patients For Non Cardiac Surgery

Mirinazhad, M

Successful preoperative management of ischemic heart disease patients undergoing non cardiac surgery requires careful team work Primary care physician, anesthesiologist and surgeon.
Ischemic heart disease is a condition where the myocardial demand outstrips the O2 supply from coronary vessels.
An adrenergic surge leading to an imbalance in myocardial o2 supply – demand ratio Surgery also causes alterations in the balance between prothrombotic and fibrinolytic factors resulting in hypercoagulability and possible coronary thrombosis.
Fluid shift in the perioperative period add to surgical stress

IMPORTANCE
1. TACHYCARDIA:
-Increased o2 demand through increased myocardial work
-Also shortens diastolic filling time thee by reducing time for optimal coronary perfusion
2. DIASTOLIC BP - in the absence of left ventricle volume overload , a diastolic arterial pressure of 60 mmHg should be sufficient to maintain coronary perfusion in most patients with CAD
3. Hb: Hb concentration below 9 gm %.Is linked to myocardial ischemia esp
ANAESTHETIC MANAGEMENT
1. Optimization of medical management
2. Revascularization by PCI
3. Revascularization by CABG
To add or continue, beta blockers in high risk and intermediate risk patients titrated to HR of 50 – 60/mt
Alpha 2 agonists by virtue of their sympatholytic effects can be useful in patients where beta blockers are contraindicated
Other agents like calcium channel blockers, ACE inhibitors, aspirin insulin &stations prove to be beneficial preoperatively
To continue drugs like beta blockers ,antihypertensive (except ACE inhibitors) digitalis ca+ blockers till the day of surgery
5. NSAIDS should be discontinued 1 week prior to elective procedures
Most surgeries can be performed safely at an INR <1.5

6. Stop warfarin 5 days before . stop LMWH 12-24 hours prior . Stop clopidogrel 5 days before surgery

Tight heart rate control with beta blockade dispenses the need for routine non invasive prop testing (intermediate grade & prophylactic coronary revascularisation in high risk patients.

2. To achieve 24 efficacy with once daily dosing beta selective agent with long life (bisoprolol) or a formulation providing extended plasma conc. (metaprolol succinate) is suggested.

3. There is a protective effect of preoperative satins on cardiac complications during non- cardiac surgery.

Postgraduate learning:Focusing on PowerPoint presentation and multisensory learning media

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Multi-sensory learning media includes all the tools and techniques of communication which can be used to enhance the audience' capacity to memorize messages or information.

PowerPoint is aiming to make a visual connection with them.

To achieve this goal:

1. Start by creating a structure: the essential objectives to be achieved, the messages, the points to bring the participants from where they are to where they need to be.

2. The audience must see, read, and memorize what is displayed on the slides:

- ***Create an adequate contrast*** between the text colour and the background colour.
- ***Select an adequate font size:*** the text -no more than 4 lines by slide, no more than 5 words /line--needs to be at a 28 or 32-point size, with titles being shown in 40 or 36-point. The only reason for using a font of less than 24 is when adding explanatory text to a graph or diagram – here, 20-point is usually enough. Writing text in capital letters makes it more difficult to read. A bold font is also easier to look at than underlining and italics. The use of bullet points does not work on slides.
- ***Do not use moving text (or slide)*****:** If the text moves onto the screen the participants have to wait until the text has stopped before they can read it. A stronger technique is use of the "Appear" effect, which just makes the text appear and is the easiest for the audience to read.
- ***Use visuals instead of text slides.*** Alternate every second or third slide with visuals such as graphs, diagrams, photos and media clips in order to maintain the audience's attention.

Keep it simple! The audience will memorize and appreciate.

Medical treatment of Acute Coronary Syndrome

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Cardiovascular and circulatory diseases are yet the prominent causes of death in the world, responsible for more than 54 million deaths in 2013. The spectrum of ACS includes ST-segment elevation myocardial infarction (STEMI), and the non–ST elevation acute coronary syndromes (NSTE-ACS), which consist of non–ST elevation myocardial infarction (NSTEMI), and unstable angina (UA). Nearly all acute coronary syndromes result from coronary atherosclerosis, commonly with superimposed coronary thrombosis caused by rupture or erosion of an atherosclerotic lesion. Coagulation cascade and platelets activation play major roles in the formation of thrombus after plaque disruption.

Therefore, basic pharmacologic treatment of acute coronary syndrome consists of anti- ischemic, antiplatelet and anticoagulant drugs. Anti-ischemics include Nitrates, Beta blockers, Morphine and Calcium Channel Blockers. Antiplatelets include ASA and Clopidogrel; and Anticoagulants include Unfractionated Heparin and Low Molecular Weight Heparins (LMWH).

Nitrates are endothelium-independent vasodilators with peripheral and coronary vascular effects. By dilating the capacitance vessels, nitrates decrease cardiac preload and reduce ventricular wall tension.

Beta blockers reduce heart rate, contractility, and BP, resulting in decreased MVO2.

Morphine Sulfate has strong analgesic and anxiolytic effects, as well as hemodynamic actions, that are possibly beneficial in ACS. It causes venodilation and produces modest reductions in heart rate (through increased vagal tone) and systolic BP.

Calcium channel blockers (CCBs) have vasodilatory effects and reduce arterial pressure.

Aspirin (acetylsalicylic acid) irreversibly inactivates the cyclooxygenase activity of platelet prostaglandin Endoperoxide (PGH) synthase 1 (COX-1), thereby suppressing thromboxane A2 production throughout the platelet lifespan.

Clopidogrel Irreversibly blocks ADP binding to the surface of the platelet P2Y12 receptor.

Unfractionated Heparin is a combination of polysaccharide chains of various lengths that prevent coagulation by blocking thrombin (factor IIa) and factor Xa.

LMWH has several advantages over UFH: (1) Greater anti–factor Xa activity (relative to factor IIa) that inhibits thrombin generation more efficiently; (2) Greater release of tissue factor pathway inhibitor than UFH, which is not neutralized by platelet factor 4; (3) Causing HIT less frequently; (4) High bioavailability of LMWH allows subcutaneous (SC) administration; (5) monitoring of the anticoagulation level is not necessary; and (6) less binding to plasma proteins than UFH and therefore and a more consistent anticoagulant effect.

Lessons learned from 40 years of PCI

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It took Roentgen to develop x-ray in the 19th century, Forssmann to perform the first cardiac catheterization on himself in 1929, Sones, Amplatz, and Judkins to develop coronary angiography after 1958, and Dotter to introduce catheter-based therapy in 1964 to let Gruentzig succeed with the first percutaneous coronary intervention (PCI) on September 16, 1977. After a rather slow start due to skepticism and the fact that coronary angiography was only performed after long periods of angina proved refractory to drugs (typically revealing triple vessel disease), PCI grew to be the most common intervention in cardiology and perhaps in medicine in general. The sustainability of PCI cannot be better documented than with the world's first patient still enjoying an excellent long-term result after 40 years.

Refining balloon, guidewire, and guiding catheter, the 3 key assets of PCI, and adding the stent (introduced in 1986 by Puel) is most noteworthy since the first PCI case. The current drug eluting stents (DES) are easy to implant and safe. They provide excellent long-term results that are hard to challenge. Replacing them by bioabsorbable vascular scaffolds (BVS, first used in Japan) is intriguing considering that the stent's beneficial contribution ends after a couple of weeks. Yet, it is unlikely that BVS will ever be truly competitive with DES.

The future will see slow but continued growth in numbers as coronary artery disease (CAD) will be detected ever more early and universally. Due to improved prevention the average age of the population will increase and age limits for PCI will be further raised. Consequently, the ratio PCI / coronary artery bypass grafting (CABG) will further increase. Notwithstanding, CABG will remain superior for advanced CAD.

Updates of lipid management in ACS

Mohamadifar, A

patients who have experienced myocardial infarction (MI) are at high risk of recurrence of cardiovascular events compared with those who have stable coronary artery disease.Dyslipidemia is common and one of the therapeutic targets in patients with ACS. Statins can reduce coronary plaque burden and lower the risk of cardiovascular death, recurrent MI, stroke, and coronary revascularization in patients with ACS. Growing evidence from clinical trials and meta-analyses supports early, intensive, and continuous therapy with statins in patients with ACS. Statins are accepted worldwide as the first-line lipid-lowering therapy as guidelines recommend. However, some patients do not reach the target level of low-density lipoprotein cholesterol by statins alone or are contra-indicated for statins. Recently, several clinical trials showed the further benefit of ezetimibe combined with statins on cardiovascular outcomes and coronary plaque regression in patients with ACS. In addition, proprotein convertase subtilisin/kexin type 9 (PCSK9) inhibitors, novel and powerful lipid-lowering agents, have been developed and used in clinical settings. In this review, we summarize the present statin therapy, and refer to ezetimibe and PCSK9 as novel or additional non-statin strategies in the management of ACS.

Anticoagulant therapy in Acute Coronary Syndrome

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Arterial thrombosis is the most common cause of Acute Coronary syndrome(ACS). Disrupted plaque exposes thrombogenic materials in the plaque core to blood and leads to thrombotic occlusion which may be persistent or temporary. Arterial and venous thrombi have different volume of platelets and fibrins (white and red thrombi). Vascular endothelium, platelets, coagulation and fibrinolytic systems lead to normal hemostasis.
Parentral anticoagulants include, Heparin, LMWH, Fundaparinux and direct thrombin inhibitors.
Heparin ;Activates antithrombin and accelerates the rate at which it inhibits clotting enzymes particularly thrombin and factor Xa. Heparin has different pharmacokinetics in different persons, so it has unpredictable anticoagulant effect. Heparin administration needs to be monitored by APTT or anti-factor Xa measurement. Dosage of Heparin for ACS patients as follow,5000 units as bolous and 12 u/kg/h. Major side effects of Heparin are bleeding, heparin induced thrombocytopenia, osteoporosis and elevated transaminases.
LMWH ;Activates antithrombin but the ratio of anti-factor Xa-to-anti-factor IIa is ranging from 2:1 to 4:1 and predictable dose response. LMWH monitoring is not necessary in the most of the patients. It is recommended to monitor in the renal insufficieny, pregnancy, mechanical heart valves and obese patients. LMWH dosage is 1mg/kg/SC twice daily in ACS patients. Bleeding, thrombocytopenia and osteoporosis are the side effects.
Fundaparinux ;Is the synthetic analogue of the antithrombin binding pentasacharide sequence. It catalyses inhibition of factor Xa. Dosage for the ACS patients is 2.5 mg once daily through subcutaneous route.
Bivaluridin ;Shortest half life which may be used in the patients with ACS especially in HIT patients.
Rivaroxaban; Oral direct factor Xa inhibitor may be used in the patients with ACS.

Preoperative Evaluation of Patients with Cardiovascular disease

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Introduction: A detailed preoperative evaluation is necessary for patients with cardiovascular disease posted for surgery as it helps in identification, stratification and if required modification of risk factors. It also helps in optimizing the patient's general condition prior to surgery. It guides in deciding the best suitable anesthesia management for that patient.

Aims:The aims of preoperative evaluation are: Identify the patients at risk, evaluate the severity of underlying cardiovascular disease, and determine the extent of risk and the need for preoperative interventions to decrease the risk of perioperative complications.

Methods:

The preoperative evaluation includes:

1-History: onset, duration, progress of disease, treatment and complications developed if any. It should include details of medications.

2-Physical examination of the patient: In addition to general examination, systemic examination, from cardiac

Point is needed.

3-Investigations: blood investigations, chest radiograph, electrocardiograph.

4-Diagnostic tests or procedures.

Conclusion:The detailed preoperative evaluation in fact, decreases the perioperative morbidity and mortality.

Keywords: Cardiac surgery, Preoperative evaluation

Patients with acute coronary syndrome (ACS) are still prone to recurrent ischemic events, especially in the first months after the ep Secondary prevention in Acute Coronary Syndrome (ACS)

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Associate professor of Cardiology, isode of ACS. In addition, myocardial injury caused by episodes of ACS can cause complications in the next months and years and cause new events such as arrhythmia, sudden cardiac death, heart failure, mural thrombosis, and systemic thromboembolism. In recent decades, our understanding of the pathophysiology of vascular events has improved leading to new therapeutic and preventive strategies to prevent death, stroke, and recurrent vascular events. These secondary prevention methods focus on two goals: 1) vascular protection and reduction of ACS recurrence; 2) cardiac protection and reduction of ventricular remodeling and its consequences. These objectives are followed by the following interventions: lifestyle modifications (e.g. smoking cessation, increasing physical activity, use of healthy diet), cardiac rehabilitation, treating psychiatric disorders, treating of high blood pressure, glycemic control, modification of lipid profile (i.e. use of statins), antiplatelet therapy (i.e. aspirin and one of P2Y12 inhibitors), renin angiotensin system inhibition (i.e. ACE inhibitors, ARBs, aldosterone antagonists), use of beta adrenergic blockers, and probably use of direct oral anticoagulants, and if indicated, use of devices such as Permanent Pace Maker (PPM), Implantable Cardioverter Defibrillator (ICD) and/or Cardiac Resynchronization Therapy (CRT). These evidence-based recommendations for secondary prevention of ACS usually underuse in clinical practice in many regions of the world.

Advanced Hemodynamic and neurologic monitoring in Emergency CABG

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ECG and invasive arterial blood pressure and CVP monitoring are routine monitors for CABG.

Additional and advanced monitors for CABG particularly for emergent CABG are:

1. PAC: No evidence of improved outcome with PAC use. However, Commonly used for treatment guidance in conjunction with TEE monitoring and for post operative care in the ICU, Particularly in patients with severely reduced ventricular function and those with pulmonary hypertension.
2. 2)New monitors with capability of continuous monitoring of cardiac output (C.O), SVO2, SVR, RVEF, PAP and PAOP and many other parameters by specific PA catheters and other minimally invasive monitor for continuous C.O, S.V and SVR monitoring by a peripheral arterial catheter are advanced hemodynamic monitoring in elective and emergent CABGS.
3. TEE : TEE use in patients undergoing CABG can provide invaluable information beyond ischemia detection. TEE is Recommended for all cardiac operations.It can assist in pre-CPB evaluation of cardiac function , associated valvular lesions, evaluation of Atherosclerotic plaques in the aorta , position of canula, volume status ,ventricular function , response to inotropic agents and de- airing.
4. Neurophysiologic monitoring: Increasing report that cerebral oximetry aids in detecting catastrophic events. cerebral oximetry has these advantages:continuous vigilance, immediate warning, simple interventions and improved outcomes .it monitors brain oxygenation at critical levels and at high sensitivity and well suited for all type of cardiovascular procedures –Not pulse, pressure or temperature dependent. So that co is one of the multimodality neuromonitoring for emergent CABG. Absolute values below 50 or decrease in rso2 of 20% from awake baseline are cause for Concern and initiation of intervention.

Case Presentation 2
"The Clot That Would Not Go Away !!"

Norouzi, J

A 58-year-old man presented with Hyperacute Inf MI, the patient had a history of CABG 10 years ago.
At presentation the patient complained of typical chest pain, hemodynamically stable and physical exam unremarkable. Primary PCI undertaken 3AM, the angiography revealed total occlusion of left system, CTO native RCA, patent LIMA, patent SVG on OM & clot filled SVG on RCA.
Considering the option of opening a native RCA due to CTO nature was out of the question so we intervened for the SVG graft which was clot filled after numerous passage of Thrombosuction catheters we still could not establish forward flow. It seemed that a large clot was occluding the proximal RCA, the patients symptoms were deteriorating and he was getting hemodynamically unstable. The circumstances needed an urgent remedy to overcome this grave situation……

Ventricular Tachyarrhythmias and Ventricular Storm in Acute Coronary Syndrome

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Ventricular arrhythmias are common complications of acute coronary syndrome (ACS). They occur in almost all patients and are related to the formation of re-entrant circuits at the confluence of the necrotic and viable myocardium, as well as to irritable ischemic myocardium. Premature ventricular contractions occur in approximately 90% of patients with ACS. At the other end of the spectrum, the incidence of ventricular fibrillation (VF) is reported as approximately 2% to 4%. The incidence of VF in patients with ACS seen in CCUs over the past three decades appears to have declined.

One should always look for treatable causes including active Ischemia, electrolyte disturbances, decompensated heart failure and proarrhythmic effect of drugs. The most effective drugs in this setting are beta blockers, Amiodarone, Sotalol, Mexiletine and in rare situations Procainamide or Quinidine. Other adjunctive measures are sedation or general anesthesia and left stellate ganglion denervation.

During the last decade, radiofrequency ablation has proved to be an effective therapy for patients in electrical storm who are refractory to drug therapies. Patients with monomorphic VT will mostly have scar related reentry and the underlying substrate is amenable to ablation. Polymorphic VT or VF is usually secondary to ischemia, hemodynamic instability or metabolic derangements but early coupled or Purkinje related PVCs are increasingly reported as the initiating triggers and are an appropriate target for ablation.

Approach to complex bifurcation lesions in primary PCI

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Coronary bifurcations are frequent and account for approximately 20% of all percutaneous coronary interventions. Nonetheless, they remain one of the most challenging lesion subsets in interventional cardiology in terms of a lower procedural success rate and increased rates of long-term adverse cardiac events. Provisional side branch stenting should be the default approach in the majority of cases and we propose easily applicable and reproducible stepwise techniques associated with low risk of failure and complications.

Bifurcation lesion is seen in almost 25 percent of primary PCI cases and it doesn't alter long term result of primary PCI. Drug-eluting stent (DES) implantation using the 'provisional' approach is the gold standard for percutaneous treatment of patients with unselected bifurcated lesions. Nevertheless, many operators still consider the provisional approach unsuitable for coronary patients with complex bifurcation anatomies. Yet, the provisional approach may be so differently carried out that its procedural outcome is often unpredictable. Some technical renements may help to anticipate or manage procedural difculties, which may occur during the management of complex patients. We sought to overview the issues related with DES selection as well as some technical points, which may increase the effectiveness of provisional stenting. In particular, the DES characteristics inuencing bifurcation interventions and the technical renements, which may be considered during a provisional stenting procedure are discussed. Indeed, main vessel stent sizing, proximal optimisation, side branch protection modality, side branch rewiring, kissing balloon and side branch rescue techniques are all pivotal to increase the safety and efcacy of the provisional strategy especially in the setting of complex anatomies and patients.

Selection of reperfusion strategy in STEMI

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Primary PCI is the preferred reperfusion strategy for STEMI if it can be done in a timely manner Only 25% of US hospitals are capable of Primary PCI 82% of STEMI pts transferred from non-PCI hospitals for Primary PCI have time delay > 120 min .The appropriate timing of angiography to facilitate revascularization is essential to optimize outcomes in patents with ST-segment–elevation myocardial infarction and non–ST-segment–elevation acute coronary syndromes. Timely reperfusion of the infarct-related coronary artery in ST-segment–elevation myocardial infarction both with fibrinolysis or percutaneous coronary intervention minimizes myocardial damage, reduces infarct size, and decreases morbidity and mortality. Primary percutaneous coronary intervention is the preferred reperfusion method if it can be performed in a timely manner. The amount of myonecrosis per unit time from the moment of coronary occlusion is curvilinear, with the maximum amount of infarction occurring in the first few hours.[9] Several clinical studies have confirmed the important relationship between achieving prompt antegrade coronary flow of the infarct artery and improved clinical outcomes for both primary PCI and fibrinolysis. Selecting the optimal reperfusion strategy requires customization based on patient factors including time from symptom onset to first medical contact (FMC), the amount of myocardium at risk, the presence of shock or severe heart failure, the risk of bleeding with fibrinolysis, and the time required to perform PCI (including transfer to a PCI-capable hospital.

Coronary CT Angiography for Safe Discharge of patients with possible ACS

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Patients who present with acute chest pain that is believed to be of ischemic origin but who have normal initial biochemical markers for myocardial necrosis and normal or nondiagnostic electrocardiograms (ECG) represent a major diagnostic challenge to emergency departments (ED).

Multiple large clinical multicentre trials were done to evaluate role of coronary CT Angiography in emergency department.

In ROMICAT-I they demonstrated that 50% of patients who presented with acute chest pain to the ED and were at low to intermediate likelihood of ACS had no CAD by coronary CTA, a finding that has 100% NPV but limited PPV for the subsequent diagnoses of ACS and MACE.

In other large multicentre trial by Harold I. Litt and colleagues showed a CCTA-based strategy for low-to-intermediate-risk patients presenting with a possible acute coronary syndrome appears to allow the safe, expedited discharge from the emergency department of many patients who would otherwise be admitted.

In ROMICAT-II, in patients in the emergency department with symptoms suggestive of acute coronary syndromes, incorporating CCTA into a triage strategy improved the efficiency of clinical decision making, as compared with a standard evaluation in the emergency department, but it resulted in an increase in downstream testing and radiation exposure with no decrease in the overall costs of care.

Conclusion: Coronary CT Angiography is appropriate modality for safe discharge and decreased the average length of

Hospital stay for low-to-intermediate-risk patients who come to emergency department with chest pain.

ACS management in prehospital and ED

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Patient's Throughput:

In patients with ACS, throughput is divided to two parts: 1. Prehospital phase, and 2. Emergency ward phase.

In prehospital phase, throughput includes:

1. Patients or their families call to 115 and 115 operator asks him/her some questions about their history and patient's location.
2. This Mission is announced to dispatch. Dispatch has been notified the mission to the nearest pre-hospital emergency unit.
3. Ambulance was arrived to the scene and prehospital interventions were done and patient was transported to the hospital with appropriate facilities.
4. In any parts, if needed, consultation with physician was done.

Emergency ward phase:

1. The patient was triaged.
2. ED's physician assessment.
3. Nurse executed medical orders.
4. Make decision, and if needed: Cath lab was activated.

Telemedicine device and 247 code

Telemedicine is a bridge between prehospital and hospital phase. Telemedicine send the patients information such as demographic and ECG to specialist dispatch.

"247" code was started from 2016 for ACS patients in IRAN. 247 means: 24 hours of a day and 7 days of a week, when a patient with suspected ACS calls to EMS, this code was activated and at the scene the patient's ECG was sent to appropriate hospital via telemedicine device. If specialist dispatch diagnosed AMI with ECG, the Cath lab was activated in the period of time till patient was delivered to hospital and the patient was transported to Cath lab directly to reduce "door to needle time".

Our goal: Reduce short-term and long-term complications of AMI.

Best regards

Role of Interventional Echocardiography in Mechanical Complications in ACS

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At the present time, with development of primary PCI procedure the mechanical complications of myocardial infarction (MI) are relatively rare but unfortunately with high mortality rate. Post MI ventricular septal rupture (VSR) is a devastating complication of ST elevation MI. Although surgical intervention is considered the gold standard for treatment, it carries high morbidity and mortality rates. As a result, attention has turned to percutaneous options for the closure of VSR in patients with significant risk for surgical repair, either as a definitive strategy, or as a bridge to surgery after initial stabilization. Papillary muscle rupture (PMR) is also a catastrophic complication of acute MI. It can lead to acute MR, pulmonary edema, cardiogenic shock, or some combination of these findings. If PMR is untreated, the prognosis is poor and the mortality could be as high as 80%. For patients with PMR, the standard therapy for MR is open surgical repair or replacement. Percutaneous mitral valve repair using Mitraclip has recently emerged as an alternative to surgery for the treatment of severe MR. There are a few case reports with successful results. Left ventricular pseudoaneurysm due to acute MI is infrequent but fatal complication that occur especially during the 1st week of MI. Surgical intervention is essential but conveys significant operative mortality so catheter-based closure of the ruptured segment may be an alternative to surgery especially in patients with high surgical risk. Multimodality imaging especially echocardiography has significant pivotal role in all of these transcatheter procedures.

Coronary ectasia/aneurysm and slow flow

Sajjadieh, A

Coronary artery ectasia (CAE) represents a form of atherosclerotic coronary artery disease seen in 1.58% of patients undergoing coronary angiography. The presence of ectatic segments produces sluggish blood flow, with exercise-induced angina and myocardial infarction, regardless of the severity of coexisting stenotic.

Coronary aneurysm is defined as a localized, irreversible dilatation of the blood vessel lumen that exceeds the diameter of the adjacent normal segment by more than 1.5fold. In contrast, ectasia is used to describe a diffuse dilatation of coronary arteries that involves 50% or more of the length of the artery.

Atherosclerosis is the most common cause of CEA. Arteritis and congenital are other etiologies.

The presence of aneurismal/ectatic segments due to their sluggish or turbulent blood flow, associated with increased incidence of typical exercise-induced angina pectoris and acute coronary syndromes , regardless of the severity of coexisting stenotic coronary disease. Micro embolisms with consecutive disturbance of coronary perfusion may account for ventricular arrhythmias and even sudden cardiac death.

Surgical correction is the preferred treatment. 1- Aneurysmal ligation with distal bypass grafting 2-Isolated coronary artery bypass grafting 3- Anuerysm plication 4-Saphenous vein patch repair of the aneurysm. Antiplatelet or anticoagulants or both – to decrease the risk of thrombus and embolization. PTFE covered stents > 10 mm size aneurysms –high restenosis.

Acute Ischemic Mitral Regurgitation.

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Acute mitral regurgitation (MR) is a frequent complication of acute myocardial infarction (AMI)with a variable presentation depending on the severity of MR and the integrity of the Sub-valvular apparatus. While most cases are asymptomatic or have mild dyspnea, rupture of chordae tendinea or papillary muscles are catastrophic complications that may rapidly lead to cardiogenic shock and death. Despite the presence of pulmonary edema and/or cardiogrenic shock, the murmur of acute MR is usually subtle due to rapid equalization of left atrial(LA) and left ventricular pressure(LV) gradient, and therefore misleading. Echocardiography is the definite diagnostic modality, allowing quantification of the severity of MR and the structural abnormalities within the subvalvular apparatus. Severe MR accompanied by rupture of chordae or papillary muscles should be managed with temporary stabilization with medical treatment or with mechanical circulatory support, with sub-sequent surgical intervention to repair or replace the valve.

Management of Acute Coronary Syndrome in Pregnancy

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The incidence of coronary artery disease (CAD) in women of child-bearing age is low, and acute myocardial infarction (AMI) is uncommon.But can be devastating for both the mother and the fetus. With increased the pregnancy rate in woman older than than 40 years AMI increased in these women. There have been major advances in the diagnosis and treatment of acute coronary syndromes (ACS) in the general population, but there is little consensus on the approach to diagnosis and treatment of pregnant women. In this review we will discuss the pathophysiology, presentation, diagnosis and management of pregnant women with ACS. The risk factors for CAD is identical to general populations with added risk of hypercoagulabe state of pregnancy.In most studies coronary artery dissection is more common and atherosclerotic cacses are less frequent.Anterior MI is more common than inferior one. The presentation is identical to other patients with MI also dyspnea, nausea and cardiac arrest may be seen. More than two third of patient presentation is ST elevation MI and rest of them is non-STE MI.Diagnosis is based on symptoms, ECG and typical rise and falling of cardiac biomarkers.Management of AMI in pregnancy are the same as general population with thrombolysis, PCI and CABG on base of appropraitness.

Primary PCI for STEMI: still a role for thrombus aspiration?

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The ACC/AHA/SCAI guidelines have been updated so that routine thrombectomy during primary PCI for STEMI has been given a class III indication and selective or bailout thrombectomy has been given a class IIb indication due to lack of data. Based on the evidence from large randomized trials, thrombectomy should not be used routinely during PPCI for STEMI. Instead, it should be used a bailout strategy in cases of heavy thrombus that do not respond to balloon pre-dilatation.

Technical tips such as advancing the guiding catheter tip in the coronary artery and maintaining negative pressure on the aspiration catheter as it is withdrawn, or allow a retrograde blood spill-over from the guiding catheter after the aspiration catheter is removed are small technical measures but important to improve the safety of this procedure.

The newest study (Swedish Coronary Angiography and Angioplasty Registry (SCAAR)) is the largest prospective study of thrombus aspiration in primary percutaneous coronary intervention (PCI) which showed thrombus aspiration was not associated with a reduction in mortality, confirming the results from the large randomized clinical trials TASTE and TOTAL. Also, in this study, thrombus aspiration was not associated with increased risk of in-hospital stroke; and it was associated with decreased risk of stent thrombosis.

Thrombus aspiration does not improve outcomes when used systematically; it is still a valuable tool; and in selected patients, it might improve outcome.

Updates on rescue PCI & Pharmaco-invasive intervention

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Primary percutaneous coronary intervention (PPCI) is considered to be the best reperfusion option in ST-segment–elevation myocardial infarction (STEMI) when it can be performed in a timely fashion and by an expert team.
However, PPCI is not universally available, and delays in performing PPCI are common in real-world practice due to geographical or logistical issues.
Pharmacoinvasive strategy refers to fibrinolytic therapy (full dose or half-dose) either in a prehospital setting or at a non-PCI–capable hospital, followed by immediate transfer to a PCI capable hospital for early PCI.
The rationale for this pharmacoinvasive approach is that initial fibrinolytic treatment is implemented to permit the early restoration of coronary blood flow and subsequent invasive strategy to improve the initial results achieved and obviate reocclusion with routine elective PCI in case of successful fibrinolysis.
The optimal timing of routine angiography and PCI for pharmacoinvasive strategy has not been determined, but it seems reasonable to perform a coronary angiogram within 3 to 24 hours after successful fibrinolysis in most patients.
Pharmacoinvasive therapy may be suitable for STEMI patients who have a low risk of bleeding, present to a non–PCI-capable facility within 2 to 3 h of onset of symptoms, and have no immediate access to PCI.
Multiple randomized large-scale trials have proven efficacy and safety of this reperfusion strategy including: STREAM 2013, KAMIR 2016 and EARLY-MYO2017.
Rescue PCI refers to urgent catheterization and coronary angioplasty after failed fibrinolysis that occurs in up to 30-40% of patients after lytic therapy.
Also lifesaving, but it is a high risk procedure with higher mortality and in-hospital bleeding complication compared to PPCI especially if unsuccessful.
Predictors of mortality and unfavorable outcome include: Age>75 years, Anterior location, and cardiogenic shock. Femoral access and glycoprotein IIb/IIIa receptor inhibitor use are associated with greater bleeding risk.

Hypertension crisis management in a Patient with Acute coronary syndrome ?

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In the majority of patients presenting as an emergency with AMI and hypertension without signs of other acute target organ damage, hypertension does not necessarily represent an acute major threat.

Treatment should be aimed at relieving ASC symptoms, and protect extending the ischemic by reduction of cardiac demand but it has to be well balanced with potentially risk of coronary perfusion reduction and loss of viable myocardial tissue and cardiogenic shock.

In a patient presenting with AMI and hypertension Crisis, the reduction of blood pressure (BP) should not be abrupt and a gradual reduction over a period of 24-48 hours is recommended, so that further myocardial or brain ischemia is avoided.

The appropriate treatment should include the initiation of intravenous nitrates, with intravenous labetalol, sodium nitroprusside and/or nicardipine as alternatives, especially in very severe hypertension or hypertensive emergencies.

Sublingual nifedipine, which has usually been considered as a firstline drug, should be avoided, in view of the negligible oral absorption and unpredictable hypotensive effects.

BP should be reduced to <160/110 mmHg before administration of thrombolysis, although if available, primary angioplasty is an option for reperfusion in patients with high BP and/or the perceived risk of stroke if thrombolysis is unacceptable.

Oral or intravenous b-adrenoceptor blockers lower the BP within hours. They also have important anti-ischemic effects, by reducing oxygen demand by 15-30%, so that they should be considered as first-line therapy in patients with myocardial infarction (MI), in the absence of contraindications. Moreover, the b-blockers have antiarrhythmic properties and cause favorable shunting of blood away from non-ischemic to ischemic regions.

Comparison Results of Catheter Based Atrial Fibrillation Ablation Versus drug Therapy

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"Atrial fibrillation is a worldwide problem with significant morbidity, mortality and also cost for people and countries. AF ablation and antiarrhythmic drugs are both acceptable treatments for this important arrhythmia. Many randomized controlled trials to compare ablation with AADs done, few on the way and still waiting more. All trials including the latest one "CABANA ", indicate improved QoL,significant AF burden and symptoms reduction with ablation. Meanwhile, although preliminary studies showed good things, cardiac electrophysiology need more RCTs to show probable mortality and stroke reduction with ablation compared to AADs.

Impact of IO TEE in mortality in CABGs patients

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TEE in OR was initially applied to assess LV systolic function then remarkably increased use in past two decades.
Some indication for IO TEE include: assessment of ventricular systolic and diastolic function ,evaluation of MV ,AV ,TV and PV function ,assessment of associated shunts ,detection of clot or air in heart chambers ,evaluate Ascending and Descending aorta ,grading of atherosclerotic change and protruding plaque in Aortic root and arch.
Association of Mitral Regurgitation is the most common combined pathology in CAD patients who need surgical intervention. So definition of Pathology of MR, origin of leak, involved components and also annular sizing are crucial to get the best result of surgery in terms of prognosis and free of symptom survival.
TEE also could be useful to define volume status and is the best noninvasive diagnostic tools (instead of invasive measurement of PAWP).So TEE guided hemodynamic intervention is highly recommended.
IO TEE also facilitate insertion of catheters in rapidly growing minimal invasive procedures including valve and shunt surgery.
In conclusion: Perioperative Echocardiography provide useful information which significantly influences clinical /surgical management to improve outcome of patients.
Nowadays IO TEE is the routine diagnostic ,and guiding method in heart surgery.

Management of Massive thrombotic Lesions in STEMI Patients

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Acute ST-elevation myocardial infarction (STEMI) usually results from coronary atherosclerotic plaque disruption with superimposed thrombus formation. Detection of coronary thrombi is a poor prognostic indicator, which is mostly proportional to their size and composition. Particularly, intracoronary thrombi impair both epicardial blood flow and myocardial perfusion. Thus, although primary PCI is the preferred treatement strategy in STEMI setting, the associated use of adjunctive antithrombotic drugs and/or percutaneous thrombectomy is crucial to optimize therapy of STEMI patients, by improving either angiographical and clinical outcomes.

Role of Stress Echocardiography with or without contrast in ACS patients

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Coronary artery disease is a major cause of mortality and morbidity in many countries. Chest pain is the major, common problem in Emergency Departments. Patients with chest pain have a spectrum of cardiac risk including typical chest pain with typical ECG findings compatible with ACS who should be referred to cath lab as soon as possible. At the other end of spectrum are patients with atypical chest pain ,and nonspecific ECG changes who need to stablished a Rule in Or Rule Out diagnosis. Most of these patients admitted to hospital because of uncertain DX.

In face of clinical uncertainty Imaging study with stress echocardiography with or without contrast injection could be a great opportunity to provide a cost-effective solution in terms of both diagnosis and prognosis in these patients.

Echocardiography has the advantage of real time, cheap and free of radiation (using ionizing contrast), so is the method of choice to evaluate both anatomic and functional evidence of ischemia.

Assessing of inducible ischemia during pharmacologic or nonpharmacologic provocative test in ED is feasible and reliable. Also contrast introducing during test could be the best approach for better evaluation of endocardial border delineation and myocardial perfusion to increase accuracy and specificity of test.

ACS in patients with NECA or Non- obstructive CAD

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Our understanding of acute myocardial infarction (AMI) has evolved considerably over the past 50 years, which has given rise to innovative therapies that have improved patient outcomes. These innovations have primarily focused on alleviating atherothrombotic processes that obstruct coronary blood flow, evident in most patients with AMI. However, in approximately 1 in 10 patients (5–14% reported prevalence1–4) with AMI, angiography does not reveal obstructive coronary artery disease (CAD), so the pathophysiological processes responsible for the AMI are not immediately evident. These patients are labeled as having "myocardial infarction with non-obstructive coronary arteries (MINOCA)", which is being increasingly recognized with the more widespread use of coronary angiography in AMI. Importantly, the management of these intriguing patients is predicated upon their initial recognition and subsequent evaluation to elucidate the pathophysiological processes responsible for their presentation. Since the term was first coined,clinical interest in patients with MINOCA has rapidly evolved and focused attention on the condition. The purpose of this talk is to summarize the contemporary understanding of MINOCA .

Primary PCI in STEMI!!"

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Primary percutaneous coronary intervention (PCI) has been established as the treatment of choice for patients presenting with acute ST elevation myocardial infarction (STEMI) and is associated with high success rate, low mortality in non-shock patients and low complication rates.

STEMI was defined as symptoms of ischemia associated with ST-segment elevation of ≥1 mm in limb leads and/or ≥2 mm in chest leads in ≥2 contiguous leads, or new left bundle branch block, or true posterior myocardial infarction with ST depression of ≥1 mm in ≥2 contiguous anterior leads. There are no situations in which fibrinolytic therapy is preferred over primary PCI unless the patient refuses invasive procedures. Fibrinolytic therapy works best when symptom onset is < 3 hours since fresh thrombus lysis more readily than more organized, subacute thrombus. If symptoms have been present for > 3 hours then primary PCI is preferred.

The best outcomes occur when primary PCI is performed with a door-to-balloon time of < 90 minutes and when symptoms onset was < 12 hours. Primary PCI is only indicated when symptoms duration is 12-24 hours (delayed presentation) if severe congestive heart failure, hemodynamic/ electrical instability or continued angina is present. Primary PCI is not recommended when symptom onset is more than 12 hours and the patient is asymptomatic .

Catheterization team was activated immediately on confirmation of STEMI diagnosis. After loading with dual antiplatelets, patients were immediately shifted to catheterization laboratory.

After gaining vascular access, non-culprit vessel angiogram was done first followed by the culprit vessel angiogram. Once the decision to go ahead with angioplasty was taken, heparin was administered in dosage of 70–100 U/kg to achieve an ACT of 250–300. GPIIb/IIIa inhibitor use was left to operator's discretion. The choice of guidewire, balloon, stent, thrombus aspiration and IABP was on operator's discretion.

Hemodynamically stable patients were kept in CCU for 24–48 h and subsequently shifted to step down unit and were discharged on 4th or 5th day. At discharge statinsin dose of 40–80 mg and dual anti platelet (DAPT) agents were prescribed to all patients. ACEI/ARB and beta blockers were used in all patients without contraindications for their use.

Important predictors significantly associated with mortality are the door to balloon time, Killip class, final TIMI flow and severe LV dysfunction.

Congenital Coronary Anomaly & ACS

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Anatomical variations in origin, course or termination of coronary arteries are increasingly diagnosed (in up to 5% of coronary angiographies) incidentally and however more than 80% of them are benign, rarely may be lethal and malignant & corrective surgery is mandatory to overcome the adverse outcome.

Coronary artery take-off from opposite sinus of Valsalva with interarterial course is an anomaly which may disable the patient because of impairment of myocardial blood supply, specially during exercise & may present with ACS.

Surgery for such lesions and other rare anomalies are treatment of choice, to preserve myocardial function and is life saving.

Poster Presentation

The Second Iranian Congress on Acute Coronary Syndromes

Effect of Colchicine on TIMI frame count in ST elevation myocardial infarction patients undergoing primary percutaneous coronary intervention

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Objective: There are historically evidence about the effect of inflammation process in pathophysiology of patients with ST-segment elevation myocardial infarction (STEMI). Colchicine is a known drug, which had different beneficial effects like anti-inflammatory feature and safety in cardiovascular patients. In this study, we aimed to evaluate the effect of colchicine on TIMI frame count in patients with STEMI undergoing primary percutaneous coronary intervention (PPCI).

Methods & Materials: This was a two-center, prospective, triple-blinded, placebo-controlled clinical trial study, performed in two primary percutaneous coronary intervention referral hospitals, Imam Reza and Qaem in Mashhad, Iran. Sixty atients with anterior STEMI were randomly assigned to two groups (Colchicine, 2mg, orally and placebo group). Then patients underwent PPCI. The primary outcome parameter was final corrected thrombolysis in myocardial infarction frame count (cTFC) and secondary outcome was ST elevation resolution in EKG leads after angioplasty. After collecting data, it was categorized and analyzed by SPSS software version 16.

Results: Of seventy-eight recruited patients, 69 patients ellocated and 60 patients were included in the final analysis (30 in the colchicine group and 30 controls). Forty-eight subjects were male (80%) and 12 subjects were female (20%). There was no significant difference in mean of Post-stenting cTFC in colchicine group was 24.27± 9.79 and in placebo group was 23.80± 11.92 (P=0.86). This was also repeated for mean of final cTFC which was 22.07± 8.84 in colchicine group and 22.66± 10.62 in placebo group (P= 0.10). There was significant correlation between time of initiation of pain to device time and mean of Post-stenting cTFC (r=0.649, P<0.001), final cTFC (r=0.786, P<0.001) but not with indexed lead ST resolution (r=-0.190, P=0.313) and summed ST resolution (r=-0.020, P=0.915), in control group.

Conclusion: Our findings is not remarkable in improvement of cTFC as an important angiographic index. However, it was shown that it could protect the delay in the time of to device for cTFC rather than placebo.

Keywords: Colchicine, corrected thrombolysis in myocardial infarction frame count, STEMI

The Experience of Use Triple Antithrombotic Therapy in Patients With Acute Coronary Syndrome and Atrial Fibrillation

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BACKGROUND: In real life to evaluate the effectiveness and safety of apixaban with double antiplatelet therapy for prevention of stroke and systemic embolism in patients with non-valvular atrial fibrillation and the recent episode of acute coronary syndrome without ST segment elevation.

METHODS: 12 patients in hospitals of Isfahan with atrial fibrillation and the recent (8-14 days after the onset of symptoms of ACS) episode of acute coronary syndrome without ST segment elevation were involved into the research. The effectiveness (deaths, stroke and systemic embolism) and the safety (major clinically significant and not significant bleeding) were investigated within 3 months.

RESULTS: There were no any strokes, systemic embolism, deaths during observational period. Nasal and mild gingival hemorrhages (not requiring medical intervention) were noted in 3 patients during the first month of treatment and one patients experienced non-permanent petechiae. Major and clinically significant bleeding was not registered.

CONCLUSIONS: The use of oral anticoagulant apixaban 5 mg BID or 2.5 mg BID with double antiplatelet therapy in patients with non-valvular atrial fibrillation and the recent episode of acute coronary syndrome without ST segment elevation is effective and safe for the prevention of stroke and systemic embolism during 3 months of treatment. Future researches are required.

KEYWORDS: acute coronary syndrome without ST segment elevation; apixaban; atrial fibrillation; systemic embolis

The Streptokinase Therapy Complications and its Associated Risk Factors in Patients with Acute ST Elevation Myocardial Infarction

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Acute myocardial infarction (AMI) is one of the main leading causes of mortality and morbidity. Despite the progress in the treatment of AMI, streptokinase is still being used in many countries. Because of the critical condition of patients with AMI and complications of streptokinase therapy, this study was performed to evaluate the pattern of adverse drug reaction (ADRs) induced by streptokinase and its associated risk factors in patients with acute ST elevation MI. A prospective cross-sectional study in a 14-month period was done at the university affiliated referral cardiovascular center. The Naranjo probability scale and Food and drug administration (FDA) criteria for severity of ADRs were performed for assessing the ADRs. The linear and logistic regression tests were used to evaluate the correlation between ADRs and study risk factors. During the study period, 217 patients who received streptokinase were entered. The majority of patients (n = 191) experienced at least one ADR. Six patients died in-hospital mainly because of cardiac causes. The history of drug allergy was the main predictor in occurring of ADRs (Odds ratio: 3.26; 95% CI: 1.48-457.6; p =0.026). The most serious ADR was hemorrhagic stroke with a 1.4% incidence. Hypotension was one of the most occurred ADR (n = 75). Anaphylactic shock was not detected in this study. In summary, our study showed that the history of drug allergy is the main predictor in occurring of ADRs by streptokinase. Furthermore, streptokinase therapy was associated with a higher rate of hemorrhagic stroke in Iranian population.

KEYWORDS: Acute myocardial infarction (MI); Adverse drug reactions (ADRs); Allergy; Hemorrhagic stroke; Streptokinase

The pattern and risk factors associated with adverse drug reactions induced by Reteplase in patients with acute ST-elevation myocardial infarction: The first report from Iranian population

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OBJECTIVE: Acute myocardial infarction (AMI) is one of the main leading causes of mortality and morbidity. Reteplase is a fibrin-specific thrombolytic which is used in the treatment of AMI. There is a limited number of studies reporting the postmarketing adverse drug reactions (ADRs) induced by reteplase. This study was aimed to examine the reteplase pattern of ADR and its associated risk factors in patients with acute ST-elevation myocardial infarction.

METHODS: A cross-sectional, prospective study in an 8-month period was done at the University affiliated referral cardiovascular center. The Naranjo probability scale and World Health Organization criteria for severity of ADRs were used for assessing the ADRs. The linear regression and logistic regression tests were used to evaluate the correlation between ADRs and risk factors.

FINDINGS: The all 20 patients who received reteplase during the study period were entered. The majority of patients (n = 17) experienced at least one ADR. The results showed that the incidence of ADRs was mainly associated with gender and age, and the number of ADRs was associated with the history of diabetes and taking anti-diabetic agents. The gender was the main predictor in the occurrence of ADRs (odds ratio: 32, 95% confidence interval: 1.38-737.45; P = 0.030).

CONCLUSION: The results showed that gender, age, diabetes mellitus, and using of anti-diabetes medications are the risk factors associated with the incidence of ADRs by reteplase.

KEYWORDS: Acute myocardial infarction; Reteplase; adverse drug reactions

Effect of remote ischemic post-conditioning on oxidative stress in blood of STEMI patients treated with primary angioplasty

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Introduction: This study designed to use remote ischemic post conditioning (RIPC) as a protective strategy during percutaneous coronary intervention (PCI) in patients with ST segment elevation myocardial infarction (STEMI) to reduce myocardial cells damage due to reperfusion injury.

Methods: Sixty-one patients were divided into test group (32 patients) receiving RIPC and control group (29 patients). Patients were included with first MI who had 20-80 years old. The RIPC protocol was applied on patients arm in three successive episodes during the opening of infarct-related artery (IRA). Whole blood sample were taken from patients after the first episode before IRA opening and after the third episode after IRA opening. The serums were extracted and stored in the freezer -70˚C to determine the levels of glutathione peroxidase (GPX), superoxide dismutase (SOD), total antioxidant capacity (TAC) and malondialdehyde (MDA).

Results: The levels of GPX and SOD after the first episode of RIPC were significantly higher in test group than control group ($P < 0.001$). Similar alterations of these enzymes were obtained after IRA opening (after third episode). In addition, the levels of TAC remained unchanged in control patients but it was significantly increased after the third episode of RIPC in test patients ($P < 0.001$). Finally, the MDA level was increased in control group in comparison with test group, and administration of RIPC in test group prevented the enhancement of MDA levels significantly ($P < 0.001$).

Conclusion: The results indicated that RIPC protocol has protective properties in patients with STEMI through enhancing the antioxidant potentials and decreasing lipid peroxidation.

KEYWORDS: MDA, Oxidative Stress, Primary Angioplasty, Remote Ischemic Post-conditioning, STEMI

Effect of Pentoxifylline in Ameliorating Myocardial Injury in Patients With Myocardial Infarction Undergoing Thrombolytic Therapy: A Pilot Randomized Clinical Trial

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Cell death following acute myocardial infarction (MI) is the hallmark pathology of cardiovascular disease, leading to considerable mortality and morbidity. Platelet and neutrophil activation and inflammatory cytokines, prominently TNF-α, play an important role in the development of cell death. Because pentoxifylline inhibits platelet and neutrophil activation and reduces TNF-α, this study was performed to assess the potential benefit of pentoxifylline in the reduction of myocardial injury following acute MI. In this randomized clinical trial, 98 patients with acute MI were randomly divided into 2 groups. The intervention group received an oral dose of 1200 mg of pentoxifylline immediately before thrombolytic therapy (TLT). All patients received the same standard protocol for treatment of MI. Cardiac enzymes were checked over 48 hours. ST resolution was measured over 90 minutes. Then all patients were followed up for a 1-month period to assess major adverse cardiac effects (MACEs). There were no significant differences in peak levels of CPK (P = .18) and CK-MB (P = .33) between the 2 groups, whereas peak level of troponin I was significantly lower in the pentoxifylline group (16.8 ± 10.4 vs 21.3 ± 11.6; P = .048). No significant change between the groups was observed in biomarkers levels, ST segment resolution, cardiac ejection fraction, and MACEs. The results showed that pentoxifylline significantly reduced the peak value of troponin I in patients with acute MI receiving TLT. No significant change was observed in the other studied parameters. Further outcome-based studies are needed to show the clinical relevance of differences between the groups in troponin peak.

KEYWORDS: CK-MB, ST resolution, STEMI, ischemia injury, pentoxifylline, troponin I

An Evidence-Based Review of Off-Label Uses of Polidocanol

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Introduction: Polidocanol is approved for its competence in the treatment of varicose veins and spider veins; however, unfortunately, many of its off-label uses are still underappreciated.

Objective: Lack of an appropriate comprehensive review for off-label uses of this medication troubles physicians about making evidence-based decisions on prescribing it for its various outstanding off-label uses. This article attempts to provide physicians with the latest information concerning successful and unsuccessful use of polidocanol as an alternative treatment for esophageal and gastric varices, tendinopathy and epicondylitis, vascular malformations, varicocele, hydrocele and spermatocele, aneurysmal bone cysts, itching, management of gastrointestinal bleeding, simple renal cysts, reducing the incidence and severity of radio-induced dermatitis and hemorrhoids.

Method: The two databases of MEDLINE and Cochrane Library were searched for all human English studies, published in January 2006 to November 2017, which contained the keyword of "polidocanol" or its alternative MeSH terms.

Results: Our search identified a total number of 597 articles. Those articles that were only discussing the approved uses of polidocanol were excluded and the remaining 116 articles were reviewed.

Eleven major and 30 minor off-label uses were found within included studies.

Conclusion: Numerous successful administrations of this drug in a variety of clinical conditions lead to promising perspectives toward it. Sclerotherapy with polidocanol as a minimal-invasive method (having similar outcomes like the prevalent surgeries) may reduce the rate of complications.

Furthermore, for determining the most appropriate method and dosage, randomized clinical trials are needed, confirming and providing more clear instructions for different conditions.

Keywords: Polidocanol, off-label use, unapproved use, esophageal and gastric varices, tendinopathy, varicocele.

Fine versus coarse atrial fibrillation in rheumatic mitral stenosis: The impact of aging and the clinical significance

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Introduction : Atrial fibrillation (AF) as the most rhythm disturbance in patients with rheumatic mitral stenosis (MS), is classified in to coarse and fine subtypes according to the height of fibrillatory wave amplitude. The aim of this study is to identify the factors associated with the presence of fine versus coarse morphology in patients with rheumatic MS.

Methods : In this cross-sectional study, patients with confirmed diagnosis of severe rheumatic MS admitted between March 2013 and March 2017 were screened. Patients were categorized to sinus rhythm (SR) and AF rhythm (coarse and fine subtypes) groups according to the admission electrocardiogram. The association between various clinical and echocardiographic factors and the development of fine versus coarse AF were examined.

Results : Among 754 patients with the diagnosis of rheumatic MS, 288 (198 female) were found to have AF (38%). Among them 206 (71.5%), and 82 (28.5%) patients had fine and coarse morphology respectively. Patient in these two groups were quite similar in terms of echocardiographic parameters and comorbidities. However, patients with fine morphology AF were significantly older. (p-Value=.007).

COnclusion : Coarse morphology of AF is common in patients with rheumatic MS. While echocardiographic or most clinical parameters do not seem to associate with the occurrence of coarse or fine morphology, age seems to be the only independent factor correlated with the presence of fine subtype of AF in this population.

Keywords: atrial fibrillation, mitral stenosis, mitral valve, rheumatic

The Study of Risk Factors for Coronary Artery Disease in Patients with STEMI and Its Relation to Referral Time

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Background and objective: In the last decade, cardiovascular diseases has been recognized as the leading cause of death in the world as a global epidemic and the most common causes of mortality in the country. The aim of this study was to investigate the risk factors of coronary artery disease in patients with STEMI and its relationship with referral time.

Materials and methods: The research method is a cross-sectional and analytical-descriptive study.

The research sample included 188 patients with diagnosis of acute myocardial infarction with ST elevation, which had been referred to the Emergency Department of Imam Khomeini Hospital in Ardabil from the beginning of September 2016 to the end of September 2017. Data collection was done by using the information in the patients 'files, the corresponding Cath lab form and a questionnaire by interviewing themselves and patients' companions and were recorded in the relevant checklist. The data were analyzed using descriptive statistics and correlation tests with SPSSV22 software.

Results: The most common risk factor among patients was smoking (54.7%). The most frequent cases were combined overweight and smoking, followed by high blood pressure and smoking. 6.3% of patients did not have any risk factors for coronary heart disease. Also, there was no significant relationship between coronary risk factors and referral time. There was no significant difference between the subjects in relation to the previous ($p = 0.78$) and familial ($p = 0.49$) myocardial history of myocardial infarction and referral time.

Discussion and conclusion: According to the findings, awareness of the risks of smoking and the promotion of healthy lifestyle can reduce the incidence of heart disease.

Keywords: myocardial infarction, risk factors, referral time

Air pollution and admissions due to ST elevation myocardial infarction—a time-series study from northwest of Iran

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Introduction: We investigated the association between the levels of air pollutants and the number of daily admissions due to ST segment elevation myocardial infarction (STEMI) in a metropolitan in the northwest of Iran.
Methods: Daily concentrations of common air pollutants were obtained for the greater city of Tabriz for a period of 2 years. These reports included sulfur dioxide (SO2), nitrogen dioxide (NO2), nitric oxide (NO), nitrogen byproducts (NOx), carbon monoxide (CO), ozone (O3), and particulate matters < 10 μm (PM10). The census of admissions for STEMI was retrieved for the same period from hospital registries. The association of daily variations in air pollutant levels and the daily number of STEMI admissions were investigated in a time-series analysis.
Results: In the multi-pollutant model adjusting for long-term trend, seasonality, and temperature, a significant association was found for 1-h [NO2] and 24-h [CO]. A marginally significant association was observed for 24-h [NO2] and 8-h [CO]. The 24-h [CO] had the strongest association with the number of admissions with STEMI. Maximum 1-h concentrations of NO2 on the same day and on the prior day as well as 24-h concentrations of CO on the prior day were independently associated with increased number of STEMI admissions.
Conclusion: However, daily concentrations of SO2, NO, O3, and PM10 were not associated with the frequency of hospital admissions for STEMI.
Keywords: Air pollution, Myocardial infarction, Nitrogen dioxide, Carbon monoxide, Nitric oxide, Ozone

Prevalence, Risk Factors, and Outcome of Myocardial Infarction with Angiographically Normal and Near-Normal Coronary Arteries: A Systematic Review and Meta-Analysis

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Context: Coronary artery diseases are mostly detected using angiographic methods demonstrating arteries status. Nevertheless, Myocardial Infarction (MI) may occur in the presence of angiographically normal coronary arteries. Therefore, this study aimed to investigate the prevalence of MI with normal angiography and its possible etiologies
in a systematic review.

Evidence Acquisition: In this meta-analysis, the required data were collected from PubMed, Science Direct, Google Scholar, Scopus, Magiran, Scientific Information Database, and Medlib databases using the following keywords: “coronary angiograph”, “normal coronary arteries”, “near-normal coronary arteries”, “heart diseases”, “coronary artery disease”, “coronary disease”, “cardiac troponin I”, “Myocardial infarction”, “risk factor”, “prevalence”, “outcome”, and their Persian equivalents. Then, Comprehensive Meta-Analysis software, version 2 using randomized model was employed to determine the prevalence of each complication and perform the meta-analysis. P values less than 0.05 were considered to be statistically significant.

Results: Totally, 20 studies including 139957 patients were entered into the analysis.

The patients’ mean age was 47.62 ± 6.63 years and 64.4% of the patients were male. The prevalence of MI with normal or near-normal coronary arteries was 3.5% (CI = 95%, min = 2.2%, and max = 5.7%). Additionally, smoking and family history of cardiovascular diseases were the most important risk factors. The results showed no significant difference between MIs with normal angiography and 1- or 2-vessel involvement regarding the frequency of major

adverse cardiac events (5.4% vs. 7.3%, P = 0.32). However, a significant difference was found between the patients with normal angiography and those with 3-vessel involvement in this regard (5.4% vs. 20.2%, P < 0.001).

Conclusions: Although angiographic studies are required to assess the underlying etiology of MI, physicians facing patients presenting with the clinical features of MI in presence of normal or near-normal coronary arteries should consider the prevalence and risk factors of MI with normal or near-normal coronary arteries.

Keywords: Myocardial Infarction Angiography Prevalence Risk Factor

The Effect of Pre-thrombolytic Cyclosporine-A Injection on Clinical Outcome of Acute Anterior ST-Elevation Myocardial Infarction

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Introduction: Reperfusion injury reduces the benefits of early reperfusion therapies after acute ST-elevation myocardial infarction (STEMI). Cyclosporine-A (CsA) is a potent inhibitor of opening of the mitochondrial permeability transition pore, which has been shown to play a key role in myocardial reperfusion injury. The impact of this treatment on clinical outcomes of acute STEMI remains unknown. Our aim was to investigate the clinical outcomes of using this drug in patients acute anterior STEMI receiving thrombolytic treatment (TLT).

Methods: In this double-blinded randomized clinical trial, 101 patients with acute anterior STEMI who were candidate for TLT, were enrolled and randomly assigned into treatment or
control groups. Patients in the treatment group received an intravenous bolus injection of 2.5 mg/kg of CsA immediately before TLT. The patients in the control group received an equivalent volume of normal saline. Infarct size, occurrence of major arrhythmias, heart failure, left ventricular ejection fraction (LVEF), TLT-related complications, in hospital and 6 month mortality rates were investigated.

Results: There were no significant differences among the demographics, myocardial enzyme release, occurrence of major arrhythmias [9(18%) vs. 12(23.5%), p= 0.80], heart failure [18(36%) vs. 19(38.3%), p= 0.83], LVEF at first day [34.7±9.9% vs. 33.5±8.1%, p= 0.50] or at discharge [37.7±10% vs. 36.1±8.2%, p= 0.43], and in-hospital [4(8%) vs. 6 (11.8%), p= 0.74] or 6-month mortality rates [9(18%) vs. 10(19.6%), p= 0.99] between the CsA vs. the control group.

Conclusion: In this study the pre-thrombolytic administration of CsA was not associated with a reduction in the infarct size or any improvement in clinical outcomes.

Keywords: Cyclosporine A, reperfusion injury, myocardial infarction, thrombolysis, preconditioning.

Red cell distribution width is a predictor of ST resolution and clinical outcome following thrombolysis in acute ST elevation myocardial infarction

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Introduction: Red cell distribution width (RDW) has been shown to associate with adverse outcomes in various cardiovascular diseases. We aimed to explore the predictive value of RDW for resolution of the ST segment (STR) after thrombolytic therapy in patients with ST elevation myocardial infarction (STEMI).

Methods: Patients with STEMI with indication for thrombolytic therapy were recruited from a university center between 2013 and 2015. A comprehensive laboratory investigation at the time of admission included measurement of RDW. Following thrombolysis .

Results: ST segment resolutionwas assessed after 90min. A positive response (STR ≥ 50%) was the primary endpoint. Secondary endpoints were major adverse cardiac events (MACE) defined as occurrence of acute heart failure, ventricular dysrhythmia beyond the first 24 h, cardiac arrest or death during hospitalization.

A total of 312 patients (271 male) with the mean age of 57±.912.3 were enrolled. RDW on admission was 14.1 ± 1.0% (range: 11.6–17.7%). STR was seen in 191 cases (61.2%). MACE occurred in 36 (11.5%) patients. The long-term mortality rate was 7.1% during the follow-up period of 7.7 ± 3.2 months. Even after adjusting for co-morbid conditions, in multivariate model, baseline RDW, independently predicts STR (RR = 2.46, 95% CI 1.32–4.57, P = 0.005) and in hospital occurrence of MACE (RR = 3.17, 95% CI 1.23–8.46, p = 0.017). The cut-off values for RDW in predicting STR and MACE were 14.2% and 14.4%, respectively.

Conclusion: An elevated baseline RDW could predict adverse outcomes and response to thrombolytic therapy in
patients with STEMI. This extends our knowledge about RDW value in prognostication.

Keywords: Red Cell DistributionWidth, Myocardial Infarction, ST Resolution and Thrombolysis

A pilot randomized trial of pentoxifylline for the reduction of periprocedural myocardial injury in patients undergoing elective percutaneous coronary intervention

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Introduction: Periprocedural myocardial injury (PMI) following percutaneous coronary intervention (PCI) has received great attention due to its significant association with mortality and morbidity. Accordingly, cardioprotection during PCI is one of the important therapeutic concerns. Regarding the potential cardiovascular benefits of pentoxifylline this study was performed to evaluate whether the pretreatment pentoxifylline could reduce PMI in patients who are undergoing elective PCI.

Methods: A randomized clinical trial on 85 patients undergoing elective PCI was performed. The intervention group (n=41) received 1200 mg pentoxifylline in divided doses plus the standard treatment before PCI, while the control group (n=44) received the standard treatment. For assessing myocardial damage during PCI, the levels of CK-MB and troponin-I were measured at baseline, 8, and 24 h after the procedure. Then, patients were followed up for a 1-month period regarding the major adverse cardiac effect.

Results: Comparing with the control group, no significant change of CK-MB at 8 (p=0.315) and 24 h (p=0.896) after PCI was documented in pentoxifylline group. Similarly, no significant change was found in troponin-I at 8 (p=0.141) and 24 h (p=0.256) after PCI.

Conclusions: This study could not support the pretreatment with pentoxifylline in the prevention of PMI in patients undergoing elective PCI. However, the trend was toward the potential benefit of pentoxifylline.

Keywords: Pentoxifylline, Periprocedural myocardial Injury, PCI, Cardiac biomarkers, Creatine kinase-MB, Troponin-I

The association of right coronary artery conus branch size and course with ST segment elevation of right precordial leads and clinical outcome of acute anterior myocardial infarction

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Introduction: Coronary artery disease is the leading cause of death worldwide and electrocardiogram (ECG) is a reliable diagnostic tool to determine a myocardial infarction. The present study tried to compare the relationship between the ECG findings and angiographic findings in patients with acute anterior myocardial infarction.

Methods: Seventy-four patients with acute anterior ST elevation myocardial infarction (Ant- STEMI) presenting to the emergency room in the first 12 hours after the onset of symptoms were studied. Upon admission, a full 14-lead ECG (including leads V3R and V4R) were performed. Angiographic and ECG findings, as well as clinical outcome were compared between two groups. The statistical tests including Chi-square and independent t-test were used for data analysis.

Results: Small conus branch was seen in 52 (70.3%) and large conus in 22 (29.7%) patients. STE in right-sided leads and heart failure were significantly higher in small conus branch group versus large conus branch (88.6% vs 11.4%, $P < 0.001$ and 34.6% vs 9.1%, $P = 0.02$ respectively). There was no significant difference in mortality rate between the two groups (5.8% in small conous group vs 0% in large conus group, $P = 0.55$). There was a significant difference in major adverse cardiac events (MACE) between the two groups (51.9% in small conous group vs 18.2% in large conus group, $P = 0.01$).

Conclusion: In patients with anterior MI, small conus branch was associated with higher rate of major adverse cardiac events mostly because of increased rate of acute heart failure.

Keywords: Anterior MI; Conus Branch; Precordial Leads; Right Coronary Artery; ST Elevation

The Relationship between Coronary Artery Movement Type andStenosis Severity with Acute Myocardial Infarction

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Introduction: The severity of coronary artery stenosis which leads to myocardial infarction (MI) has been a matter of controversy. Historical data are in favor of mild luminal stenosis (<50% diameter stenosis) while recent studies suggest hemodynamically-significant coronary stenosis as the main substrate for subsequent MI. Also, mechanical stress resulted from coronary artery movement (CAM) may be responsible for plaques rupture. In this study, we evaluated the severity of plaques leading to MI and common CAM patterns in the involved coronary segments.

Methods: In a cross-sectional descriptive-analytical study, on patients with acute ST-segment myocardial infarction (STEMI) undergoing coronary angiography, the relationship between coronary artery movement type and stenosis severity with acute MI was evaluated. Lesions with stenosis diameter greater than 50 percent were defined as moderate and those equal or higher than 70% were defined as severe stenosis. Three different patterns of coronary artery motion including compression, bending and displacement types were evaluated in segments with culprit lesion.

Results: One hundred and sixty two patients were enrolled. Ninety patients (55.6%) were male and 72 (44.4%) were female. Mean age of the patients was 60.56±13.43 years. In terms of Infarct related lesions (IRLs), 86% of the cases had at least moderate stenosis and in 67%, severe stenosis was present. More than 50% stenosis was found in all patients with anterior STEMI involving LAD. Among three types of coronary motion patterns, compression pattern was significantly higher in LAD (P<0.001), RCA (P<0.001), Diagonal artery (P<0.001) and OM branch (P=0.044), but not in proper LCX (P=0.307).

Conclusion: Most of the lesions leading to myocardial infarction have a diameter stenosis of at least 50% and mainly are located in the coronary segments with compression movement pattern.

Keywords: Myocardial Infarction, Coronary Artery Movement, Coronary Plaque

The Relation between Left Coronary Dominancy and AtherosclerоticInvolvement of Left Anterior Descending Artery Origin

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Introduction: Limited information is available regarding the relationship between coronary vessel dominance and atherosclerotic involvement. Rheological factors have been implicated in the pathogenesis of coronary lesions. More than 90% of the coronary blood flow enters the left coronary if it is the dominant artery. The main purpose of this study was to determine the relation between left coronary dominance and atherosclerotic involvement of left anterior descending artery (LAD) origin. In addition, the prevalence and degree of associated ischemic mitral regurgitation (MR) in these patients were assessed.
Methods: The study included 678 consecutive patients with an indication for coronary angiography. One hundred and twenty two patients with right dominant and 61 patients with left dominant arteries were randomly selected for analysis. All demographics, risk factors, coronary dominancy and involvement, left ventricular ejection fraction (LVEF), and MR were recorded.
Results: One hundred and eighty three patients (mean age of 57.7 years) were studied. The types of coronary circulation included right, left, and balanced in 78.6%, 8.9%, and 12.5%, of the patients respectively. In 64 patient with significant LAD lesions, 22 (34.9%) had ostial while the remainder had non-ostial involvement. Ischemic MR was present in 5 (2.7%) patients. There was no difference in demographics, risk factors, LVEF, MR, extent of coronary artery disease, and LAD ostial involvement between left and right dominant circulations.
Conclusion: In this study, left coronary dominance was not associated with atherosclerotic involvement of LAD ostium and ischemic MR.
Keywords: Coronary Artery Disease Coronary Artery Dominance Angiography

The Value of Simplified Selvester QRS Scoring System in Predicting ST-segment Resolution after Thrombolysis in Patients with Acute Myocardial Infarction

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Background: Selvester QRS scoring system was developed for estimating the infarct size from the electrocardiogram (ECG).

Objective: To evaluate the predictive value of the simplified version of this scoring system on ST-segment resolution (STR) mortality in patients with acute ST-elevation myocardial infarction (STEMI) undergoing thrombolytic therapy (TLT).

Methods: We enrolled 100 consecutive patients with their first acute STEMI within 12 hours of onset of chest pain who were candidates for TLT. The Selvester QRS score was estimated on the first admission ECG. Sum of ST-segment elevation amount in millimeters was measured immediately before and 90 minutes after TLT. The difference between these two was measured and expressed as sum of STR (sSTR). All subjects were categorized into two groups: those with sSTR≥ 50% and others with sSTR<50%.

Results: Mean Selvester QRS score was significantly lower in the sSTR≥ 50% vs. sSTR<50% group (2.62±1.50 vs. 8.02±2.96; p= 0.001). Using a cutoff value of ≥3.5 points, the Selvester score had a sensitivity of 81%, specificity of 70%, PPV of 81% and NPV of 70% in predicting sSTR< 50%. Those with anterior STEMIs had larger scores (p< 0.0001) and showed more no-reflow than inferior STEMIs (p= 0.001). Low left ventricular function was associated with higher QRS scores (p= 0.02). During a mean follow up period of about 13±1.7 months, 18.6% of patients with a Selvester score ≥3.5 died compared to 4.4% in the other group (p=0.03).

Conclusion: The Selvester QRS score with ≥3.5 points on admission ECG predicts incomplete STR after TLT. These patients experience higher mortality during one year follow up.

Key words: Selvester QRS score, ST-segment resolution, acute myocardial infarction

Improving the quality of aspirin tablets in the treatment of thromboembolic diseases

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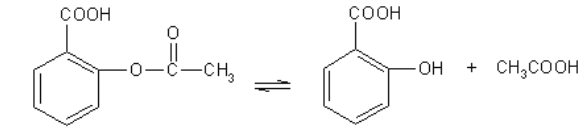
Introduction: Aspirin low dose blocks an enzyme called cyclooxygenase in the platelets and inhibits platelet aggregation in this way. Aspirin tablet is used in thromboembolic disorders, transient ischemic attacks, and reduction of the risk of heart attack in patients with a history of myocardial infarction and unstable angina. Acetylsalicylic acid, also known as aspirin, is an analgesic-antipyretic medicine made by salicylic acid interacting with acetic anhydride. It will be slowly hydrolyzed to salicylic acid and acetic acid in moist air, and aqueous solution has acidic reaction.
Hydrolysis of the drug can be a major reason for the instability of drugs. Thus, when Aspirin undergoes hydrolysis (It absorbs moisture from the atmosphere easily), the degradation products are salicylic acid (as impurity) and acetic acid.



Below studies was performed to find out which combination of excipients in tablet core, which packaging system, which coating system, and which stability condition (Accelerated or intermediated) would be suitable for use in an aqueous enteric film coating aspirin tablets.
Results: A formulation of microcrystalline cellulose (MCC) and partially pregelatinized starch (P-PGS) without any disintegrant was found to provide the necessary properties. In the formulation, MCC provides the compatibility needed to produce a table. P-PGS provides the dissolution characteristics and is responsible for the stability characteristics. Parameters effective on one year stability, Is the goal of the present study. Bioequivalence studies show the satisfactory drug effects.
Keywords: Aspirin, humidity, stability, packaging, coating

Prevalence and predictors of left ventricle regional wall motion abnormality (RWMA) six weeks after primary percutaneous intervention (PPCI) in patients with first acute anterior myocardial infarction (MI)

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Introduction: Regional wall moion abnormality (RWMA) occurs after acute myocardial infarction(MI) ,and this may take place in the area of primary percutaneous coronary intervention(PPCI).The predicting factors of RWMA after primary PCI still need to be clarified. The aim of the study was to assess the prevalence and to define the baseline clinical, angiographic and echocardiographic predictors of RWMA after PPCI in patients with acute anterior MI.

Materials and methods: Of the 110 patients initially selected for the study 107(85men and 22women, mean age 58.21±11.64 years) with first anterior MI treated with primary PCI were evaluated. Transthoracic echocardiographic examination was performed at admission time and after 6weeks.The RWMA was assessed and WMSI was calculated by dividing sum of the wall motion score over the number of visualized segments.

Results : Ninety-one patients (85%) had a positive RWMA. The mean time of the symptom-onset to balloon and door to balloon were 307.27±275.26 and 68.96±81.97 minutes, respectively. It was revealed no statistically significant association between symptom-onset to balloon time and door to balloon time compared with WMSI value (p=0.29, r: 0.105) (p=0.53, r: -0.062). For post-PPCI TIMI flow grades, the patients with a grade II and III TIMI flow had a mean WMSI value of 1.90±0.39and 1.65±0.31, respectively, that was significantly higher in patients with a grade II TIMI flow (p= 0.002) .During follow-up echocardiography, 84 (79.2%) patients had a positive RWMA. Follow-up positive RWMA was significantly lower (7.4%) in patients suffered from stable angina (p= 0.01). Statistically noticeable improvements in the level of WMSI and E/E' ratio during the follow up period of echocardiography was reported. Also there was significant relation between pre and post-PCI LVESV and WMSI compared with post-PCI RWMA (p=0.03,p<0.0001), (p=0.007 , p<0.0001). However, no statistically significant differences were observed in the demographic data and MI risk factors considering the incidence of RWMA and the mean value of WMSI.

Conclusion: In patients with the first acute MI, higher WMS index and LVESV level are strongly related to the RWMA incidence after six weeks which could be applied as predictor factors of RWMA incidence.

Key words: Myocardial infarction,primary PCI, RWMA, WMSI.

Self-care behaviors in patients with heart failure Hospital in Khatam-ol-Anbia Hospital Shushtar in 2017

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Introduction: Compliance with self-care behaviors is an effective factor in reducing the rate of hospitalization, medical expenses and mortality in patients with heart failure.This study aimed to determine the level of adherence of self-care behaviors in patients with heart failure hospitalization in khatamol anbiya hospital of shoushtar was conducted in 2017.

Methods: This was a cross-sectional study that 80 patients with heart failure at least one year experience of developing heart failure admitted to hospital khatamolanbiya in 2017 using convenience sampling were entered into the study. The entry criteria:hospitalized in the intensive care unit of the heart, personal satisfaction, and complete filling of the questionnaire. For this study, of two questionnaires: demographic data and heart failure European self care behavior questionnaire was used. Data analysis with SPSS software version 18 by Descriptive test (frequency distribution, mean and standard deviation) and independent t-test and ANOVA.

Results: Compliance with self-care behaviors was 78% moderate and 14% poor. The mean age was 61.11 ± 7.72. 68.6% history of blood pressure. Lowset Compliance related to daily weight control and Best Compliance to self-care behaviors related to drug and diet regimen . As well as between self-care with age (P=0.001) ,number of chronic diseases (p=0.02), Marital status (P = 0.006), history of high blood pressure (P = 0.002) education (P = 0.03), a significant relationship was observed.

Conclusions: According to the results of the research, it is necessary to provide training on the self-care of patients and to emphasize on its implementation. Therefore, measures should be taken to improve the self-care behaviors of these patients.

Keywords: Self care behaviors, Heart failure,Compliance

Relationship of Malondialdehyde and Lipid profile with Plasminogen Activator Inhibitor -1 (PAI-1) gene polymorphism in Acute Coronary Syndrome

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Introduction: Acute Coronary Arteries are caused by atherosclerosis. Studies have shown that there are several factors that are closely related to the development and progression of the disease, which include cell-binding molecules such as Plasminogen Activator Inhibitor-1 (PAI-1) and lipid peroxidation. In this study, we aimed to investigate the relationship between PAI-1 (4G/5G) gene polymorphism with oxidative stress markers such as malondialdehyde (MDA) and lipid profile.

Methods: In this study, 90 subjects contain 45 patient groups and 45 control groups were considered. Blood samples were taken from all contributors. DNA genome was extracted from the blood and for evaluation of PAI-1 (4G/5G) polymorphism was used from special primer. Polymorphism at - 675 position in the PAI-1 promoter by the PCR-RFLP method were detected. The concentration of MDA in serum samples was evaluated by spectrophotometric method and based on the reaction of thiobarbituric acid. Lipid profile was also measured based on routine laboratory methods.

Results: Serum level of MDA was significantly different in both the patient and control groups. Heart Risk factors such as cholesterol and triglyceride were significantly different between the patient and control groups. The serum HDL level in the patient group was lower than the control group. The distribution of the PAI-1 genotype was that the frequency of the 4G/5G genotype in the patient group Compared with the control group, it was at a higher level (77.8% in the patient group and 22.2% in the control group). In Serum HDL level there was a significant difference between 4G/4G with 4G/5G genotype ($p < 0.001$). In Serum levels of cholesterol, triglycerides and LDL there were significant differences between the three genotypes (4G/4G, 4G/5G and 5G/5G).

Conclusion: 4G/5G polymorphism of PAI-1 gene seems to be a good indicator to evaluate fibrinolytic activity and this polymorphism Causes and inhibits fibrinolytic activity Due to increased plasma levels of PAI-1, Therefore, the risk of cardiovascular disease increases. The results of this study indicate that this genetic change may cause increase cholesterol, LDL or decrease HDL.

Key words: PAI-1 gene polymorphism, MDA, Acute Coronary Syndrome

Risk Factors of Congenital Heart Diseases: A Case-Control Study in Northwest Iran

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Introduction: Congenital heart diseases are of immense importance and also a high prevalence. Contributing factors to developing these defects have not been abundantly studied. Therefore, the current study was conducted aiming at determining the effective factors on Congenital Heart Disease (CHD) in newborn infants of Northwest Iran.

Methods: A case-control study was carried out in North-West of Iran from 2002 to 2012 and a total of 473 infants entered the study. Required data were obtained through check lists completed by the information of hospital records and interview with mothers of 267 newborn infants with CHD together with medical records of mothers as the case group, and 206 medical records of healthy infants at the same period all together with those of their mothers as the control group. The obtained data were statistically analyzed using descriptive statistical methods, T-test, Spearman's correlation coefficient, and Multi-variable Logistic Regression Model (OR with 95% CI), using SPSS.19. In the present study, P value less than 0.05 was considered statistically significant.

Results: Based on the results of univariable analyses, the number of previous cesarean sections, past medical history of diseases, gestational age (GA), fetal weight at birth, diastolic blood pressure, fetal heart rate, pulse rate, fetal hemoglobin and hematocrit levels, and fetal head circumference at birth have significant relationship with incidence of congenital abnormalities ($p<0.05$). Family history, past cesarean sections history, past medical history and GA had significant relationship with CHD incidence.

Conclusion: Based on the results of present study, in order to control and reduce the cases of CHD, it is crucial to make proper decisions and implement policies for reducing cesarean cases, lowering consanguineous marriages, providing proper pre-marriage counseling, prompt treatment of mothers' illnesses, improving pregnancy health care and mothers' health status for the purpose of better well-being of newborn infants.

Keywords: Congenital Heart Disease Risk Factors Newborn Infants Iran

Correlation between the extent of coronary atherosclerosis and Serum/ Dietary Total Antioxidant Capacity

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Introduction: Oxidant stress in the cardiovascular system may occur when antioxidant capacity is insufficient to reduce reactive oxygen species and other free radicals. The possible involvement of oxidative damage in the progression of atherosclerosis has been suggested.

We investigated the relationship between severity of coronary artery disease (CAD) and serum antioxidant status by measuring the serum total antioxidant capacity (sTAC).

Materials and Methods: In this cross-sectional study a total of 160 consecutive patients who were diagnosed as CAD^{+} by coronary angiography.

-At baseline, we collected information about age, job, educational level, marital status, smoking, medications, present and past medical history, family history of CAD by filling the demographic questionnaire. Height, weight were measured by standard tools.

Dietary intakes were assessed by a semi-quantitative food frequency questionnaire (FFQ) with 168 items. Dietary TAC (Total Antioxidant Capacity) was obtained according to United States Department of Agriculture (USDA) Database for oxygen radical absorbance capacity (ORAC).

-After an overnight fasting of 10 h, venous blood samples from participants were collected for Total Antioxidant Capacity of serum.

- The severity of CAD was expressed as the sum of the Gensini scores for each lesion. Patients' demographic variables, medical histories, and clinical features, as well as in-hospital major adverse events, were obtained from the medical reports.

Results : The mean age and BMI of patients were 60.53 (±11.227)and 25.887(± 3.53).

Mean (±SD) of Gensini score, sTAC, dietary TAC were 36.389 (±33.041),4.4368(±2.35), and 14782(±2959.8) respectively. The gensini score had an inverse significant correlation with dietary TAC.

The sTAC values were significantly different between three tertiles of dietary total antioxidant capacity ($p<0.05$).

sTAC had a significant relationship with dietary total antioxidant capacity ($p<0.05$). Gensini scores showed a significant difference between tertile groups of dietary total antioxidant capacity ($p<0.0001$).

Conclusion: The severity of coronary atherosclerosis calculated by Gensini score was negatively correlated with antioxidant status.

Dietary intake of antioxidant resources of food may have an important role against oxidative stress by increasing serum Total Antioxidant Capacity (sTAC), so increasing consumption of fruits and vegetable is emphasized.

Keywords: sTAC, dietary TAC, Gensini Score, nutrition, CAD

Effects of Turmeric Supplementation on Serum Lipid Profile and Blood Pressure in Patients with Nonalcoholic Fatty Liver Disease

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Introduction: Nonalcoholic fatty liver disease (NAFLD) is considered as an independent risk factor for cardiovascular disease (CVD).Dyslipidemia and hypertension contribute to the enhanced risk of CVD in persons with NAFLD. This study aimed to investigate the effects of turmeric supplementation on serum lipids levels and blood pressure (BP) in patients with NAFLD.

Methods: In this double-blind, randomized, controlled clinical trial, 46 NAFLD patients (21 males and 25 females; age range, 20 – 60 years) were randomly assigned in the two groups. The intervention and control groups received 3g of turmeric (n = 23) and placebo (n = 23), daily for 12 weeks. Fasting blood samples and BP measurements were collected at baseline and at the end of the trial.

Results: Turmeric supplementation significantly increased serum levels of HDL-C compared with the placebo group at the end of the study (by 12.73%, $P < 0.05$). Serum levels of TG, TC and LDL-C were significantly reduced within turmeric group at the end of study ($P<0.05$). Systolic blood pressure (SBP) improved in turmeric group compared to its baseline values. Diastolic blood pressure did not change significantly in any of groups.

Conclusion: Turmeric consumption had beneficial effects on serum lipids levels and SBP of subjects and maybe useful in controlling of CVD risk factors in NAFLD patients.

Keywords: Turmeric, Serum lipids, Blood pressure, Nonalcoholic Fatty Liver

Seasonal pattern in admissions and mortality from acute myocardial infarction in elderly patients in Isfahan, Iran

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BACKGROUND: Seasonal variation in admissions and mortality due to acute myocardial infarction has been observed in different countries. Since there are scarce reports about this variation in Iran, this study was carried out to determine the existence of seasonal rhythms in hospital admissions for acute myocardial infarction, and in mortality due to acute myocardial infarction (AMI) in elderly patients in Isfahan city.

METHODS: This prospective hospital-based study included a total of 3990 consecutive patients with acute myocardial infarction admitted to 13 hospitals from January 2002 to December 2007. Seasonal variations were analyzed with the Kaplan-Meier table, log rank test, and Cox regression model.

RESULTS: There was a statistically significant relationship between the occurrence of heart disease based on season and type of acute myocardial infarction anatomical ($P < 0.001$). The relationship between the occurrence of death and season and type of AMI according to International Classification of Diseases code 10 (ICD) was also observed and it was statistically significant ($P = 0.026$). Hazard ratio for death from acute myocardial infarction were 0.96 [Confidence interval of 95% (95% CI) = 0.78-1.18], 0.9 (95%CI = 0.73-1.11), and 1.04 (95%CI = 0.85-1.26) during spring, summer, and winter, respectively.

CONCLUSION: There is seasonal variation in hospital admission and mortality due to AMI; however, after adjusting in the model only gender and age were significant predictor factors.

Myriad Roles of MicroRNAs in Acute Coronary Syndrome

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Introduction: Acute coronary syndrome (ACS) is known as a life-threatening disease. Unstable angina (UA) and acute myocardial infarction (AMI) are two major subtypes of ACS. Attempts to identify molecular diagnostic biomarkers to distinguish this disorder have been ongoing in recent years. MicroRNAs (miRNAs), a class of small noncoding RNAs, evoked a great deal of interest in last years. These main regulatory gene families have been proved to participate in most cardiovascular disease pathogenesis. The aim of the study was to investigate the specific miRNAs as diagnostics, prognostics, and therapeutics biomarkers in patients with ACS.

Methods and Materials: Systematic search of MEDLINE, EMBASE, Pubmed, OVID and Cochrane library were evaluated for all comparative studies since 2000 to 2018 with English language limitation.

Results: On the basis of the results of this study, miR-1, miR-133a, miR-133b, miR-208, and miR-499 have important roles in the diagnosis of AMI. The cluster of miRs-16/27a/101/150, miR-155 and miR-380 were reported to be prognostic indicators for ACS patients. MiR-208b and miR-133a were proposed to be valuable for the diagnosis and prognosis of patients with AMI. A cluster of three miRNAs (miR-132/150/186) have been reported to be biomarkers for the diagnosis and prognosis of UA. Some pioneering studies presented the miR-155 as a new biomarker for cardiac death in post-AMI patients. Other investigations reported the miR-34a as a valuable predicator for the risk of heart failure after AMI through p53 pathway. Furthermore, it was found that miR-126 is a unique biomarker for both AMI and UA.

Conclusion: This paper presents important findings to improve future miRNAs researches. MicroRNAs may be potential biomarkers and therapeutic targets in cardiovascular disease.

Keywords: Acute Coronary Syndrome, MicroRNAs, Unstable Angina, Acute Myocardial Infarction

Predictive factors of short-term survival from acute myocardial infarction in early and late patients in Isfahan and Najafabad, Iran

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BACKGROUND: Cardiovascular disease (CVD) is the primary cause of mortality in the world and Iran. The aim of this study was to determine the prognostic factors of short-term survival from acute myocardial infarction (AMI) in early and late patients in the Najafabad and Isfahan County, Iran.

METHODS: This hospital-based cohort study was conducted using the hospital registry of 1999-2009 in Iran. All patients (n = 14426) with an AMI referred to hospitals of Isfahan and Najafabad were investigated. To determine prognostic factors of short-term (28-days) survival in early and late patients, unadjusted and adjusted hazard ratio (HR) was calculated using univariate and multivariate Cox regression.

RESULTS: The short-term (28-day) survival rate of early and late patients was 96.6 and 89.4% (P < 0.001), respectively. In 80.0% of early and 79.3% of late patients, mortality occurred during the first 7 days of disease occurrence. HR of death was higher in women in the two groups; it was 1.97 in early patients was [confidence interval (CI) 95%: 1.32-2.92] and 1.35 in late patients (CI 95%: 1.19-1.53) compared to men. HR of death had a rising trend with the increasing of age in the two groups.

CONCLUSION: Short-term survival rate was higher in early patients than in late patients. In addition, case fatality rate (CFR) of AMI in women was higher than in men. In both groups, sex, age, an atomic location of myocardial infarction based on the International Classification of Disease, Revision 10 (ICD10), cardiac enzymes, and clinical symptoms were significant predictors of survival in early and late patients following AMI.

Cytomegalovirus infection and coronary artery disease: a single center serologic study in north-western Iran

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Introduction: The role of chronic cytomegalovirus (CMV) infection and inflammation in the pathogenesis of atherosclerosis and coronary artery disease (CAD) is still not clear. In this study we were aimed to investigate the seroprevalence of anti-CMV antibodies and inflammatory markers in patients who were undergone diagnostic coronary angiography for clinical suspicion of CAD.
Methods: In this cross-sectional descriptive study, 181 patients were selected randomly among those who were referred for diagnostic coronary angiography to the Seyyedoshohada Heart Hospital of Urmia, in the north-western region of Iran (Aug 2012- Dec 2013). Patients were categorized into either of CAD or non-CAD groups, based on their angiography findings. Anti-CMV IgG and IgM antibodies were tested using the enzyme-linked immunosorbent assay (ELISA) method (Diapron, Rome, Italy). Serum C-reactive protein (CRP), was measured by a qualitative method (Aniston Kit).
Results: A hundred and forty one patients (77.9%) had atheromatous plaques in their coronary arteries in angiography, and in 40 cases (22.1%), coronary arteries were free of any plaque. Based on the ELISA results, 171 (99.4%), 21 (12.0%), and 112 (62.9%) cases were respectively seropositive for anti-CMV IgG, IgM, and CRP. 99.3% in the CAD group and 100% in the non-CAD group were anti-CMV IgG positive. The rates for anti-CMV IgM seropositivity were 11.7% in CAD group versus 13.2% in non-CAD group, p=0.78. Groups with and without angiographically-documented CAD, had no significant difference in terms of their CRP seropositivity (64.7% vs 56.4%, p=0.34).
Conclusion: Regardless of having angiographically-proven CAD or not, almost all cases who referred for coronary angiography in our study, had a previous exposure with CMV infection as determined by the presence of anti-CMV IgG antibodies in serum. No association was observed between CMV infection and the presence of CAD, which could be justified with the high rate of CMV-specific IgG antibody seropositivity.
Keywords: Cytomegalovirus, coronary artery disease, ELISA, Coronary angiography, IgG

Outcomes of Acute Coronary Syndromes in Iran: A Systematic Review

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Objective: To systematically review ACS care in developing countries in the Middle East, Africa, and Southeast Asia.

Methods: We performed searches on PubMed and Embase for studies published between 1990 and 2017 related to ACS care in Iran including STEMI, thrombolytic and PCI rates, and in-hospital mortality. Our Pubmed keywords included "Iran," "ACS," and "myocardial infarction" . Studies with more than 30 patients that included STEMI and NSTEMI patients or STEMI patients alone were included in the study. We found 82 studies.

Results: Five studies met inclusion criteria including 2,189 patients (913 with STEMI). Most patients were male (62-96%) and were 40-60 years old at presentation. The proportion of patients presenting with a STEMI ranged from 26.8-70.1%. Many cardiology centers did not offer primary PCI with rates of primary reperfusion. The percentage of patients using EMS transport remained under 15%. Cities with smaller hospitals tended to have fewer STEMI patients undergoing reperfusion with thrombolysis [Correlation coefficient: -0.42 (95% CI -0.87, 0.08), p= 0.014].

Conclusion: Using emergency medical facilities, primary PCI for STEMI and thrombolysis is low in Iran likely secondary to underdeveloped infrastructure and lack of resources underdeveloped infrastructure. Further study is required to understand factors that can be targeted for quality improvement efforts.

Keywords: Iran, Acute coronary syndrome, Cardiology, Myocardial infarction

Neutrophil lymphocyte ratio (NLR) and the extent of coronary artery stenosis in patients with non ST elevated-acute coronary syndrome (NSTE-ACS)

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Introduction: Cardiovascular diseases are the leading cause of mortality in Iran and in the world. Considering the importance of inflammation in atherosclerosis, evaluating inflammatory factors and their contribution to cardiovascular diseases is essential. Accordingly, this study evaluates the link between neutrophil lymphocyte ratio (NLR) and coronary artery stenosis in patients undergoing coronary angiography.

Materials and Method: This study was performed on 372 patients who underwent coronary angiography for NSTE-ACS. In addition to demographics, NLR and the extent of coronary artery disease were measured in patients. Chi-Square and ANOVA tests were used to compare the data.

Results: Our study showed a direct and significant correlation between neutrophil lymphocyte ratio and the extent of coronary artery disease (CAD) ($r = 0.125$ and $P = 0.016$). Also, by examining the diagnostic accuracy of the neutrophil lymphocyte ratio in CAD, it was found that the best cut point was 2.4 (the area under the ROC curve was 0.69), with sensitivity of 72.4% and specificity of 58.3%.

Conclusion: Neutrophil lymphocyte ratio is directly and significantly correlated to the extent of involvement of coronary arteries in patients with NSTE-ACS, and it can be used to predict the involvement and extent of CAD.

Keywords: neutrophil, lymphocyte ratio, Coronary Artery Angiography, Extent of involvement.