

Contents

- SECTION 1 Basic instrumentation and modalities**
- 1 General principles of echocardiography** 3
Madalina Garbi, Jan D'hooge, and Evgeny Shkolnik
 - 2 Transthoracic echocardiography/two-dimensional and M-mode echocardiography** 15
Miguel Ángel García Fernández and José Juan Gómez de Diego
 - 3 Doppler echocardiography** 27
Jaroslaw D. Kasperek, Anita Sadeghpour, and Ruxandra Jurcut
 - 4 Deformation echocardiography** 35
Matteo Cameli, Partho Sengupta, and Thor Edvardsen
 - 5 Storage and report** 42
Steven Droogmans, Alessandro Salustri, and Bernard Cosyns
 - 6 Transoesophageal echocardiography** 46
Frank A. Flachskampf, Mauro Pepi, and Silvia Gianstefani
 - 7 Three-dimensional echocardiography** 59
Luigi P. Badano, Roberto M. Lang, and Alexandra Goncalves
 - 8 Contrast echocardiography** 70
Asrar Ahmed, Leda Galiuto, Mark Monaghan, and Roxy Senior
 - 9 Hand-held echocardiography** 79
Denis Pellerin, Nuno Cardim, and Christian Prinz
 - 10 Intracardiac and intravascular echocardiography** 85
Gilbert Habib, Carlo di Mario, and Guy Van Camp

- SECTION 2 Cardiac morphology, haemodynamics, and physiology**
- 11 Stress echocardiography: introduction and pathophysiology** 90
Rosa Sicari and Raluca Dulgheru
 - 12 Stress echocardiography: methodology** 92
Maria João Andrade and Albert Varga
 - 13 Stress echocardiography: image acquisition and modalities** 96
Rosa Sicari, Edyta Płoska-Gościńska, and Jorge Lowenstein
 - 14 Stress echocardiography: diagnostic criteria and interpretation** 99
Paolo Colonna, Monica Alcantara, and Katsu Tanaka
 - 15 Stress echocardiography: diagnostic and prognostic values and specific clinical subsets** 104
Luc A. Pierard and Lauro Cortigiani
 - 16 Lung ultrasound** 111
Luna Gargani and Marcelo-Haertel Miglioranza
 - 17 Digital echocardiography laboratory** 115
Reidar Bjørnerheim, Genevieve Derumeaux, and Andrzej Gackowski
- SECTION 3 Left ventricle: morphology and function**
- 18 Left ventricle: morphology and geometry** 123
Peng-Fei Zhang, Yun Zhang, and Siew Yen Ho
 - 19 Left ventricle: cardiac mechanics and left ventricular performance** 126
Erwan Donal, Seisyou Kou, and Partho Sengupta
 - 20 Left ventricle: systolic function** 131
Bernard Cosyns, Thor Edvardsen, Krasimira Hristova, and Hyung-Kwan Kim

- 21 Left ventricle: diastolic function** 147
 Otto A. Smiseth, Maurizio Galderisi, and Jae K. Oh

- 22 Left atrium** 162
 Monica Rosca, Sergio Mondillo, and Kim O'Connor

- 23 Right ventricle and pulmonary arterial pressure** 171
 Annemien E. van den Bosch, Luigi P. Badano, and Julia Grapsa

- 24 Right atrium** 185
 Thierry Le Tourneau, Luis Caballero, and Tsai Wei-Chuan

SECTION 3

Echocardiographic assessment of disease

- 25 Heart failure: left ventricular systolic dysfunction** 193

Erwan Donal and Elena Galli

- 26 Heart failure: left ventricular dyssynchrony** 197
 Jens-Uwe Voigt, Peter Søgaard, and Emer Joyce

- 27 Heart failure: risk stratification and follow-up** 202
 Marie Moonen, Nico Van de Veire, and Erwan Donal

- 28 Heart failure: preserved left ventricular ejection fraction** 209
 Johan De Sutter, Piotr Lipiec, and Christine Henri

- 29 Ischaemic heart disease: acute coronary syndromes** 216

Gonzalo Luis Alonso Salinas, Marina Pascual Izco, Covadonga Fernández-Golfín, Luigi P. Badano, and José Luis Zamorano

- 30 Ischaemic heart disease: coronary artery anomalies** 228

Eugenio Picano, Fausto Pinto, and Blazej Michalski

- 31 Heart valve disease (aortic valve disease): anatomy and pathology of the aortic valve** 231

Cristina Basso, Gaetano Thiene, and Siew Yen Ho

- 32 Heart valve disease (aortic valve disease): aortic stenosis** 234

Helmut Baumgartner, Stefan Orwat, Elif Sade, and Javier Bermejo

- 33 Heart valve disease (aortic valve disease): aortic regurgitation** 251

Christophe Tribouilloy, Patrizio Lancellotti, Ferande Peters, José Juan Gómez de Diego, and Luc A. Pierard

- 34 Heart valve disease (mitral valve disease): anatomy and morphology of the mitral valve** 267

Giovanni La Canna

- 35 Heart valve disease (mitral valve disease): mitral stenosis** 274

Bogdan A. Popescu, Shantanu P. Sengupta, Niloufar Samiei, and Anca D. Mateescu

- 36 Heart valve disease (mitral valve disease): mitral regurgitation** 282

Patrizio Lancellotti, Raluca Dulgheru, Mani Vannan, and Kiyoshi Yoshida

- 37 Heart valve disease: tricuspid valve disease** 299
 Denisa Muraru, Ashraf M. Anwar, and Jae-Kwan Song

- 38 Heart valve disease: pulmonary valve disease** 313
 Owen I. Miller and Werner Budts

- 39 Heart valve disease: mixed valve disease, multiple valve disease, and others** 317
 Philippe Unger and Gerald Maurer

- 40 Replacement heart valves** 324

John B. Chambers, Phillippe Pibarot, and Raphael Rosenhek

- 41 Endocarditis** 344

Gilbert Habib, Franck Thuny, Guy Van Camp, and Simon Matskeplishvili

- 42 Hypertrophic cardiomyopathy** 354

Nuno Cardim, Denis Pellerin, and Filipa Xavier Valente

- 43 Dilated cardiomyopathy** 372

Fausto Rigo, Covadonga Fernández-Golfín, and Bruno Pinamonti

- 44 Restrictive cardiomyopathy and arrhythmogenic right ventricular cardiomyopathy** 386

Perry Elliott, Kristina H. Haugaa, Pio Caso, and Maja Cikes

- 45 Isolated ventricular non-compaction** 394

Frank Weidemann, Gilbert Habib, and Clara Vazquez

- 46 Takotsubo syndrome** 397

Rodolfo Citro, Laurent Davin, and Daniel Rodriguez Muñoz

- 47 Familial cardiomyopathies** 401

Fausto Rigo, Covadonga Fernández-Golfín, and Bruno Pinamonti

- 48 Right ventricular dilatation and function** 403

Petros Nihoyannopoulos, Gustavo Restrepo Molina, and André La Gerche

- 49 Pericardial disease** 420

Bernard Paelinck, Aleksandar Lazarević, and Pedro Gutierrez Fajardo

SECTION 4

Echocardiographic assessment of disease

- 50 Cardiac transplant patients** 431

Río Aguilar Torres, Luigi P. Badano, and Dimitrios Tsapras

- 51 Cardiac masses and potential sources of emboli** 440
Nadia Benyounes, Mauro Pepi, Roberta Esposito, Carmen Ginghina, and Ariel Cohen
- 52 Cardiac tumours** 451
Maria João Andrade, Jadranka Separovic Hanzevacki, and Ricardo Ronderos
- 53 Diseases of the aorta** 459
Arturo Evangelista, Eduardo Bossone, and Alain Nchimi
- 54 Systemic diseases and other conditions: introduction** 472
Andreas Hagendorff
- 55 Systemic disease and other conditions: athlete's heart** 473
Antonello D'Andrea, André La Gerche, and Christine Selton-Suty
- 56 Systemic disease and other conditions: the heart during pregnancy** 476
Agnes Pasquet, Marcia Barbosa, and Jo-Nan Liao
- 57 Cardiac involvement in systemic diseases** 479
Edyta Płońska-Gościńiak, Michał Ciurzynski, Marcin Fijalkowski, Piotr Gosciniak, Piotr Szymański, Tomasz Pasierski, Daniel Rodriguez Muñoz, and José Luis Zamorano
- 58 Diseases with a main influence on heart valves** 497
Andreas Hagendorff, Elie Chammas, and Mohammed Rafique Essop
- 59 Diseases with a main influence on pericardium** 502
Andreas Hagendorff and Laura Ernande
- 60 Diseases with a main influence on right ventricular function** 505
Damien Voilliot, Jaroslaw D. Kasprzak, and Eduardo Bossone
- 61 Adult congenital heart disease** 507
Giovanni Di Salvo, Werner Budts, and Owen I. Miller
- ## SECTION 5
- ### Specific clinical context/environment
- 62 Acute cardiac care** 531
Susanna Price, Roxy Senior, and Bogdan A. Popescu
- 63 Cardiac rhythm disorders** 542
Kristina H. Haugaa, Francesco Faletta, and João L. Cavalcante
- 64 Cardiac oncology** 552
Maurizio Galderisi, Juan Carlos Plana, Thor Edvardsen, Vitantonio Di Bello, and Patrizio Lancellotti
- 65 Interventional echocardiography** 560
Alejandra Carbonell San Román and José Luis Zamorano
- 66 Perioperative echocardiography** 575
Patrick F. Wouters, Fabio Guaracino, and Manfred Seeberger
- ## SECTION 6
- ### Miscellaneous topics
- 67 Coronary artery imaging** 597
Andreas Hagendorff, Ivan Stankovic, and Masaaki Takeuchi
- 68 Vascular echo imaging** 603
Muriel Sprynger, Iana Simova, and Scipione Carerj
- 69 Competence and certification** 621
Alexandros S. Stefanidis and Bogdan A. Popescu
- 70 Training for emergency echocardiography** 626
Aleksandar N. Neskovic
- 71 Laboratory accreditation** 630
Petros Nihoyannopoulos and Luna Gargani
- 72 Quality assurance in echocardiography** 638
Kevin F. Fox and Henry J. Skinner
- Index** 643