NEWSLETTER DC-ISAR

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About Delhi Chapter ISAR

Indian Society for Atherosclerosis Research (ISAR) was founded in 1987 with the major aim to advance knowledge of the causes, prevention and treatment of human atherosclerosis, cardiovascular and cerebrovascular diseases in the Indian population, as well as to promote research activities both in the basic sciences and clinical fields of atherosclerosis. Delhi Chapter ISAR was formed following meeting of the National Executive and General body in November 2014. ISAR- Delhi chapter is devoted to promote dissemination of knowledge of various aspects of atherosclerosis and related fields in India.

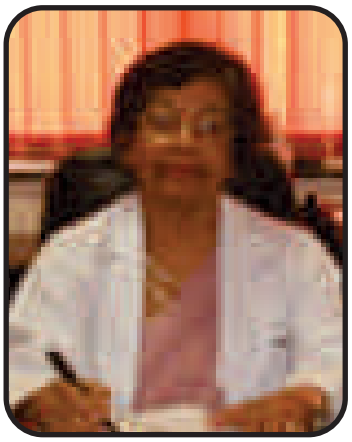
To up the ante against this silent killer, it was prudent for the Delhi Chapter to roll up its sleeves and actively initiate and promote research activities, share and disseminate current understanding about the disease. Working towards its goal, it is organizing its first ever symposium so that current knowledge can be shared. The Delhi Chapter of ISAR envisages being proactive in future and organizing such events at regular and frequent intervals.

Delhi Chapter of ISAR (www.delhichapterisar.co.in) is a state chapter of ISAR (www.isar.co.in) which is a member society of IAS ,the International Atherosclerosis Society (www.athero.org). For financial logistics, membership of Delhi Chapter is to be seperately applied for

Message from Director, LHMC & SSK Hospital

Message from Director G B Pant Institute of Postgraduate Medical Education & Research

President Delhi Chapter-ISAR Message



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It is my proud Privilege to be associated with the Indian Society for Atherosclerosis Research for the Past 25 yrs. In my capacity as President, I have tried to contribute to the growth of this prestigious society.

The Delhi chapter marks another step in our advance towards exploring the origins, progression and behavior of Atherosclerosis : A global burden of mortality, morbidity. We aim to develop it as a platform for continued regular engagement betweenmembers from different fields varying from basic scientist to cardiologist involved in Atherosclerosis Research. The approach would be to integrate basic and clinical research with a focus on development of biomarkers, guidelines for patient care, management of risk factors and exploring the Preventive pathways.

I have personally been working on Endothelial Dysfunction and inflammatory aspects of Atherosclerosis for the last decades and have national and international awards and recognition appreciating our research in Atherosclerosis. It brings me back to the yet unsolved research issues of relative risk, reliable biomarkers and effective management strategies of Atherosclerosis.

I wish all success for the first CME of ISAR- Delhi Chapter.

(Dr. Jayashree Bhattacharjee)
Principal, VMMC & Safdarjung Hospital
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Secretary DC-ISAR Message

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Dear Delhi Chapter ISAR members

It is my immense pleasure that we have been able to form the Delhi Chapter ISAR., which incidentally, is the pioneer in being the first state chapter of Indian Society for Atherosclerosis Research . Delhi is a centre of excellence in cardiac tertiary care as well as in world class research. Along with my active involvement in the National body ISAR for the past15 yrs ,(of which I am currently Vice-President) , I have also nurtured a dream of having a Delhi Chapter ISAR, to support and promote the activities of the National body ISAR in the area of Atherosclerosis Research

The focus of all medical research is , or should be , the translation of research ultimately to patient care . And this is where this multi-disciplinary society fulfils this need .As the epidemic of CAD continues to surge inspite of all measures, ISAR provides the basic researchers , the scientists , the physicians , the cardiologists , the pharmacists and any person involved in Atheroscerosis research, a common platform to brainstorm the knowledge for better understanding , evaluation , prevention and treatment of CAD .

We are proud to organize the first CME/Symposia of Delhi Chapter ISAR at Lady Hardinge Medical College on 15th May 2015 as well as release the first Newsletter of DC-ISAR in the year 2015 . The symposia presents a mix of posters and Quiz , Clinical update and basic research invited talks by the best in the field , a calculation of your 10yr risk for MI as per the Procam trial - in addition, a platform to exchange your knowledge and views in the field of Atherosclerosis.

In the short span of a couple of months we are pleased to inform you that we have an updated website in place (www.delhichapterisar.co.in) and have welcomed more than 60 members to the Delhi Chapter ISAR

Personally I have been working on Genetics of HDL associated proteins, Apo A1 SNP's, CETP,LCAT, Paroxonase genetics, MMP-9 metalloproteinases ,oxidative stress markers and inflammation associated with Atherosclerosis and we have numerous national awards as well as International awards for our work .

Looking forward to a fruitful association

Dr RITU SINGH

Acute Coronary Syndrome: Update on Diagnosis & Management

Dr Sanjay Tyagi

MD, DM, FAMS, FESC, FCSI, FAPI, FACC

Director, G B Pant Institute of Postgraduate Medical Education & Research
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The term "acute coronary syndrome" encompasses a range of thrombotic coronary artery diseases, including unstable angina and both ST-segment elevation and non-ST-segment elevation myocardial infarction(MI). Inflammation, thrombosis and atherosclerosis are interdependent and define a triad within the complex pathogenic process of atherothrombosis. The composition of the atherosclerotic plaque, rather than the percent stenosis, appears to be a critical predictor for both risk of plaque rupture and subsequent thrombogenicity. A large lipid core, rich in tissue factor (TF) and inflammatory cells including macrophages, and a thin fibrous cap with compromise of its structural integrity by matrix degrading enzymes, such as metalloproteinases (MMPs), render a lesion susceptible to rupture and subsequent acute thrombosis. Thrombosis may lead to a complete occlusion or, in the case of mural thrombus or intraplaque hemorrhage, to plaque progression. Disruption of a vulnerable or unstable plaque (type IV and Va lesions of the AHA classification) with a subsequent change in plaque geometry and thrombosis may result in an acute coronary syndrome. The high-risk plaque tend to be relatively small, but soft or vulnerable to "passive" disruption because of high lipid content. Inflammatory processes are important components of all stages of atherosclerotic development, including plaque initiation and disruption. Unstable angina and non –ST segment elevation MI are generally associated with white, platelet-rich, and only partially occlusive thrombus. In contrast, ST segment elevation MI has red, fibrin rich, and more stable occlusive thrombus.

Diagnosis requires an electrocardiogram and a careful review for signs and symptoms of cardiac ischemia. In acute coronary syndrome, common electrocardiographic abnormalities include T-wave tenting or inversion, ST-segment elevation or depression (including J-point elevation in multiple leads), and pathologic Q waves. Risk stratification allows appropriate referral of patients to a chest pain center or emergency department, where cardiac enzyme levels can be assessed. Most high-risk patients should be hospitalized. Intermediate-risk patients should undergo a structured evaluation, often in a chest pain unit. Many low-risk patients can be discharged with appropriate follow-up. Troponin T or I generally is the most sensitive determinant of acute coronary syndrome, although the MB isoenzyme of creatine kinase also is used. Early markers of acute ischemia include myoglobin and creatine kinase-MB subforms (or isoforms), when available. Patients with these syndromes are at varying degrees of risk of (re) infarction and death. This risk can be reliably predicted by clinical, electrocardiographic, and biochemical markers.

Aspirin, clopidogrel, heparin (unfractionated or low molecular weight), and anti-ischaemic drugs should be offered to all patients, irrespective of the predicted level of risk. The discovery of platelet glycoprotein (GP) IIb/IIIa receptor antagonists has been a major advance in the pharmacotherapy for patients undergoing PCI and those presenting with ACS without ST-segment elevation. Patients at high risk should also receive a glycoprotein IIb/IIIa receptor inhibitor and should undergo early coronary arteriography with a view to percutaneous or surgical revascularisation. . Early angiography followed by revascularization when appropriate also reduces rates of death, MI, and recurrent ischemia in patients with non-ST-segment-elevation acute coronary syndromes, with the greatest benefits realized in the highest risk patients. Among patients with non-ST-segment-elevation acute coronary syndromes with multivessel disease, goal is complete ischemic revascularization.

In patients with ST-segment-elevation myocardial infarction timely reperfusion of the infarct-related coronary artery 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.

Quest towards identifying markers for coronary artery disease: A proteometabolomic approach

Shantanu Sengupta

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Coronary artery disease (CAD) is one of the largest causes of mortality and morbidity. There are several traditional risk factors identified for CAD. However, these lack the desired predictive accuracy. Thus, it is important to identify newer markers of CAD which could lead into better disease management. With the advent of mass spectrometry and advances in techniques like quantitative plasma proteomics and metabolomics it is now possible to to identify such newer markers.The present study was aimed to identify differentially expressed proteins in stable CAD patients and was done in three phases. In the first (discovery) phase, plasma from angiographically proven CAD cases and population based controls were subjected to iTRAQ based proteomic analysis. Proteins found to be differentially expressed were then validated in the second and third (verification and validation) phases in larger number of (n=546) samples. After rigorous statistical analysis adjusting for confounding factors (age, diet, etc.), four proteins involved in the reverse cholesterol pathway (Apo A1, ApoA4, Apo C1 and albumin) along with diabetes and hypertension were found to be significantly associated with CAD and could account for approximately 88% of the cases as revealed by ROC analysis. The maximum odds ratio was found to be 6.70 for albumin ($p<0.0001$), followed by Apo AI (5.07, $p<0.0001$), Apo CI (4.03,$p=0.001$), and Apo AIV (2.63, $p=0.003$). Down-regulation of apolipoproteins and albumin implicates the impairment of reverse cholesterol pathway in CAD.

Apart from proteomics, an attempt was made to identify metabolites that could have differential levels in CAD patients using an untargeted LC-MS based metabolomics approach. Blood samples from angiographically proven CAD cases controls were analyzed in this study. 100 µl of plasma was precipitated using 200 µl of acetonitrile. Using reverse phase and HILIC based chromatography followed by mass spectrometry we identified a total of 32 metabolites (2 fold; $p<0.05$) in plasma whose levels were significantly altered in CAD samples. Further, we have validated the discriminative ability of these metabolites in an independent set of CAD and control samples using multivariate PLS-DA analysis. Interestingly, Lyso PC(18:0), Cortisol, Lyso PC (P-17:0), glycerophosphocholine were among the top discriminators for CAD which implies involvement of phosphatidylcholine pathway in the pathogenesis of atherosclerosis.

DR Atul Goel Msg

Recent advances in Cardiovascular Diseases

Dr Parul Goyal
Associate Professor, Biochemistry, PGIMER-Dr RML Hospital, New Delhi

Indian Scenario

Worldwide the number of deaths from cardiovascular diseases is on the rise, revealed a new study by University of Washington. Globally, the number of deaths due to cardiovascular diseases increased by 41% between 1990 and 2013, climbing from 12.3 million deaths to 17.3 million deaths. India is facing an epidemic of cardiovascular disease. Indians have been reported to have the highest incidence of CAD. The prevalence rate is almost 80-120 per 1000 population. South Asia, which includes India, experienced the largest jump in total deaths due to cardiovascular diseases, with 1.8 million more deaths in 2013 than in 1990, an increase of 97%. CAD also occurs more prematurely, often affecting people under the age of 40 years. The overall disease burden in Asian Indians is estimated to be over three times greater than the Caucasians in United States, 6 times that of Chinese and about 20 times higher than the Japanese population . In addition, over 3-6 times greater susceptibility to type 2 diabetes mellitus (Ty2DM) among South Asians than any of the Western population and a unique 'apple shaped' pattern of fat distribution with increased waist circumference as opposed to low BMI, have precipitated the increased prevalence of metabolic syndrome, a well-known antecedent for CAD. Chambers J, et al in their study concluded that homocysteine was an independent risk factor in Asian Indians, which probably contributed to the increased CAD risk.

Cardiovascular risk assessment

Early assessment of endothelial dysfunction and evaluation of cardiovascular health is an attractive and economically viable alternative to address the growing concern of CVD burden in the young Asian Indian population. We have acquired adequate diagnostic capabilities to accurately assess the extent of disease severity in clinically symptomatic patients of heart disease, well complimented by numerous options for medical and surgical therapies to redress their suffering. However, there are as yet no clinically applicable measures to assess early vascular changes in asymptomatic individuals. Non-invasive assessment of Carotid Intima Media Thickness (CIMT) is a strong predictor of future vascular events. In a 6-year follow-up in the Whitehall II study, systemic endothelial dysfunction was associated with progression of preclinical carotid arterial disease as assessed by CIMT changes rather than the traditional risk factors . Flow-mediated dilatation testing provides an integrated vascular measure that may aid the prediction of structural disease evolution and represents a potential short- to intermediate-term outcome measure for evaluation of preventive treatment strategies.

Newer molecules/markers

The non-physiological changes in the expression levels of proteins for inflammation, proteolytic injury, oxidative stress etc can serve as excellent markers that find utility in the diagnosis, prognosis and therapeutic application in CVD. The role of newer biomarkers such as macrophage activity (MCP-1, Neopterin), tissue remodeling (MMP-9), inflammation (serum phospholipase A2), thrombosis (tissue-factor), platelet activation (CD-40 & CD-40L), B-type natriuretic peptides (BNPs) and oxidative stress (prolidase, myleopreoxidase) , have evoked tremendous interest in cardiovascular medicine and are emerging as attractive candidate biomarkers that may allow risk stratification at the individual level. Incorporation of these novel factors into established risk scores such as the Framingham risk score can lend a new dimension to future assessment of atherosclerotic burden at the individual level.

Newer concepts in active prevention & management

Prevention, stabilization and regression of atherosclerotic plaques may have a major impact on reducing the risk of acute coronary events. Lifestyle factors play an important role in preventing cardiovascular disease. The ACC (American College of Cardiology) recommends physicians provide dietary guidance to patients at risk for or with established CVD.A new survey from NYU Langone Medical Center for the Prevention of Cardiovascular Disease found that majority of doctors would welcome additional training in diet and nutrition so that they can effectively inform patients on the subject. The study will be presented at the ACC's 64th Annual Scientific Session.

As per the research from the University of Toronto and Massachusetts General Hospital, new understanding of how macrophages reproduce within the plaque calls for the re-evaluation of current atherosclerosis therapy. Research has been concentrated on therapies that would block white cells from getting into the plaques, but not the growth of cells within the plaque. With more research, scientists may use statins -- which also have anti-inflammatory properties -- to limit the spread of macrophages within the plaques, besides their use as lipid lowering agents.

The researchers at the Swedish medical university Karolinska Institute have produced a vaccine against the T cell receptors, and managed to inhibit inflammation leading to the development of atherosclerosis in animals. The study is expected to be of considerable significance to the future treatment of atherosclerosis, heart attack and stroke.

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Current Activities by Delhi Chapter- ISAR

The first symposia of DC_ISAR on "Recent Advances in Cardiovascular Diseases " is being organized by the Delhi Chapter ISAR and the Department of Biochemistry, under the aegis of LHMC Centenary Celebrations, on 15th May 2015.

It is our proud privilege to have Dr Sanjay Tyagi , Director, G B Pant Institute of Postgraduate Medical Education & Research, as Chief Guest and Invited speaker as well as a Dr Shantanu SenGupta, from CSIR Institute of Genomics and Integrative Biology, New Delhi as Guest Speaker.

More than 150 Delegates from various intitutes and Hospitals in Delhi NCR including AIIMS,MAMC,LHMC,RML,Sir Ganga Ram Hospital, Medanta, Escorts are registered for this CME. The symposia includes poster presentations and quiz contest focusing on Atherosclerosis and Coronary Artery disease . The best posters and quiz winners will be awarded .

It is indeed a matter of great pride and pleasure to welcome more than 60 members to this Delhi Chapter society, and in the future also we hope to get such overwhelming response from researchers and clinicians from various disciplines to join us and contribute in a big way towards atherosclerosis related research and patient care.

Upcoming Events

1. ISARCON-2015 28TH Annual Conference Indian Society For Atherosclerosis Research , 29th - 31st October, Jamia Hamdard Institute of Medical Sciences, Delhi, isarcon2015.org
2. ISA 2015,17th International Symposium On Atherosclerosis,23 - 26 May 2015 , Netherlands, Amsterdam, www.isa-2015.com
3. EAS 2015 GLASGOW, 83rd EAS Congress, UK,22 March2015, www.eas-society.org
4. 67th Annual Conference of CSI -2015, 3-6 December, Kerala. http://www.csicon2015.com

Membership form for ISAR-DC

INDIAN SOCIETY FOR ATHEROSCLEROSIS RESEARCH
Delhi Chapter

Email :secretary.delhi.chapter.isar@gmail.com

Website :www.delhichapterisar.co.in

Name :

Designation :

Office address with Phone no:

Residence address with phone no :

Academic Qualifications :

Area of Research :

Details of Publication/presentation/poster/thesis in atherosclerosis and related areas

Membership applied for

- Delhi Chapter ISAR –Life Member (Fee : Rs 1,000)
- Delhi Chapter ISAR – Annual Member (Fee: Rs 500)

Nominated by (Life member of ISAR national body with his/her LM no)

Demand draft/Cash/ Multicity or local cheque should be made in name of Delhi Chapter ISARand should reach Secretary or Treasurer ISAR .

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Siting (Lto R): Dr. Anjali Arora, Dr.SB Sharma,Dr. J. Bhattacharjee,Dr. S.Dwivedi, Dr. D.K.Srivastav, Dr. J. Gambhir

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This newsletter was compiled by Dr Parul Goyal and Prof.(Dr) . Ritu Singh