Editorial

1 Surgical Perspectives on Transcatheter Aortic Valve Replacement: The Sky Is Indeed Falling—for Now
Harold L. Lazar, MD

4 Precision Medicine in TAVR: How to Select the Right Device for the Right Patient
Guillaume Marquis-Gravel, MS, MSc, Sreekanth Venugopall, MD, Anita W. Agar, MD, MSc, and Michel Zeitoun, MD

7 Acute Kidney Injury in Patients With Normal Renal Function Undergoing Transcatheter or Surgical Aortic Valve Replacement: Should We Be Concerned?
Lorenzo Azzalini, MD, PhD, MSc, and Francesco Moroni, MD

11 Big Data for a Big Problem: How Can We Enhance the Implementation of Perioperative Cardiovascular Guidelines?
Joel L. Parlow, MD, FRCPC, and Michael McMullen, MD, FRCPC

14 Sex Differences in Cardiac Resynchronization Therapy Device Implantations and Complications: Tough Questions, Tougher Answers
F. Daniel Ramirez, MD, MSc

17 Deep Learning Applied to Electrocardiogram Interpretation
Shijie Zhou, PhD, John L. Sapp, MD, FRCPC, FHRS, Amir AbdelWahab, MD, MSc, and Natalia Trayanova, PhD, FHRS

On the Cover: Summary. The morphologic phenotype, biomechanical indices, and expression of a panel of vascular smooth muscle proteins were examined in the pulmonary arteries of patients diagnosed with aortic insufficiency (AI; n = 4-6) and aortic stenosis (AS; n = 12-16) undergoing the Ross procedure at the Montreal Heart Institute. Patients diagnosed with AS were subdivided based on the diameter of the aortic annulus (AA; n = 6-8 in each group). Elastin and collagen immunohistochemical staining and biomechanical properties (energy loss and stiffness) of the pulmonary artery of patients with AI were similar to those observed in the pulmonary artery of patients diagnosed with AS regardless of the diameter of the aortic annulus. In contrast, protein levels of nonmuscle myosin IIB in the pulmonary artery of patients with AS, regardless of the diameter of the aortic annulus, were significantly higher compared with patients with AI. From the article by Emmott et al., pages 47-56 of this issue.
# Table of Contents

## Viewpoint

22  The Sky Is Not Falling: Surgical Perspectives on a New Transcatheter Paradigm  
Edward D. Percy, MD, Sameer A. Hirji, MD, Farhang Yazdchi, MD, and Marc P. Pelletier, MD

## Clinical Research - Aortic Valve Disease

27  Network Meta-analysis of Surgical Aortic Valve Replacement and Different Transcatheter Heart Valve Systems for Symptomatic Severe Aortic Stenosis  
Hiroki Ueyama, MD, Toshiki Kuno, MD, PhD, FESC, FSCAI, Tomo Ando, MD, Kentaro Hayashida, MD, PhD, FESC, FACC, FJCS, and Hisato Takagi, MD, PhD

## Clinical Research - Risk Factors and Prevention

57  Underutilization of Perioperative Screening for Cardiovascular Events After Noncardiac Surgery in Alberta  
Pishoy Gouda, MB, BCh, BAO, MSc, Xiaoming Wang, MSc, PhD, Michael McGillion, RN, PhD, and Michelle M. Graham, MD, FRCPC

## Clinical Research - Aortic Valve Disease

37  Acute Kidney Injury Following Aortic Valve Replacement in Patients Without Chronic Kidney Disease  
Noriaki Moriyama, MD, Teemu Laakso, MD, Peter Raivio, MD, PhD, Sebastian Dahlfacka, MD, PhD, Eeva-Maija Kinnunen, MD, PhD, Tatu Juvonen, MD, PhD, Antti Valtola, MD, Annastiina Hursu, MD, PhD, Maina P. Jalava, MD, Tuomas Ahvenvaara, MD, Tuomas Tauriainen, MD, PhD, Jarkko Piuhola, MD, PhD, Asta Lahtinen, MD, Matti Niemelä, MD, PhD, Timo Mikikallio, MD, PhD, Marko Virtanen, MD, Pasi Maaranen, MD, Markku Eskola, MD, PhD, Mikko Savontaus, MD, PhD, Juhani Airaksinen, MD, PhD, Fausto Biancardi, MD, PhD, and Miika Laine, MD, PhD

47  Distinct Expression of Nonmuscle Myosin IIB in Pulmonary Arteries of Patients With Aortic Stenosis vs Insufficiency Undergoing a Ross Procedure  
Alexander Emmott, PhD, Vanessa Hertig, MSc, Alexandre Bergeron, MSc, Louis Villeneuve, MSc, Laurence Lefebvre, RN, Richard L. Leask, PhD, Angelino Calderone, PhD, and Ismail El-Hamamsy, MD, PhD

66  Outcome and Cost of Optimal Control of Dyslipidemia in Adults With High Risk for Cardiovascular Disease  
Dat T. Tran, PhD, Dan Palfrey, MPH, T.K.T. Lo, PhD, and Robert Welsh, MD, PhD

77  Circulating miRNAs Related to Long-term Adverse Cardiovascular Events in STEMI Patients: A Nested Case-Control Study  
Xinying Yang, PhD, Xiaoyu Du, MD, Ke Ma, MS, Guoqi Li, PhD, Zhuohui Liu, MS, Wei Rong, MS, Huantai Miao, MD, Fuli Zhu, MD, Qinghua Cui, PhD, Shaowei Wu, PhD, Yulin Li, PhD, and Jie Du, PhD
# Table of Contents

## Clinical Research - Electrophysiology and Arrhythmias

### 86 Sex Disparities in the Choice of Cardiac Resynchronization Therapy Device: An Analysis of Trends, Predictors, and Outcomes

Mohamed Osama Mohamed, MRCP(UK), Tahmeed Contractor, MD, Donah Zachariah, MRCP(UK), Harriette G.C. van Spall, MD, Purvi Parwani, MD, MPH, Maroa B. Minisian, PhD, Muhammad Rashid, MRCP(UK), Glen P. Martin, PhD, Diane Barker, MD, Ashish Patelwa, MD, and Mamas A. Mamas, DPhil

### 94 Usefulness of Machine Learning-Based Detection and Classification of Cardiac Arrhythmias With 12-Lead Electrocardiograms

Kuan-Cheng Chang, MD, PhD, Po-Hsin Hsieh, MS, Mei-Yao Wu, MD, PhD, Yu-Chen Wang, MD, PhD, Jan-You Chen, MD, PhD, Fuu-Jen Tsai, MD, PhD, Edward S.C. Shih, PhD, Ming-Jing Huang, PhD, and Tsung-Chi Huang, PhD

### 105 Sports-Related Sudden Cardiac Arrest in Germany

Philipp Bohm, MD, Jürgen Scharhag, MD, Florian Egger, MD, Karl-Heinz Tischler, MD, David Niederseer, MD, Christian Schmied, MD, and Tim Meyer, MD

### 113 Oral Anticoagulants and Antiplatelet Agents in Patients With Atrial Fibrillation and Concomitant Critical Limb Ischemia: A Nationwide Cohort Study

Hsin-Fu Lee, MD, Yi-Hsin Chan, MD, Pei-Ru Li, BS, Jia-Rou Liu, MS, Tze-Fan Chao, MD, Lung-Sheng Wu, MD, Shang-Hung Chang, MD, PhD, Yung-Hsin Yeh, MD, Chi-Tai Kuo, MD, Lai-Chu See, PhD, and Gregory Y.H. Lip, MD

## Clinical Research - Interventional Cardiology

### 122 Influence of Bleeding Risk on Outcomes of Radial and Femoral Access for Percutaneous Coronary Intervention: An Analysis From the GLOBAL LEADERS Trial

Chao Gao, MD, Piotr Buszman, MD, Paweł Buszman, MD, PhD, Piy Chichareon, MD, Rodrigo Modolo, MD, Scot Garg, MD, PhD, Kuniaki Takahashi, MD, Hideyuki Kawashima, MD, Rutaoo Wang, MD, Chun Chin Chang, MD, Norihiro Kogame, MD, Mariusz Tomaniak, MD, Masafumi Ono, MD, Hironori Hara, MD, Ton Slagboom, MD, Adel Aminian, MD, Christoph Kurt Naber, MD, PhD, Didier Carrie, MD, PhD, Christian Hamm, MD, Philippe Gabriel Steg, MD, Yoshinobu Onuma, MD, PhD, Robert-Jan van Geuns, MD, PhD, Patrick W. Serruya, MD, PhD, and Aleksander Zurakowski, MD

## Clinical Research - Congenital Heart Disease

### 131 Heightened Dependence of Left-Heart Filling Pressures on Right-Heart Failure in Congenital Heart Disease

Alexander C. Egbe, MBBS, MPH, Rahul Vojjini, MD, Mohamed Badawy, MBBS, Vaibhav Jain, MBBS, Crystal R. Bonnichsen, MD, Yogesh N.V. Reddy, MBBS, Masaru Obokata, MD, and Barry A. Borlaug, MD

## Basic Research

### 140 The GLP-1 Receptor Agonist Liraglutide Increases Myocardial Glucose Oxidation Rates via Indirect Mechanisms and Mitigates Experimental Diabetic Cardiomyopathy

Malak Almutairi, MSc, Keshav Gopal, PhD, Amanda A. Greenwell, Adrian Young, MSc, Robert Gill, MSc, Hanin Abuasayn, MSc, Rami Al Batran, PhD, Jadin J. Chabade, Manoj Gandhi, PhD, Farah Eaton, Ryan J. Mailloux, PhD, and John R. Ussher, PhD

[ONLINE ONLY. View full-text article at www.onlinecjc.ca]
Table of Contents

Systematic Review/Meta-analysis

151 A Systematic Review of the Risk of Motor Vehicle Collision in Patients With Syncope
Justin N. Chee, PhD(c), MSc, Chris Simpson, MD, FHRs, FCCS, Robert S. Sheldon, MD, PhD, FHRs, FCCS, Paul Dorian, MD, FHRs, Jamie Doo, MD, MBA, Juan Guzman, MD, MSc, Satish R. Raj, MD, MSCI, FHRs, Roopinder K. Sandhu, MD, MPH, FHRs, Venkatesh Thirugananamandamourthy, MBBS, MSc, Martin S. Green, MD, Andrew D. Krahn, MD, FHRs, FCCS, Sarah Plonka, BSc, and Mark J. Rapoport, MD, FRCPC

162 Cardiac Rehabilitation Programs for Chronic Heart Disease: A Bayesian Network Meta-analysis
Rongzohong Huang, PhD, Suetonia C. Palmer, MB, ChB, PhD, Yu Cao, PhD, Hong Zhang, MD, Yang Sun, PhD, Wenhua Su, MD, Liwen Liang, MD, Sanrong Wang, PhD, Ying Wang, MD, Yu Xu, PhD, Narayan D. Meltani, MD, Libong Jiang, PhD, Giovanni F.M. Strippoli, MD, PhD, and Xingsheng Li, PhD

Letters to the Editor

172.e1 Allergy Evaluation and Desensitization Standards for Radiocontrast Media
Baruch D. Jakubovic, MD, and Mariana Castells, MD, PhD

Departments

A7 Information for Readers