

This year's annual congress of the Swiss Society of Cardiology was a true success

Annual Congress of the Swiss Society of Cardiology



Figure 1: The Basel congress centre, where this year's joint annual congress of the Swiss Society of Cardiology and the Swiss Society of Cardiac Surgery was held.

This year's annual congress of the Swiss Society of Cardiology was held in Basel from Wednesday June 6 to Friday June 8, 2018 (fig. 1). The congress was organised together with the Swiss Society for Cardiac Surgery led by its president Michele Genoni from Zurich, and attracted 1471 participants (including 348 from industry) from all over Switzerland. The scientific programme was led by 176 moderators and featured, in 41 sessions, lectures and talks by 240 speakers from Switzerland and abroad.

Of the 214 submitted abstracts, 152 were presented. Of those, 76 were oral presentations and 76 were part of the poster session.

The Andreas Grüntzig lecture

One highlight was the Andreas Grüntzig lecture and award given this year by Professor Tiziano Mocetti from the CardioCentro Lugano (fig. 2).

He reviewed the history of cardiology care in the Ticino and the growth of the CardioCentro that he founded and developed to its current size and importance – a truly unique and impressive achievement. Indeed, out of a small division within the Ospedale Civico di Lugano, Prof. Mocetti created, thanks to a large donation by a patient of his, an impressive, internationally visible heart centre offering the whole spectrum of current cardiovascular care, except transplantation.

In addition, his team published seminal papers in the best journals of medicine such as the *European Heart Journal*, *Circulation* and the *New England Journal of Medicine*, among others.

The Amgen research prize

The Amgen research prize, formerly the cardiovascular biology prize supported by Werner Lambert, then Pfizer and now Amgen, was founded by Prof. Thomas F. Lüscher in 1997 and was first awarded a year later at the annual congress of the Swiss Society of Cardiol-

ogy to a promising young cardiovascular researcher. The prize consisted then, as it does now, of 30 000 CHF for future research by the winner. Furthermore, winners are asked to provide a review article on their research for *Cardiovascular Medicine* to make the work known at the national level.

From the beginning, it was of importance to the founder to ensure a fair and objective assessment of the applications. To that end, a scientific board, consisting not only of Swiss members, but also experts from abroad was assembled to minimise conflicts of interest. Furthermore, the president himself never participated in the rating, but rather assured proper procedures for selection of the winner. This year's committee consisted of: Thomas F. Lüscher, president, Zurich/London; Michel Burnier, Lausanne; Filippo Crea, Rome; François Mach, Geneva; Christian Matter, Zurich; Christian Mueller, Basel; Francesco Paneni, Zurich; and Thomas Thum, Hannover, FRG. The winners of the last 20 years are listed in table 1.



Figure 2: The Andreas Grüntzig awardee Prof. Tiziano Mocetti from Lugano (right), with the session chairman Prof. Thomas F. Lüscher from London and Zurich (left).

Table 1: Winners of the research Prize of the Swiss Society of Cardiology from 1998 to 2018.

1998	Jan Kustera, Bern
1999	Matthias Barton, Zurich
2000	François Mach, Geneva
2001	Frank Ruschitzka, Zurich
2002	Brenda R. Kwak, Geneva
2003	Simon Hoerstrup, Zurich
2004	David Kurz, Zurich
2005	Sabine Steffens, Geneva
2006	Roberto Corti, Zurich
2007	Giovanni Camici, Zurich
2008	Michele Miragoli, Bern
2009	Elena Osto, Zurich/Padua
2010	Gabriella Kania, Zurich
2011	Christian Templin, Zurich
2012	Benedikt Weber, Zurich
2013	Fabrizio Montecucco, Geneva
2014	Emrush Rexhaj, Bern
2015	Elena Osto, Zurich
2016	Baris Gencer, Geneva
2017	Christoph Gräni, Zurich
2018	Sarah Costantino, Zurich and Raphael Twerenbold, Basel



Figure 3: The winners of this year's Amgen research prize of the Swiss Society of Cardiology: Raphael Twerenbold (left) and Sarah Costantino (middle). With the president of the awards committee Prof. Thomas F. Lüscher (right).

Impact of Glycemic Variability on Chromatin Remodeling, Oxidative Stress, and Endothelial Dysfunction in Patients With Type 2 Diabetes and With Target HbA_{1c} Levels

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Abstract: Intensive glycemic control (IGC) targeting HbA_{1c} fails to show an unopposed reduction in cardiovascular complications in type 2 diabetes (T2D); however, the underlying mechanisms remain unclear. Epigenetic changes are emerging as important mediators of cardiovascular damage and may play a role in this setting. This study investigated whether epigenetic regulation of the adaptor protein p66^{Shc}, a key effector of mitochondrial oxidative stress, contributes to persistent vascular dysfunction in patients with T2D despite IGC. Thirty-nine patients with uncontrolled T2D (HbA_{1c} >7.5%) and 24 age- and sex-matched healthy control subjects were consecutively enrolled. IGC was implemented for 6 months in patients with T2D to achieve a target HbA_{1c} of <7.0%. Brachial artery flow-mediated dilation (FMD), urinary 8-isoprostaglandin F_{2α} (8-isoPGF_{2α}), and epigenetic regulation of p66^{Shc} were measured at baseline and follow-up. Continuous glucose monitoring was performed to determine the mean amplitude of glycemic excursions (MAGE) and postprandial incremental area under the curve (IAUC_{pp}). At baseline, patients with T2D showed impaired FMD, increased urinary 8-isoPGF_{2α}, and p66^{Shc} acetylation in circulating monocytes compared with control subjects. FMD, 8-isoPGF_{2α}, and p66^{Shc} expression were not affected by IGC. DNA hypomethylation and histone 3 acetylation were favored in the p66^{Shc} promoter of patients with T2D, and IGC did not change such adverse epigenetic remodeling. Persistent downregulation of methyltransferase DNMT3B and deacetylase SIRT1 may explain the observed p66^{Shc}-related epigenetic changes. MAGE and IAUC_{pp} but not HbA_{1c} were independently associated with the altered epigenetic profile on the p66^{Shc} promoter. Hence, glucose fluctuations contribute to chromatin remodeling and may explain persistent vascular dysfunction in patients with T2D with target HbA_{1c} levels.

Figure 4: The award articles of Sarah Costantino.

This year, for the first time, two candidates of equal scientific achievement were awarded the Amgen research prize of the Swiss Society of Cardiology 2018: Sara Costantino from the Centre for Molecular Cardiology in Zurich and Raphael Twerenbold from the University Hospital in Basel (fig. 3).

Sarah Costantino received the award for her work on the molecular mechanisms of diabetic endothelial dysfunction and vascular disease (Diabetes. 2017;66:2472–82) and transcription of the aging gene p66shc in obesity (Eur Heart J. 2017; online; fig. 4).

Raphael Twerenbold was selected by the committee for his important and clinically relevant studies on the diagnostic value of

troponin in patients with acute chest pain and possible acute coronary syndromes (Circulation. 2017;136:1495–508 and Circulation. 2018; 137:436–51; fig. 5).

The general assembly

The general assembly of the Swiss Society of Cardiology took place on Wednesday June 6 and was chaired elegantly by the outgoing president Michael Zellweger from Basel, who has effectively led the society for the last 2 years (fig. 6). He will be followed by the incoming president for the next 2-year term, Giovanni Pedrazzini from Lugano. Michael Billinger was elected as the new representative of Bern University to follow Thomas Suter, who stepped down, and Christoph Wyss from the Heart Clinic Hirslanden, who will take over the role of Urs Kaufman (who played a pivotal role in the negotiations on reimbursement for cardiological clinical services). His commitment by the assembly with an impressive round of applause. Finally, Patrick Monnier, a representative of the practicing cardiologists, was replaced by Tomoé Stampfli Andres from the Hospital La Tour in Meyrin. Lastly, Felix Tanner from Zurich was elected vice-president and, as such, president-elect for the next term 2020 to 2022.

After the report of the president, Paul Erne from Lucerne and Peter Buser from Basel were named honorary members of the Swiss Society of Cardiology (fig. 7).

The president reminded the members that the Swiss Society of Cardiology celebrated its 70th birthday this year at their annual congress – an impressive tradition for a scientific society and good reason to look back on developments in cardiology and cardiac surgery, as well as to look forward, to speculate and to dream about future advancements. This was indeed the special focus of the 2018 programme, with eminent keynote speakers in different areas of the field highlighting the advances in cardiology, and those that Switzerland, in particular, could enjoy. Future developments were also discussed. Thus, as the president mentioned, cardiology lives up to the statement of Jack Nickolson that “aging means getting better!”

Important items were the changes in reimbursement for cardiology services in Switzerland and the political issues behind them, which will make life more difficult for practising colleagues. Furthermore, the proposal of the board to create subspecialty certifications attracted an unforeseen number of members of the Swiss Society of Cardiology to the general assembly. The president explained in detail the process the board followed to come up with the proposal, which lasted al-

ESC European Society of Cardiology
European Journal of Cardiology

BASIC SCIENCE

Interplay among H3K9-editing enzymes SUV39H1, JMJD3C and SRC-1 drives p66^{Shc} transcription and vascular oxidative stress in obesity

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Abstract: Interplay among H3K9-editing enzymes SUV39H1, JMJD3C and SRC-1 drives p66^{Shc} transcription and vascular oxidative stress in obesity. This study investigated whether epigenetic regulation of p66^{Shc} contributes to persistent vascular dysfunction in patients with obesity despite intensive glycemic control (IGC) targeting HbA_{1c} levels. Thirty-nine patients with uncontrolled T2D (HbA_{1c} >7.5%) and 24 age- and sex-matched healthy control subjects were consecutively enrolled. IGC was implemented for 6 months in patients with T2D to achieve a target HbA_{1c} of <7.0%. Brachial artery flow-mediated dilation (FMD), urinary 8-isoprostaglandin F_{2α} (8-isoPGF_{2α}), and epigenetic regulation of p66^{Shc} were measured at baseline and follow-up. Continuous glucose monitoring was performed to determine the mean amplitude of glycemic excursions (MAGE) and postprandial incremental area under the curve (IAUC_{pp}). At baseline, patients with T2D showed impaired FMD, increased urinary 8-isoPGF_{2α}, and p66^{Shc} acetylation in circulating monocytes compared with control subjects. FMD, 8-isoPGF_{2α}, and p66^{Shc} expression were not affected by IGC. DNA hypomethylation and histone 3 acetylation were favored in the p66^{Shc} promoter of patients with T2D, and IGC did not change such adverse epigenetic remodeling. Persistent downregulation of methyltransferase DNMT3B and deacetylase SIRT1 may explain the observed p66^{Shc}-related epigenetic changes. MAGE and IAUC_{pp} but not HbA_{1c} were independently associated with the altered epigenetic profile on the p66^{Shc} promoter. Hence, glucose fluctuations contribute to chromatin remodeling and may explain persistent vascular dysfunction in patients with T2D with target HbA_{1c} levels.

Conclusion: These results uncover a novel epigenetic mechanism underlying endothelial dysfunction in obesity. Targeting SUV39H1 may attenuate oxidant-transcriptional programming and thus prevent vascular disease in obese individuals.

ORIGINAL RESEARCH ARTICLE

Direct Comparison of Cardiac Myosin-Binding Protein C With Cardiac Troponins for the Early Diagnosis of Acute Myocardial Infarction

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BACKGROUND: Cardiac myosin-binding protein C (cMyC) is a cardiac-restricted protein that is more abundant than cardiac troponins (cTn) and is released more rapidly after acute myocardial infarction (AMI). We evaluated cMyC as an adjunct alternative to cTn in the early diagnosis of AMI.

METHODS: Unselected patients (N=1954) presenting to the emergency department with symptoms suggestive of AMI, concentrations of cMyC, and high-sensitivity (hs) and standard-sensitivity (Sn) were measured at presentation. The final diagnosis of AMI was independently adjudicated using all available clinical and biochemical information without knowledge of MyC. The prognostic end point was long-term mortality.

RESULTS: Final diagnosis was AMI in 340 patients (17%). Concentrations of cMyC at presentation were significantly higher in those with versus without AMI (median, 2.37 ng/L versus 1.3 ng/L, P<0.001). Discriminatory power for AMI, as quantified by the area under the receiver-operating characteristic curve (AUC), was comparable for cMyC (AUC, 0.924), hs-cTnI (AUC, 0.927), and hs-cTnT (AUC, 0.922) and superior to cTnI measured by a contemporary sensitivity assay (AUC, 0.869). The combination of cMyC with hs-cTnT or standard-sensitivity cTnI (but not hs-cTnI) led to an increase in AUC to 0.931 (P<0.0001) and 0.926 (P<0.003), respectively. Use of cMyC more accurately classified patients with a single blood test into rule-out or rule-in categories: Net Reclassification Improvement +0.145 versus hs-cTnI, +0.235 versus hs-cTnT (P<0.001). In early presenters (chest pain <2 h), the improvement in rule-in/rule-out classification with cMyC was larger compared with hs-cTnT (Net Reclassification Improvement +0.256) and hs-cTnI (Net Reclassification Improvement +0.306; both P<0.01). Comparing the C statistic, cMyC was superior to hs-cTnI and standard sensitivity cTnI (P<0.05 for both) and similar to hs-cTnI at predicting death at 3 years.

CONCLUSIONS: cMyC at presentation provides discriminatory power comparable to hs-cTnI and hs-cTnT in the diagnosis of AMI and may perform favorably in patients presenting early after symptom onset.

ORIGINAL RESEARCH ARTICLE

0/1-Hour Triage Algorithm for Myocardial Infarction in Patients With Renal Dysfunction

Raphael Twerenbold, MD et al

EDITORIAL, see p 452

BACKGROUND: The European Society of Cardiology recommends a 0/1-hour algorithm for rapid rule-out and rule-in of non-ST-segment elevation myocardial infarction using high-sensitivity cardiac troponin (hs-cTn) concentrations irrespective of renal function. Because patients with renal dysfunction (RD) frequently present with increased hs-cTn concentrations even in the absence of non-ST-segment elevation myocardial infarction, concern has been raised regarding the performance of the 0/1-hour algorithm in RD.

METHODS: In a prospective multicenter diagnostic study enrolling unselected patients presenting with suspected non-ST-segment elevation myocardial infarction to the emergency department, we assessed the diagnostic performance of the European Society of Cardiology 0/1-hour algorithm using hs-cTnI and hs-cTnT in patients with RD, defined as an estimated glomerular filtration rate <60 mL/min/1.73 m², and compared it to patients with normal renal function. The final diagnosis was centrally adjudicated by independent cardiologists using all available information, including cardiac imaging. Safety was quantified as a sensitivity in the rule-out zone, accuracy as the specificity in the rule-in zone, and efficacy as the proportion of the overall cohort assigned to either rule-out or rule-in based on the 0- and 1-hour sample.

RESULTS: Among 3254 patients, RD was present in 487 patients (15%). The prevalence of non-ST-segment elevation myocardial infarction was substantially higher in patients with RD compared with patients with normal renal function (31% versus 13%, P<0.001). Using hs-cTnI, patients with RD had comparable specificity of rule-out (100.0% [95% confidence interval (CI), 97.5–100.0] versus 92.2% [95% CI, 91.6–92.8] [P=0.99]) and lower specificity of rule-in (88.7% [95% CI, 86.3–91.1] versus 96.5% [95% CI, 95.7–97.2] [P<0.01]), and lower overall efficacy (51% versus 81%, P<0.001), energy doses by a much lower percentage of patients eligible for rule-out (18% versus 58%, P<0.001) compared with patients with normal renal function. Using hs-cTnT, patients with RD had comparable sensitivity of rule-out (98.6% [95% CI, 95.9–99.8] versus 98.5% [95% CI, 96.5–99.5] [P=0.10]) and lower overall efficacy (54% versus 76%, P<0.001), proportion ruled out, and overall sensitivity (58% versus 58%, P=0.001) compared with patients with normal renal function.

CONCLUSIONS: In patients with RD, the safety of the European Society of Cardiology 0/1-hour algorithm is high, but specificity of rule-in and overall efficacy are decreased. Modifications of the rule-in and rule-out thresholds did not improve the safety or overall efficacy of the 0/1-hour algorithm.

Figure 5: The papers of Raphael Twerenbold.



Figure 6: The general assembly of the Swiss Society of Cardiology with the board and its president Michael Zellweger (standing right).



Figure 7: The newly elected honorary members of the Swiss Society of Cardiology: Peter Buser from Basel (left) and Paul Erne from Lucerne (right).

most two years. The proposal had been send to all members of the Swiss Society of Cardiology beforehand to allow for an informed decision making and eventually vote. Many cardiology societies worldwide have introduced such a concept and a matching curriculum that reflects the impressive developments in this speciality in the last three decades. For invasive procedures such as percutaneous coronary angioplasty, transcatheter aortic valve implantation and the ablation of arrhythmias in particular, a comprehensive training programme is required today to ensure efficacy and safety for patients undergo-

ing such procedures. In spite of this, the proposal of the board was surprisingly rejected with 110 voting no against 69 yes and 2 abstentions.

The future

Overall, this year's annual congress of the Swiss Society of Cardiology was a true success. Its members can truly be proud of it, but life goes on and we already have to think about the next annual meeting which will take place in Interlaken on June 18–21 in 2019.

Some issues remain, however, in particular the question of whether we should still allow cardiologists with only a basic training and certified as FHM of cardiology to perform any investigation or procedure without documentation of successfully passing a structured practical and theoretical core curriculum and examination. History will tell, and we shall learn that those who do not listen to the historical process – as Mikhail Gorbachov put it – will be overruled. We shall see – as always predictions are difficult, but this issue will not disappear with the 2018 vote. Indeed it is likely come back on the table.