Milan Cardiology

HIGHLIGHTS

Fondazione
Internazionale
Menarini

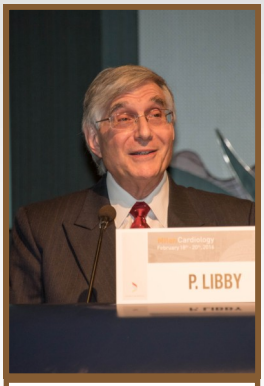
Milan(Italy)
February 18th - 20th, 2016

HIGHLIGHTS

Welcome to Milan!

Paolo G. Camici
(Milan, Italy)

Prof. Camici, Chairman of the convention and Prof. Libby, opened the congress works by emphasising the link between the San Raffaele School of Cardiology and the Harvard School of Cardiology, a link on which the scientific organisation of the convention is based. Prof. Libby then added that collaboration among the international research teams is essential for being able to conduct clinical trials at a global level. Overcoming the barriers between the individual states is the first step towards acquiring global knowledge and also improving the health of humanity.



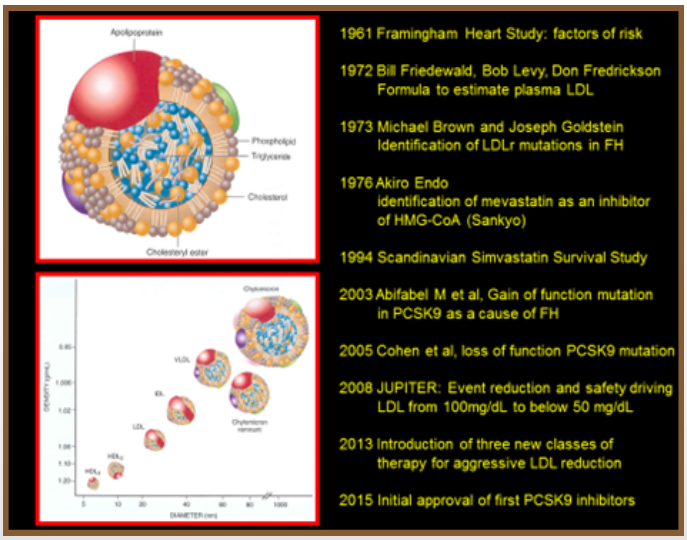
Peter Libby
(Boston, USA)

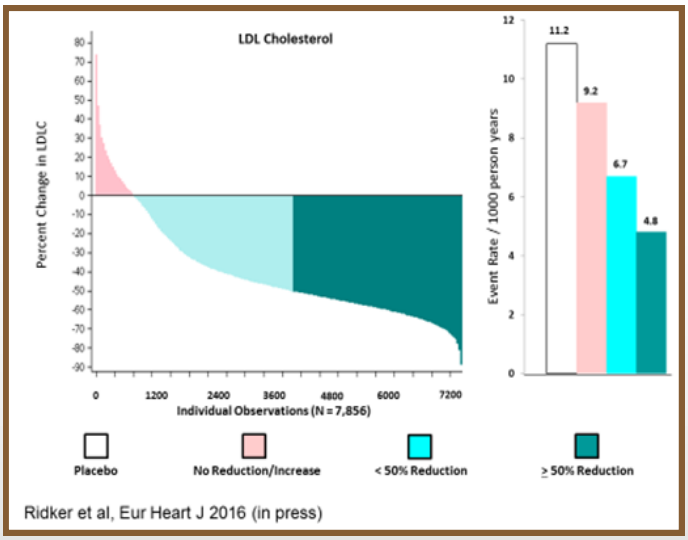
HIGHLIGHTS

The plasmatic level of LDL: new goal standards

Paul M. Ridker
(Boston, USA)

In his talk, Prof. Ridker from Boston presented extremely interesting data on the residual incidence of cardiovascular events linked to the individual response to statins. Over the years, the guidelines and meta-analyses published in the main world journals have based their conclusions on the average reduction of LDL levels obtained with statins. In this way, the correlation between treatment for lowering cholesterol levels and the response of the individual patients have passed into the background. This correlation is instead essential because the individual response to statins is characterised by an extremely high variability that significantly influences the protective effectiveness of these drugs in terms of a reduction in the cardiovascular events. Pharmacological research is currently developing new cholesterol-lowering treatments based on innovative actions. Standing out amongst these are the PCSK9 enzyme inhibitors in the form of monoclonal antibodies. In patients who fail to respond in an optimal manner to statin-based therapy, the use of these new agents could significantly reduce the residual risk of the onset of a cardiovascular event. It is also extremely important to treat the residual inflammatory risk that is closely linked to the plasmatic levels of LDL in these patients.





What is the impact of cholesterol-lowering treatment on the plasmatic levels of LDL?
Do all patients respond in a significant manner to statin-based treatment?
What are the new pharmacological classes currently being studied for the treatment of familial hypercholesterolaemia?

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Chronic inflammatory conditions and Cardiovascular disease

Juan Carlos Kaski
(London, UK)

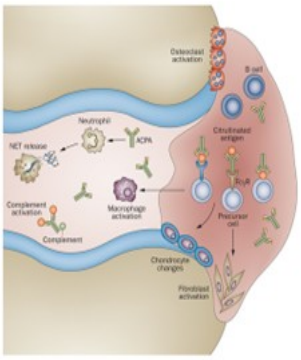
Prof. Kaski from London spoke about the correlation between chronic inflammation and cardiovascular disease. Patients suffering from rheumatic disease and systemic lupus erythematosus have a high risk of the onset of cardiovascular events. Underlying this correlation, an extremely important role is played by the T and B lymphocytes since they are among the main activators of the inflammatory processes and the processes that give rise to atherosclerotic plaques. Data in literature report that among patients suffering from rheumatic disease there is a high percentage of cases of instable plaques. At the basis of this phenomenon there are specific physiopathological mechanisms that determine lesions of the joint cartilage and lesions and laceration of the atherosclerotic plaques. The esosomes and the micro-particles deriving from the leukocytes, platelets and endothelial cells are responsible for conveying the micro-RNA, autoantigens and cytokines, causing the onset and development of the atherosclerotic plaques in these patients.

Chronic Inflammation and Rapid Coronary Artery Disease Progression

- ✓ Chronic rheumatoid diseases /CV risk
- ✓ The association with accelerated atherosclerosis
- ✓ Inflammatory mechanisms

Similar Pathophysiologic Mechanisms in RA Joint Damage and Atheromatous Plaque Disruption

There are fundamental similarities between inflammatory mechanisms involved in the joint destruction by rheumatoid arthritis and atheromatous coronary artery plaque disruption that leads to ACS and rapid disease progression.



What relationship exists between rheumatic disease and atherosclerosis?
What role do the T and B lymphocytes play in determining these phenomena?
Why do patients suffering from systemic lupus erythematosus have a higher incidence of cardiovascular events?
What is the role played by the cytokines?

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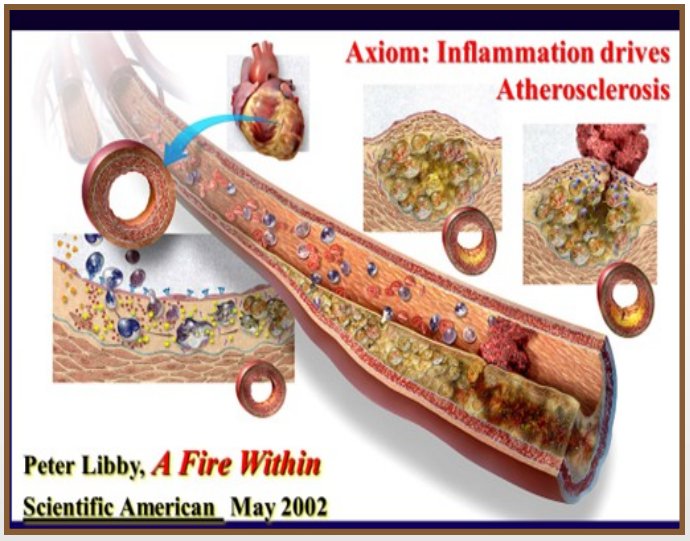
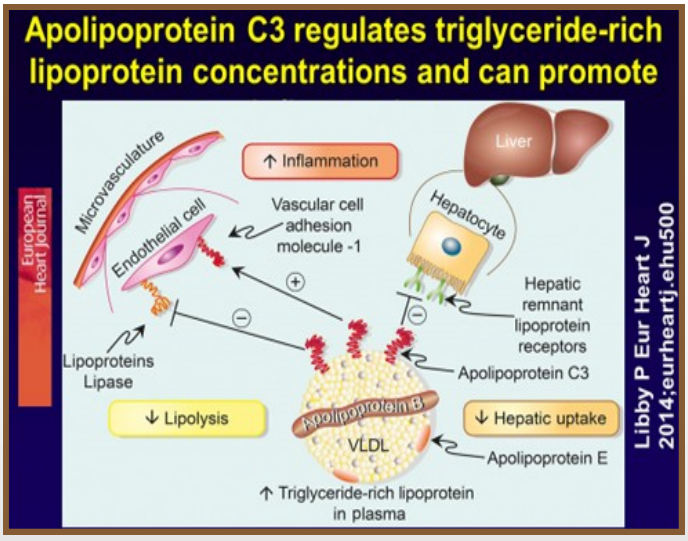
The interface between inflammation and Atherosclerosis: new findings

Peter Libby
(Boston, USA)

Prof. Libby from Boston presented data that radically revolutionise this correlation. A fundamental notion of physiopathology of the atherosclerotic plaque is represented by the role of the oxidised LDLs as a triggering factors of the inflammatory phenomena that represent the first movens, but is this really the case? Another pillar of the physiopathology of the atherosclerotic plaque is represented by the protective role played by the HDL in its determinism, however, also in this case, is it really so? Recent data in literature based on genetic studies shed doubts on these "certainties" – the oxidised LDLs do not give rise to any inflammatory phenomenon, rather, it is the native LDLs that stimulate the so-called adaptive immunity. The increase in the HDL levels is not correlated to any reduction in the cardiovascular events in patients suffering from familial hypercholesterolaemia. It is the triglyceride-rich lipoproteins and those rich in apoprotein 5 that are correlated in a significant manner with the cardiovascular risk. These triglyceride-rich lipoproteins have an elevated pro-inflammatory activity, decidedly higher than that of the LDLs. At this stage, the traditional axioms that link atherosclerosis to inflammatory phenomena must be reviewed in a radical manner. In particular, it is necessary to review the role of the LDLs, the HDLs and the triglycerids in the determinism of the atherosclerotic plaque.





What are the main mechanisms that determine the onset of the atherosclerotic plaque?
What are the principal pro-inflammatory phenomena?
What is the role of apoprotein 5 in determining these inflammatory phenomena?
What is the role of triglycerides in the determinism of the atherosclerotic plaque?

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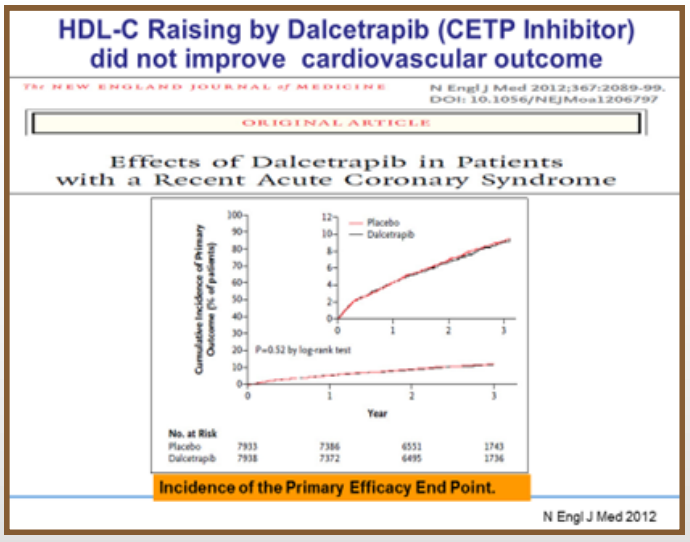
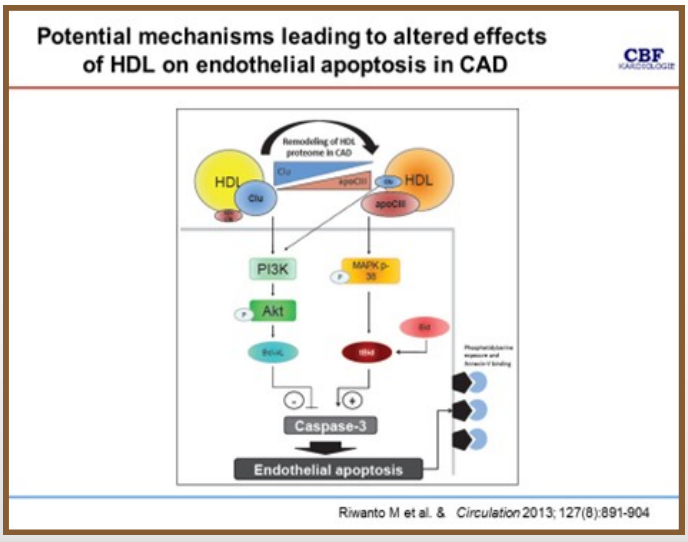
HDL and coronary disease

Ulf Landmesser
(Berlin, Germany)

Prof. Landmesser from Berlin spoke about the link between HDL and coronary disease in the light of the new findings in the scientific field. Starting from the data of the PROCAM study that seem to demonstrate a significant correlation between the increase in the plasmatic levels of HDL and the reduction in cardiovascular events, data published in 1993, Prof. Landmesser addressed the role of HDL in the determinism of cardiovascular disease. What emerges is that the use of drugs that have the sole effect of increasing the HDL levels, do not give rise to any reduction in terms of the incidence of cardiovascular events in patients at risk. Even more specifically, in patients suffering from cardiovascular disease, the HDLs are subjected to a series of mutations that alter not only their structure but also their function, significantly reducing their presumed protective effect on the development of atherosclerotic lesions. A similar effect has also been demonstrated in patients suffering from chronic renal failure, where the modified HDLs were themselves the promoters of inflammatory events at the endothelial level. All these data indicate that the HDLs are not in themselves independent protective factors with regard to the development of the atherosclerotic disease.





What are the main links between the plasmatic levels of HDL and coronary disease?
What are the hypothetical actions of the HDLs at the level of the endothelial wall?
Which phenomena do the HDLs face during the atherosclerotic disease?

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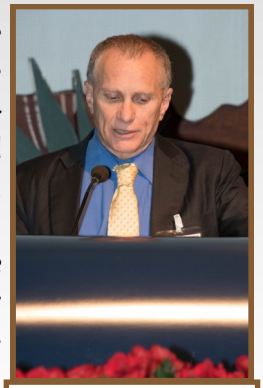
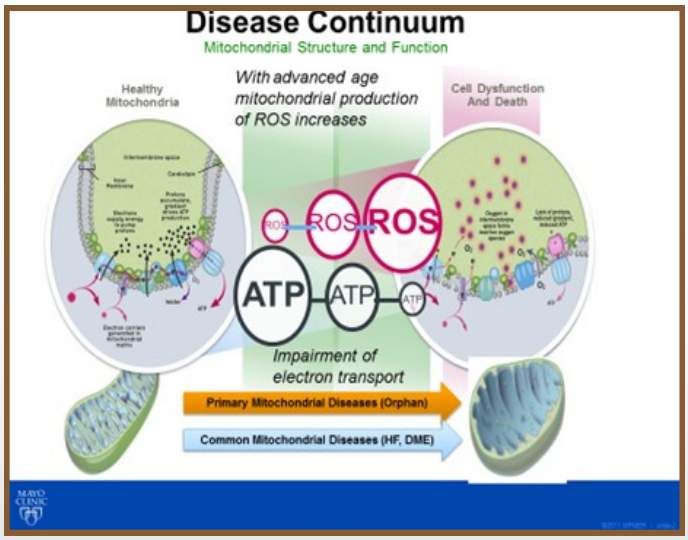
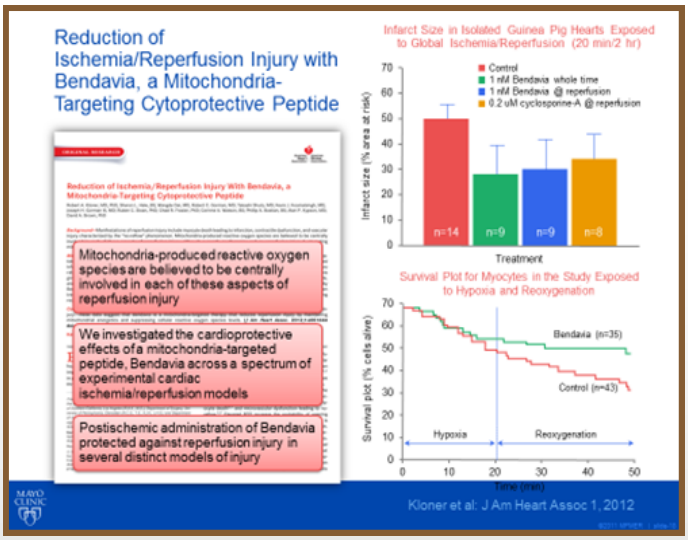
The mitochondrial dysfunction



Amir Lerman
Rochester, USA)

Prof. Lerman from Rochester spoke about mitochondrial dysfunction that gives rise to a reduction in the production of ATP and an increase in that of ROS at the same time that the ageing phenomena become more prevalent. There are so-called primary pathological situations, other forms are characterised by heart failure and atherosclerosis. The mitochondrial dysfunction has effects on the entire organism since the mitochondria are fundamental elements found in all the cells of our body. The speaker then discussed the effects of the new drugs on specific peptides that are captured by the mitochondria. This is the case of Bendavia which, by selectively bonding with the cardiolipin, prevents its peroxidation, thereby inhibiting the opening of the pores that regulate the mitochondrial permeability. The effect on mice gives rise to the reduction in the progression of atherosclerotic disease. Another innovative aspect is linked to the study of those peptides that are produced inside the mitochondria and then expelled later on: the so-called peptides of mitochondrial derivation. Prof. Lerman then presented data from a recent publication on some of these peptides, most importantly, humanin, which from preliminary studies seems to have a protective effect on the endothelium.





What are the principal diseases that develop following mitochondrial dysfunction?
What are the main physiopathological phenomena that determine the development of endothelial dysfunction?
What are the principal target peptides at a mitochondrial level?
What are the principal peptides of mitochondrial derivation?

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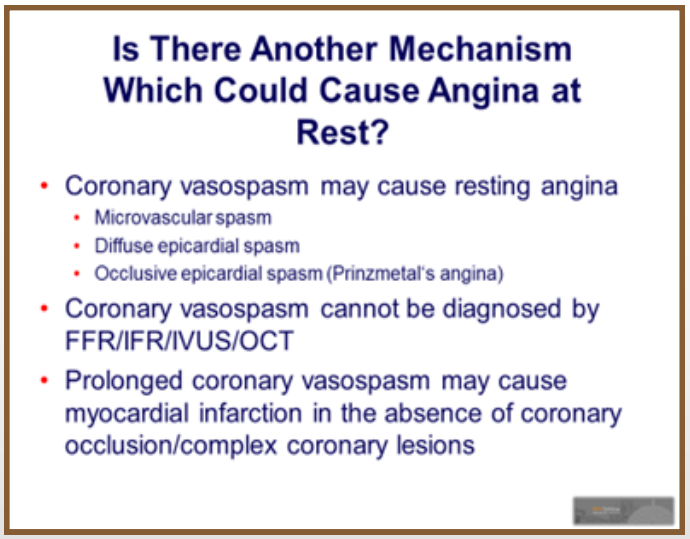
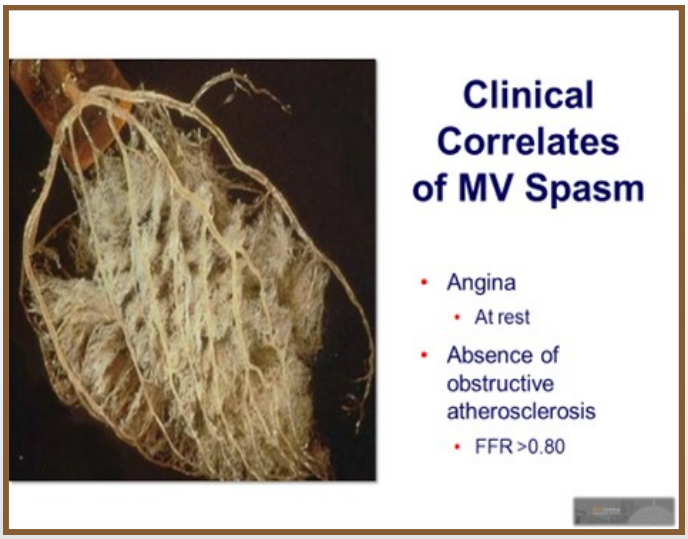
The microvascular spasm

Udo Sechtem
(Stuttgart, Germany)

Prof. Sechtem from Stuttgart presented very interesting data on this topic: the so called microvascular spasm. Angina at rest can be supported by specific pathological situations characterised for the main by the presence of occlusive lesions at the level of the coronary tree. However there are situations in which these symptoms are present without any apparent triggering causes. This is the case of the coronary vasospasm, in turn divided into three main forms: microvascular spasm, diffused epicardial spasm and occlusive epicardial spasm. These situations cannot be diagnosed by using the common echocardio-angiograph techniques, apart from which, in the case in which the vasospasm is prolonged over time, it can be the cause of myocardial infarction. More specifically, the microvascular spasm can be considered a diffused coronary spasm which starts from the smaller-gauge vessels and spreads proximally to the entire coronary tree. In all likelihood, at the basis of this form there is an increase in the microvascular susceptibility to vasoconstrictive stimuli. In order to diagnose this, there must be the presence of repeated angina attacks in the absence of specific coronary lesions as well as positivity to the acetylcholine test.





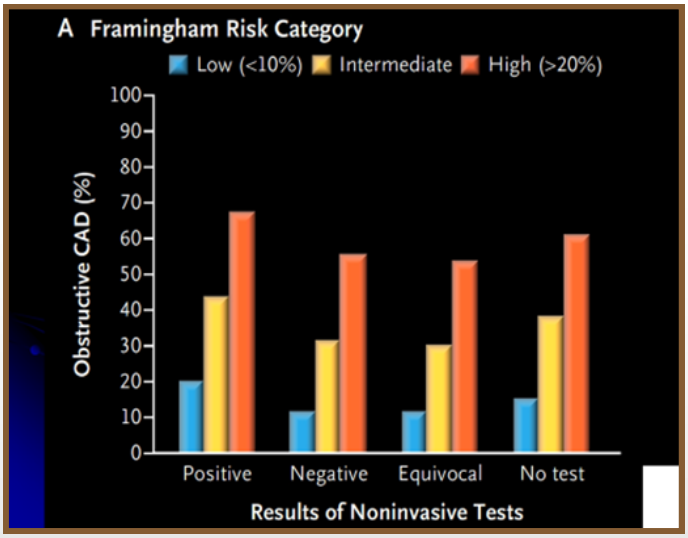
What are the physiopathological bases of microvascular spasm?
What is the incidence of this form that determines angina at rest?
What is the effectiveness of the STENT in reducing angina attacks in these patients?
How is it possible to diagnose the presence of microvascular spasm?

HIGHLIGHTS

Coronary ischaemia beyond epicardial stenosis

Prof. Marzilli from Pisa addressed the topic of myocardial ischaemia in relation to the presence of epicardial stenosis. In actual fact, both situations seem to be unrelated, in other words also when the cause of stenosis is removed, or in numerous cases where no stenotic lesions are present, there is the presence of coronary ischaemia. How can this phenomenon be explained? One possible answer is that myocardial ischaemia correlates with the presence of angina but not with the presence of coronary stenosis. At this point, the speaker presented data on the correlation between myocardial ischaemia and a whole series of physiopathological conditions such as endothelial dysfunction, mitochondrial dysfunction, platelet dysfunction, microvascular dysfunction and other similar situations.

Mario Marzilli
(Pisa, Italy)



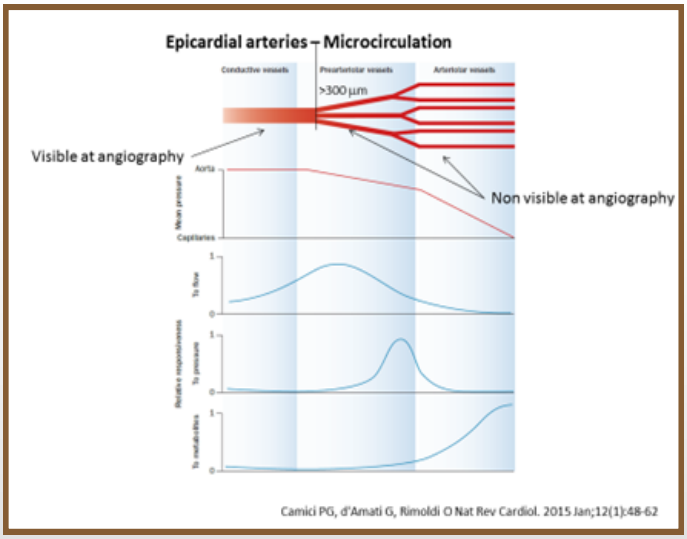
What are the underlying causes of the scarce correlation between myocardial ischaemia and epicardial stenosis?
Why does coronary disease fail to correlate with the angina symptoms?
Just how much is the coronary-angiography really predictive?
What correlation exists between coronary stenosis and the coronary flow reserve?

HIGHLIGHTS

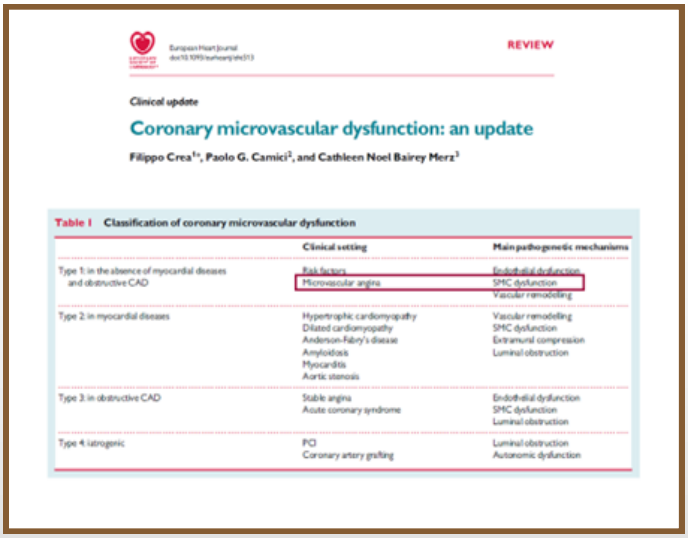
The coronary microvascular dysfunction: a broad spectrum disease

Paolo G. Camici
(Milan, Italy)

Prof. Camici from Milan addressed this topic, starting from the statement that only a small part of the cardiovascular tree is visible with the normal angiographic techniques. He then described the principal physiopathological mechanisms that characterise the microvascular dysfunction, specifying that at the basis there may be structural and/or functional vascular alterations, but also extra vascular causes. The microvascular dysfunction is in turn one of the determining causes of myocardial ischaemia, together with atherosclerotic disease and vascular spasm. The speaker then analysed the main pathological forms that make up the picture of the microvascular dysfunction. There are 4 types: the first is characterised by the presence of angina in the absence of cardiovascular disease, at the basis of which there may be the phenomena of endothelial dysfunction and/or vascular remodelling. The second type is characterised by the presence of myocardiopathies such as hypertrophic and/or dilatative cardiomyopathy, amyloidosis, myocarditis and aortic stenosis; at the basis of this type there may be vascular remodelling conditions as well as intraluminal obstruction or extraluminal compression. The third type is characterised by the presence of obstructive cardiovascular disease that gives rise to stable angina up to the acute coronary syndrome; at the basis of these forms there may be conditions of endothelial dysfunction. Finally the fourth type is characterised by the presence of iatrogenic diseases. The triggering causes may be the PCI and coronary bypasses; also at basis of these cases there may be intraluminal obstruction or conditions of autonomic dysfunction.



Camici PG, d'Amati G, Rimoldi O Nat Rev Cardiol. 2015 Jan;12(1):48-62



REVIEW

Clinical update

Coronary microvascular dysfunction: an update

Filippo Crea[1]*, Paolo G. Camici[2], and Cathleen Noel Bairey Merz[3]

Table 1 Classification of coronary microvascular dysfunction

	Clinical setting	Main pathogenetic mechanisms
Type 1: in the absence of myocardial diseases and obstructive CAD	Risk factors	Endothelial dysfunction
	Microvascular angina	SMC dysfunction
		Vascular remodelling
Type 2: in myocardial diseases	Hypertrophic cardiomyopathy	Vascular remodelling
	Dilated cardiomyopathy	SMC dysfunction
	Anderson-Fabry's disease	Extramural compression
	Amyloidosis	Luminal obstruction
	Myocarditis	
	Aortic stenosis	
Type 3: in obstructive CAD	Stable angina	Endothelial dysfunction
	Acute coronary syndrome	SMC dysfunction
		Luminal obstruction
Type 4: iatrogenic	PCI	Luminal obstruction
	Coronary artery grafting	Autonomic dysfunction

What is the limit of the main angiographic techniques?
Which are the principal physiopathological mechanisms underlying the microvascular dysfunction?
Which are the main clinical pictures determined by the microvascular dysfunction?

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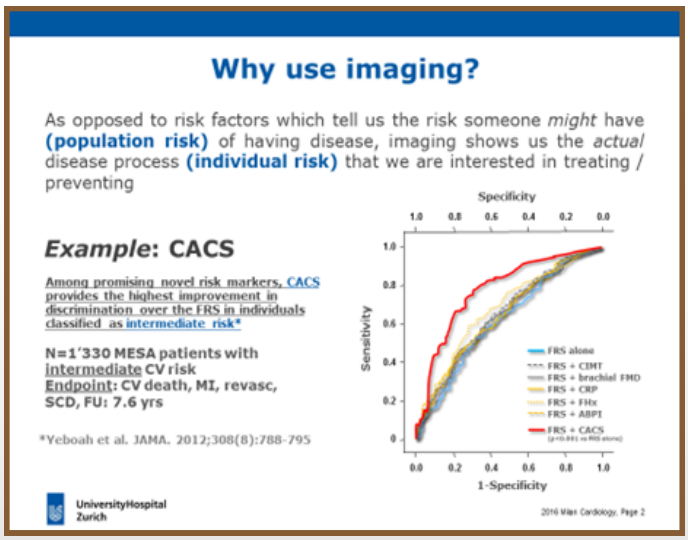
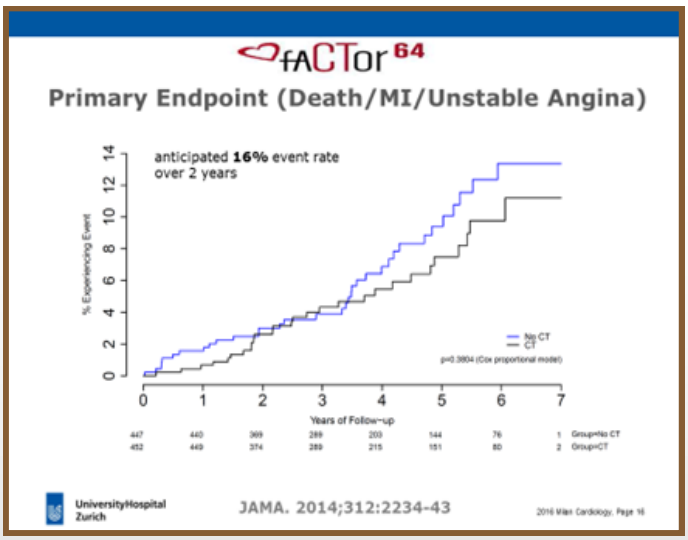
The prognostic value of coronary angiography with computed tomography (Angio CT) in asymptomatic patients

Oliver Gaemperli
(Zürich, Switzerland)

The use of Imaging techniques is essential for switching over from a risk analysis based on the population to an analysis of the individual risk. With these words Prof. Gaemperli from Zurich started his talk. The Angio CT has become an extremely useful tool in asymptomatic subjects for the purpose of assessing their level of individual risk. The clincal and registry studies have analysed the data relating to tens of thousands of patients, making it possible to build an extremely indicative risk curve. In addition, with the la Angio CT it is possible to identify the so-called vulnerable plaques and also to characterise them from a morphological point of view. The Angio CT is therefore able to become a useful tool for identifying patients at risk and for establishing the relative preventive strategies characterised mainly by the changing of their lifestyle, with a reduction in their LDLs and blood pressure and the keeping of their glycaemia in check. However, despite the presence of extremely indicative data regarding the prognostic value of the Angio CT, its application for the screening of asymptomatic patients has not yet been recommended by the guidelines. Underlying this decision are various influencing factors such as the cost analysis of the method and also the level of radiation to which patients would be exposed.





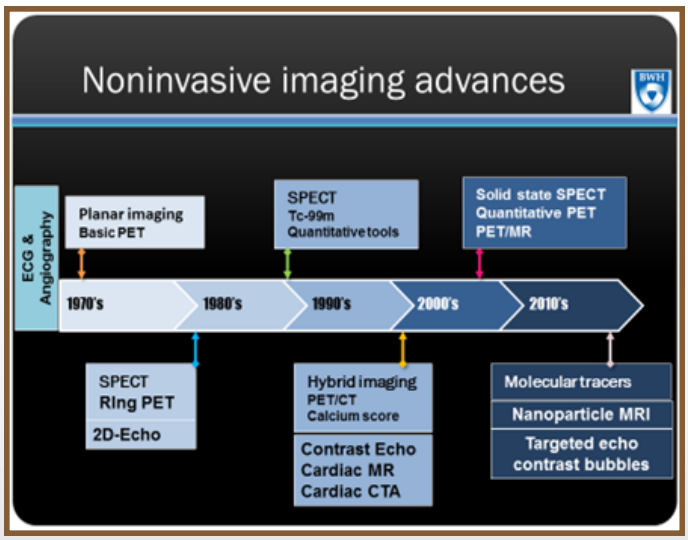
What are the principal characteristics of the Angio CT ?
What is the level of sensitivity and specificity of this method?
What do the clinical and registry studies conducted with the Angio CT indicate?
Why is the Angio CT still not recommended as a base method for the screening of cardiovascular-risk patients?

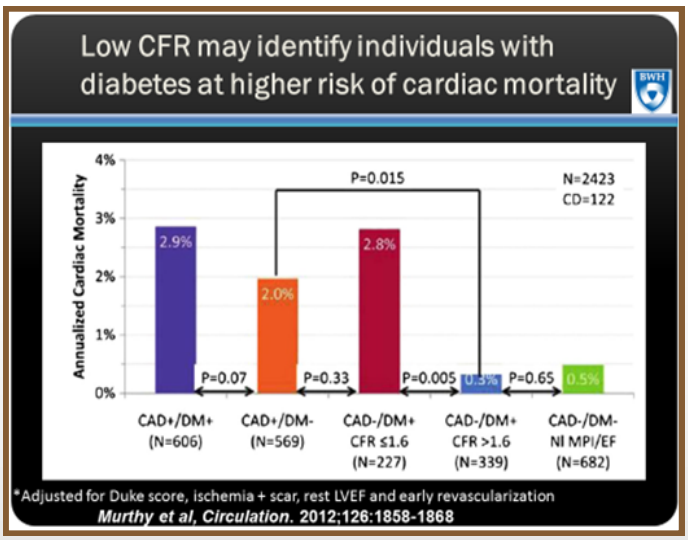
HIGHLIGHTS

Quantification of the myocardial flow in relation to the stratification of the risk ischaemic coronary disease

Sharmila Dorbala
(Boston, USA)

Prof. Dorbala di Boston ha approfondito questa tematica specificando che, se da una parte, lo studio della malattia cardiovascolare sta producendo nuove scoperte tali da modificarne il profilo di conoscenza, dall'altra parte, l'individuazione dei pazienti ad altro rischio dipende sempre più da nuove metodologie legate alle tecniche di *imaging*. La relatrice è quindi passata ad esaminare queste nuove metodologie. La conclusione a cui è giunta, tuttavia, è sempre la stessa: queste tecniche sono estremamente interessanti e stimolanti dal punto di vista della ricerca ma difficilmente applicabili nella pratica medica. Fra le metodologie prese in esame, la PET è quella che presenta il più alto livello di affidabilità e di riproducibilità legato ad una certa facilità di utilizzo ed alla presenza di software sufficientemente diffusi dal punto vista commerciale. Con questa tecnica è possibile quantificare, in maniera non invasiva, la riserva di flusso coronarico e questo dato può essere di estrema utilità sia per la valutazione dei benefici di un intervento di rivascolarizzazione coronarica, sia per escludere quelle condizioni legate ad un alto rischio di malattia coronarica.





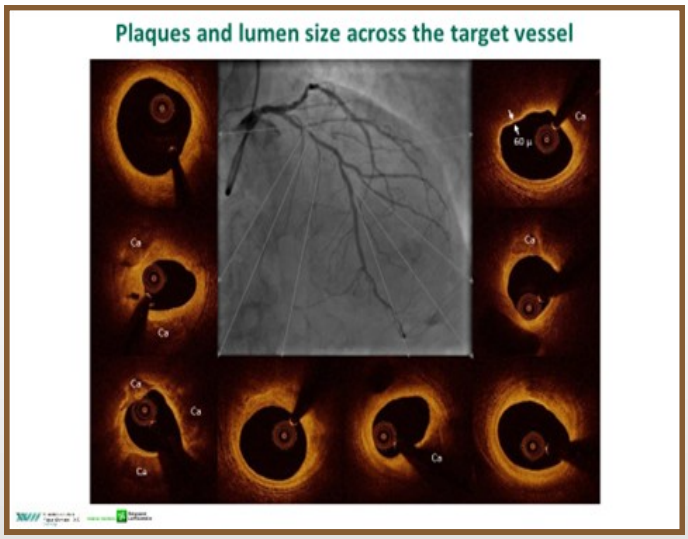
What are the principal imaging techniques used in patients suffering from coronary disease?
What are the main advantages and greatest limits of these methods?
What are the principal characteristics that make the PET a reliable method for quantifying the coronary flow reserve?

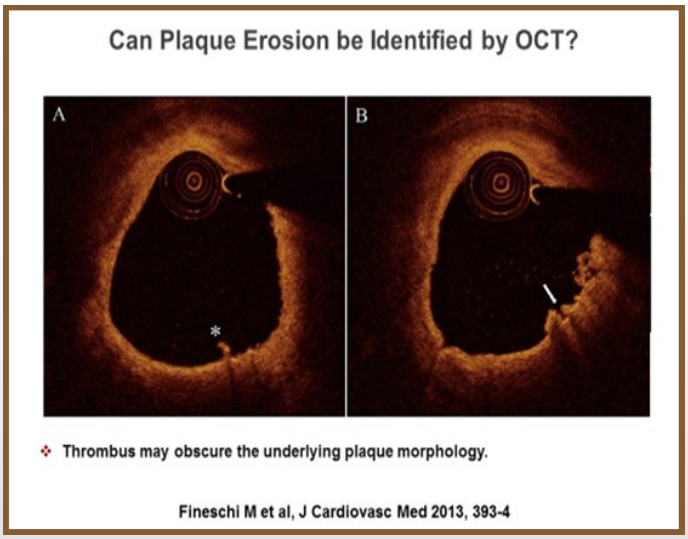
HIGHLIGHTS

The coronary tree seen from the inside: optical computerised tomography

Giulio Guagliumi
(Bergamo, Italy)

Prof. Guagliumi from Bergamo presented very interesting data on the different types of atherosclerotic lesions that can affect the coronary tree and showed images taken inside the vessels themselves using the same technique as optical computed tomography (OCT). This technique is highly innovative, in a few seconds it allows for assessing the atherosclerotic lesions present in the coronary vessels, while also measuring and differentiating them based on their morphology which is closely linked to the risk of breaking. The plaques can be divided into fibroatheromas, fibroatheromas with thinned capsule, and plaques with splits in turn divided into "culprits" and "non-culprits". Thanks to the OCT it is also possible to identify the phenomena linked to plaque erosion before breakage, unless these are not obscured by the presence of an overlying thrombotic lesion. Another characteristic of this technique is the possibility of assessing the progression of the atherosclerotic lesions as well as the effectiveness of medical/surgical treatment via the progressive monitoring of the lesions themselves inside the vessels. Thanks to OCT it is also possible to monitor the breakage and repair processes which the plaques may be subjected to.





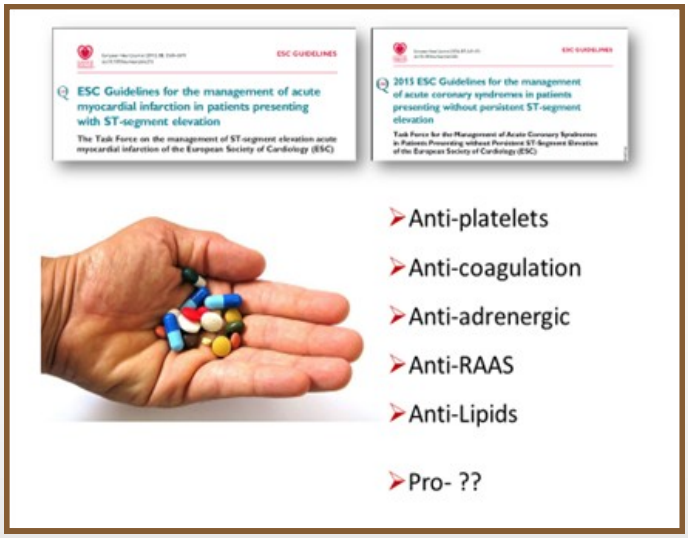
What are the principal characteristics of the OCT technique?
Which atherosclerotic lesions can be evaluated via the use of OCT?
In what way is it possible to monitor a patient suffering from ACS using OCT?
How can a plaque at the risk of breaking be identified with OCT?

HIGHLIGHTS

Acute coronary syndromes and optimal pharmacological treatment

Domenico Cianflone
(Milan, Italy)

Prof. Cianflone from Milan addressed this very controversial topic due to the results not always being optimal, and which the multi-therapeutic approach has produced over recent years. Patients are forced increasingly more to take unacceptable quantities of tablets, without however being able to cancel the residual risk of the disease they are exposed to. It is therefore necessary to change not only the therapeutic protocols, but also the approach to the patients, who need to have a one-to-one relationship with a physician and not just be faced by a simple list of drugs to take. One aspect that the physician sometimes risks neglecting is that of the impact that a correct lifestyle can have on the outcome of a disease. In order to have an effect on the patients' lifestyle it is necessary to establish a close physician/patient relationship based on trust and the reciprocal capacity to talk to each other. This relationship must be continuative over time as this is the only road to take for attempting to optimise the treatment of each individual patient over and above the mere administration of drugs.



What are the main limits of multi-therapy?
How can we define the "residual risk" to which patients are exposed, despite the use of pharmacological tools?
How much do changes to one's lifestyle affect the evaluation of the outcomes of a disease?

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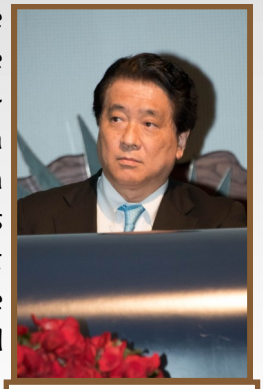
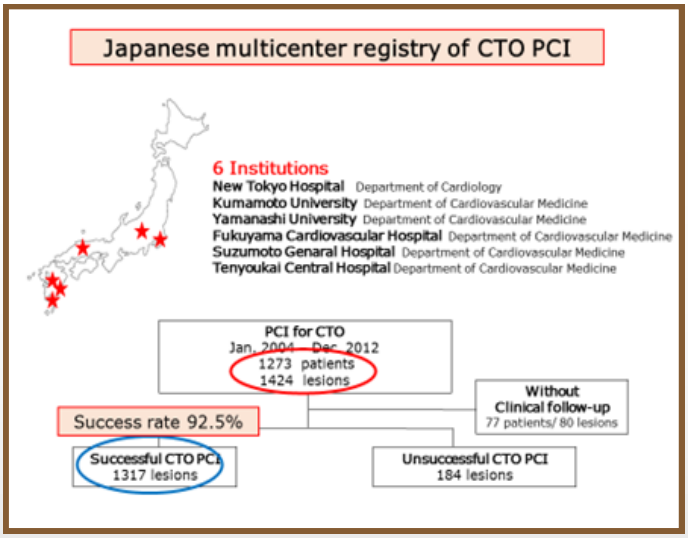
Treatment of Total Coronary Occlusions (TCOs): new findings



Sunao Nakamura
(Chiba, Giappone)

Prof. Nakamura from Tokyo presented data collected from his case studies on the treatment of ischaemic patients with total coronary occlusion. In particular he spoke about his experience based on the application of the PCI for treating total occlusions, using the retrograde approach for the complete removal of the plaque with a very good success rate. This technique is associated with a significant improvement in the long-term survival of the patients treated. As regards the outcome, the PCI shows better results than medical treatment. The association of the PCI with the placement of medicalised stents, the so-called DES, further improves the percentage of the therapeutic success rate. The performing of an intravascular-guided ultrasound PCI (IVUS) ensures greater improvement of the clinical outcome of patients suffering from OCT. A negative outcome is instead observed in a high percentage of patients suffering from concomitant renal failure. The use of the new bio-absorbable vascular scaffolds (BVS) in association with the PCI has currently produced extremely encouraging results. The speaker concluded by stating that with the application of these new techniques, the prognosis of patients suffering from TCO has improved in an exceedingly significant manner in over the last few years.



What are the principal differences between the anterograde and retrograde technique in performing a PCI?
Are there any significant differences in terms of outcome between first and second generation DES?
What are the results in terms of therapeutic success obtained by Prof. Nakamura in his clinical experience?

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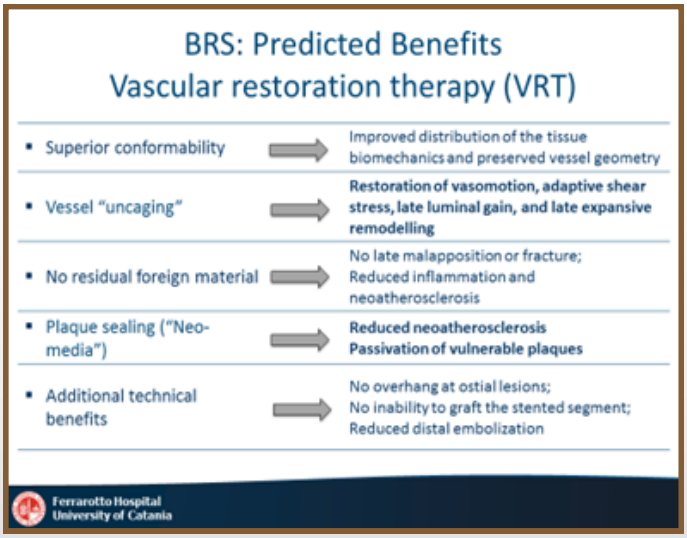
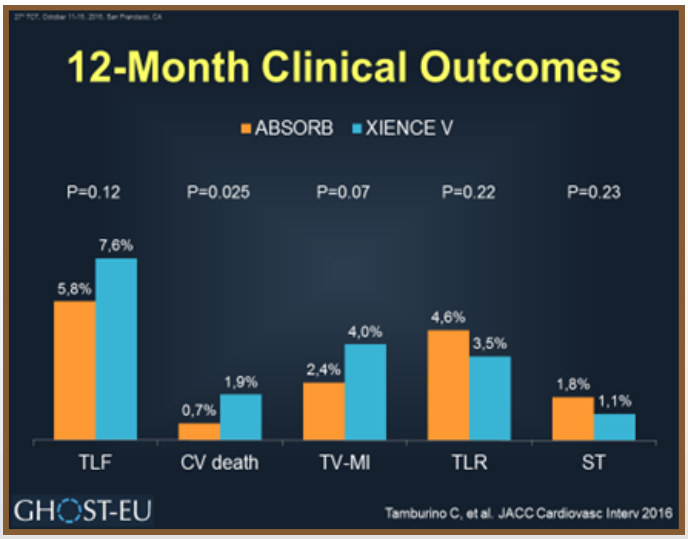
HIGHLIGHTS

New therapeutic tools for treating total coronary occlusions: reabsorbable stents

Corrado Tamburino
(Catania, Italy)

Prof. Tamburino from Rome presented data taken from clinical and registry studies on the use of new absorbable stents in the treatment of total coronary occlusions. From the clinical studies conducted on patients with simple lesions, no significant improvements were observed in terms of mortality or the risk of thrombosis with the new stents compared to the old non reabsorbable ones. In the registry studies involving more than 1400 patients treated in 11 centres located in 5 European countries, the results obtained were decidedly positive, in more than 99% of the cases, the so-called "technical success" was achieved, characterised by a really low percentage of residual stenosis. Therapeutic failure at the level of the target lesion showed a percentage of cases not exceeding 5%. The cardiovascular mortality did not exceed the threshold of 1% of cases and myocardial infarction at the level of the target vessel was not higher than the threshold of 2.4% cases. Finally, thromboses were only observed in 2% of the vessels treated. Prof. Tamburino then presented data taken from his own personal case studies, always fully compliant with those of the European registry. In short, the reabsorbable vascular stents seem to show much better results than the non-reabsorbable ones in terms of outcome, especially when applied to more complex lesions or during acute coronary syndromes.





What are the principal characteristics of reabsorbable vascular stents?
What are the main comparative studies between reabsorbable stents and the traditional ones?
What are the principal mechanisms involved in the pathogenesis of late thrombosis

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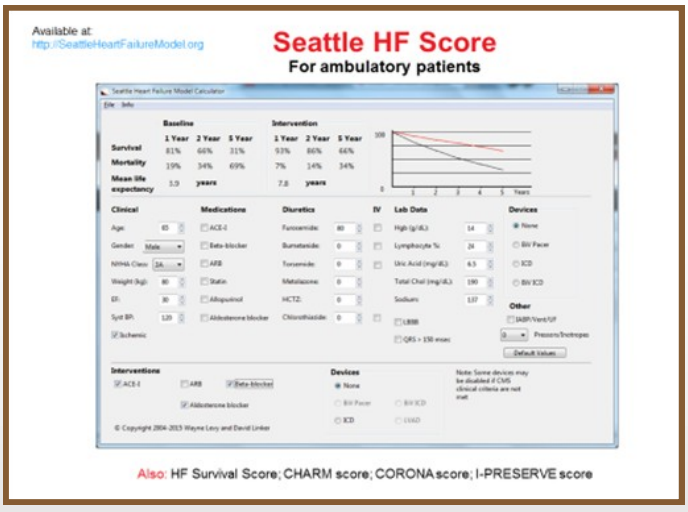
HIGHLIGHTS

The risk of stratifying patients suffering from Heart failure

Martin R. Cowie
(London, UK)

Prof. Cowie from London addressed this very topical issue in terms of the complexity of the disease on one hand, and the need to establish a correct relationship with the patient and caregivers on the other. Heart failure is a complex disease for being able to make a correct analysis and as a result, in order to achieve sustainable conclusions from the prognostic point of view, it is necessary to implement dedicated research protocols. Why should we stratify patients according to their risk? The European guidelines on heart failure published in 2012 have indicated a whole series of fundamental elements for the stratification of the risk with the purpose of orientating the prognostic judgement of these patients. During hospitalisation of the patient a great quantity of data are produced starting from admission to casualty up to hospitalisation in the clinical ward. How can we integrate these data in order to produce reliable prognostic indications? There are specific tools available also on computerised platforms like the Seattle score for example which is applied to outpatients. These tools are undoubtedly valid; nevertheless they cannot be considered separately from the physician's personal experience. But above all, how can we manage all this information at the time they are transmitted to the patient? At this point the speaker stressed the importance of putting ourselves in the patient's shoes in the aim of assessing the impact of the transmission of information such as the risk of death after a year that the patient is faced with. Prof. Cowie concluded his talk by emphasising the need to answer the three following questions before informing the patient in a scientific manner about his/her disease status, and namely: what choices are available? What are the pros and cons? Who can help me make the right decisions?



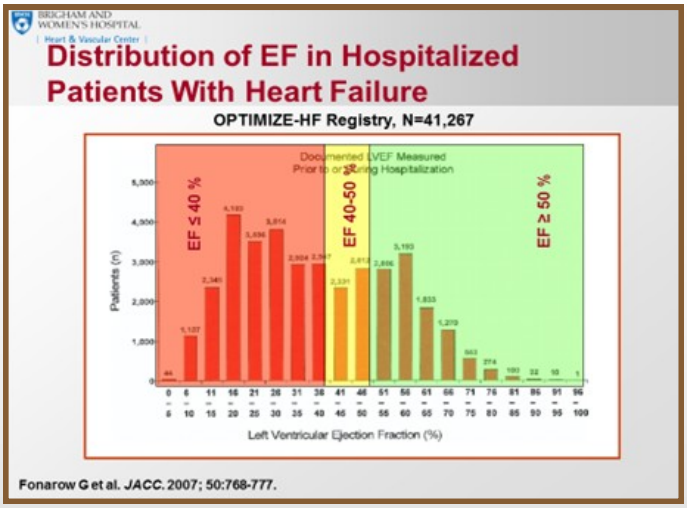
What are the indications in the 2012 European guidelines regarding the prognosis of patients with heart failure? What are the principal factors taken into consideration in the Seattle score for stratifying patients suffering from heart failure? How can we integrate the prognostic data for the purpose of providing the patient and his family with the correct information?

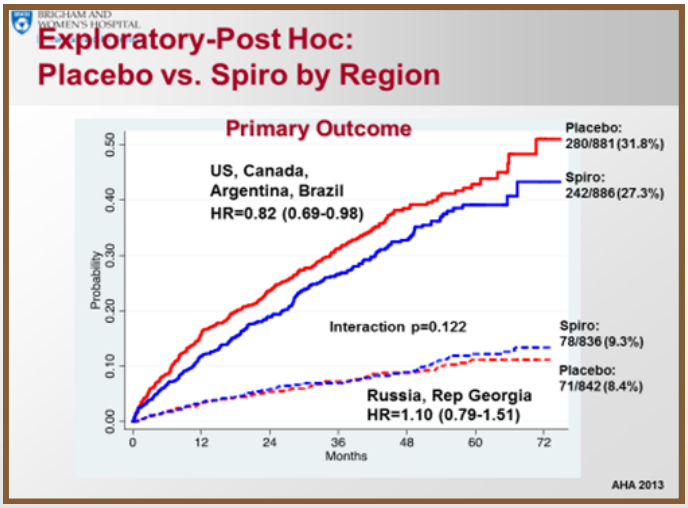
HIGHLIGHTS

Heart failure with a preserved ejection fraction

Marc Pfeffer
(Boston, USA)

Prof. Pfeffer from Boston addressed this topic that still today poses a whole series of issues the need to be analysed. Approximately half of the patients suffering from heart failure have a normal ejection fraction. Despite this, only since the early years of the twenty-first century have clinical studies been conducted on this type of patient. The problem lies in the fact that these studies did not produce any significant data. Not only did the data relating to mortality fail to show any significant differences compared with the placebo, but the data relating to both the structural and functional indicators of the left ventricle failed to show any specific peculiarities. Patients suffering from heart failure with a preserved ejection fraction seem to be lacking in any specific markers of the disease: their ejection fraction is normal, the structure of the left ventricle can be either normal or also altered, likewise the echocardiographic parameters linked to the diastolic relaxation of the left ventricle may also be within the norm; and yet these patients do not present a more positive prognosis in terms of outcome of the disease compared to patients with heart failure with reduced ejection fraction. The TOPCAT is the only study in which, following a post hoc assessment, significant differences emerged between the placebo and active treatment with regard to both the cardiovascular mortality rate and mortality for all the causes, and the frequency of hospitalisation. The drug tested was spironolactone and the comparison was represented by the placebo. The patients enrolled in the study belonged to two populations that differed greatly one from the other: the first belonging to the American continent and the other belonging to Europe (Russia and Georgia). spironolactone significantly reduced the death rate and also the hospitalisation of the patients belonging to the American continent but not of those of the European continent. The speaker pointed out that the two populations were not completely homogeneous and that the American one showed clinical/haematological values that were significantly more negative than those of the European one. Prof. Pfeffer concluded that on the basis of the data obtained from the post-hoc analyses of the TOPCAT study, he is ready to start treating patients suffering from heart failure with a preserved ejection fraction with spironolactone.





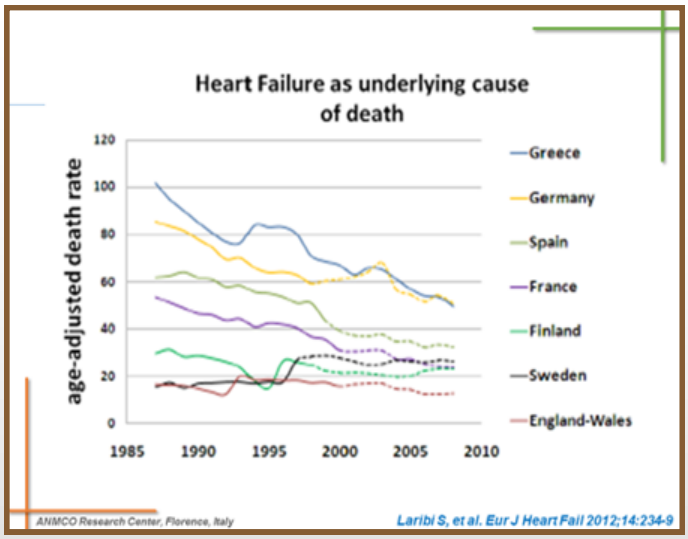
What are the principal differences between the two types of heart failure, that with a reduced ejection fraction and that with a preserved ejection fraction? What are the principal structural characteristics of the left ventricle in patients suffering from heart failure with reduced ejection fraction? What are the principal differences between the two randomised populations in the TOPCAT study?

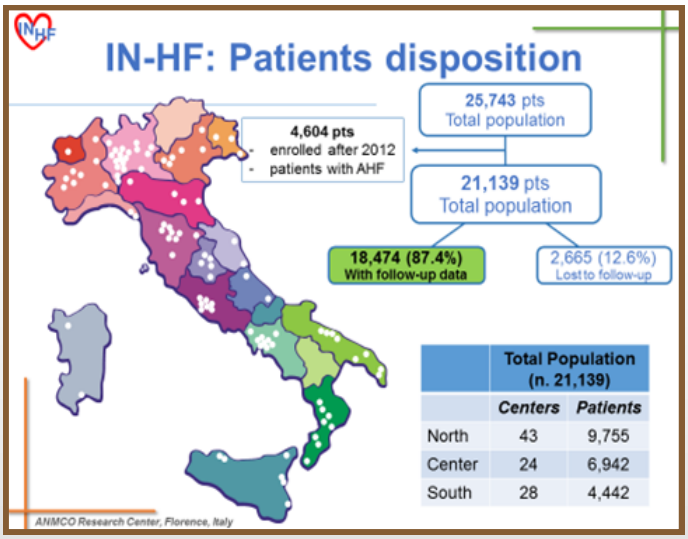
HIGHLIGHTS

How has the epidemiology of Heart failure changed over the last 10 years?

Aldo P. Maggioni
(Florence, Italy)

Prof. Maggioni from Florence presented extremely interesting data regarding the changes that the epidemiology of heart failure has undergone over the last 10 years at both an international and an Italian level. The death rate due to heart failure has dropped at a world level and simultaneously the prescriptions for ACE inhibitors, Beta-blockers and Spironolactone have increased in an extremely significant manner. Likewise, there has been a reduction in the prevalence of heart failure as an indirect cause of death in Europe, but not in the prevalence of the disease in absolute terms, projected from 2012 to 2030 in the United States where an increase by one percentage point has been predicted in both men and women. At this stage, the speaker presented the data of the Italian Registry of Heart failure in which, from 1995 until 2014 the data were registered coming from 25,743 patients in all the regions in Italy. In these, follow-up data are available in 87.4% of the sample, equal to 18,474 patients. It is interesting to note how over recent years both the instrumental and laboratory diagnosis indicators have changed, as well as the indicators relating to the pharmacological treatment. One particularly interesting fact is linked to the improvement in the outcome of the disease in patients suffering from heart failure with reduced ejection fraction, while patients suffering from heart failure with preserved ejection fraction, despite showing a more favourable outcome than patients suffering from heart failure with reduced ejection fraction, fail to show any type of improvement.





What are the outcome data at a European level over the last 20 years?
How has the pharmacological treatment of these patients changed over the years?
What is the epidemiology of heart failure based on the Swedish data?

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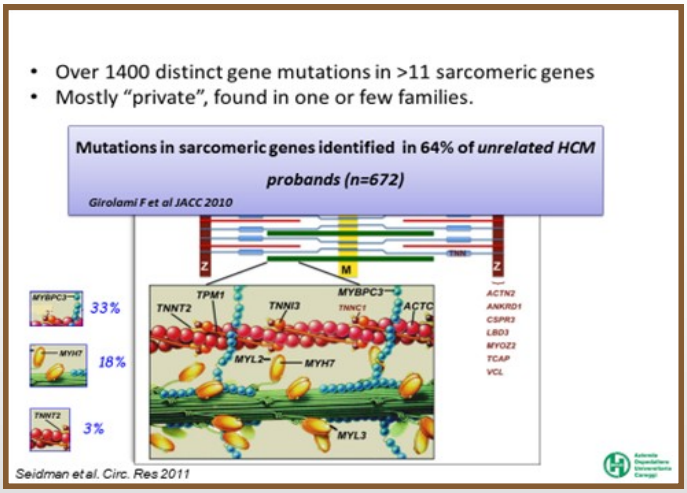
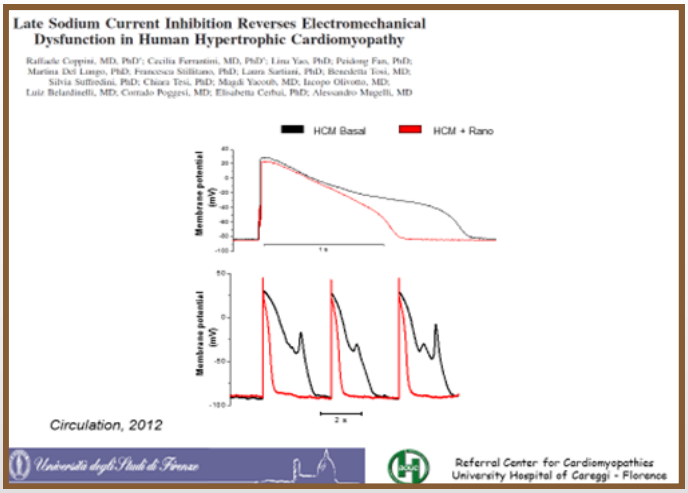
HIGHLIGHTS

Genetic mutations and clinical outcome of hypertrophic cardiomyopathy

Iacopo Olivotto
(Florence, Italy)

Prof. Olivotto from Florence addressed this topic by presenting data produced in part by his research group. Hypertrophic cardiomyopathy (HCM) is a myocardial disease characterised by a high variability of clinical symptoms. The majority of symptoms that manifest at a young-adult age are due to mutations in the genes of the sarcomeric proteins. However, in 30% of cases forms exist with an aetiology that is still unknown. More than 1400 distinct mutations affecting more than 11 sarcomeric genes have been detected, mostly of the "private" type, meaning that they are present in one or only a few families. This high variability in the mutations responsible for the disease, gives rise to an elevated heterogeneity of the clinical pictures. One particular form of HCM is the so-called "thin filament disease", characterised by the presence of genetic mutations at the level of the thin filament of the sarcomere which specifically involves the protein complex of Troponin. These patients have a more negative outcome compared to subjects suffering from other forms of genetic mutations in which the thick filament of the sarcomere is involved. It is extremely important to be able to identify the genetic mutations responsible for the disease, because in quite a considerable percentage of cases there is a close correlation between the clinical picture, the outcome and the underlying genetic mutations. For the purpose of being able to analyse in depth the knowledge of this disease, the SHARE project has been set up on a world level: this is the Human Sarcomeric Cardiomyopathy registry that gathers together data pertaining to people suffering from hypertrophic cardiomyopathy and in 55% of cases, data relating to genetic tests are also recorded. The genetic typing of HCM is essential not only in diagnostic and prognostic terms, but also from the therapeutic point of view. At this point Prof. Olivotto presented data from a study conducted with Ranolazine on the cardiomyocytes of 26 patients suffering from hypertrophic cardiomyopathy who had been subjected to a myomectomy. Thanks to the inhibition of the sodium channel, this drug was able to correct the electromechanical dysfunction typical of these cardiomyocytes.





What are the principal genes involved at the sarcomeric level in the genetic mutations? What is the probable outcome of patients where the MYH7 Arg403Glu mutation is present? What influence does the presence of multiple genetic mutations have on the outcome of the disease?

HIGHLIGHTS

These are but a few of the topics addressed during the congress works. For a more in-depth analysis please visit the website of the **Fondazione Internazionale Menarini** which also contains the full versions of the congress talks.
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