ESTI European Society of Thoracic Imaging

ESTI WINTER COURSE 2023

December 7-9, 2023

REYKJAVIK, ICELAND

COURSE PROGRAMME

ESTI European Society of Thoracic Imaging

WELCOME WORDS

Dear colleagues & friends,

ESTI would like to invite you to join us for the traditional Winter Course in thoracic radiology.

This course will serve as a good introduction to thoracic imaging for someone just starting in this field, as well as a solid refresher for the experienced thoracic radiologist. Topics covered span from ILDs, cancer imaging, infections, vascular and trauma, as well as modalities and AI. The faculty consists of excellent lecturers from across Europe.

We are very happy to welcome you to Reykjavik!

Best wishes,
Anagha P. Parkar
ESTI Winter Course Organiser

CONTENTS

ESTI WINTER COURSE 2023 FACULTY

J. Biederer, Heidelberg/DE
E. Castañer González, Castelldefels/ES
G. Chassagnon, Paris/FR
T. Franquet, Barcelona/ES
B. Ghaye, Brussels/BE
F. Gleeson, Oxford/UK
I. Hartmann, Rotterdam/NL
A. Oikonomou, Toronto/CA
A.P. Parkar, Bergen/NO
M. Prokop, Nijmegen/NL
H. Prosch, Vienna/AT
C. Schaefer-Prokop, Amersfoort/NL
A. Snoeckx, Edegem/BE
V. Vasilevska Nikodinovska, Skopje/MK
J. Wildberger, Maastricht/NL

JÜRGEN BIEDERER, HEIDELBERG/DE

Research Interests

- Advanced imaging strategies for thoracic diseases with multi-slice detector CT and magnetic resonance imaging for diagnostics and motion-adapted radiotherapy
- Pioneer in the establishment of Lung MRI in clinical practice
- Developer of experimental ex-vivo systems for thoracic imaging based on ventilated and perfused porcine lung explants inside a dedicated MR-compatible chest Phantom

Education, Positions and Degrees

2022-2023	President of the European Society of Thoracic Imaging (ESTI)
2012-today	University Hospital Heidelberg, Klinik für Diagnostische und interventionelle Radiologie
2020-today	Head of Radiology, Regional Hospital Bergstrasse/UH Heidelberg
2017-today	Visiting professor, Faculty of Medicine/University of Latvia, Riga
2007-today	Associate Professor of the Faculty of Medicine/CAU Kiel
2012-today	Pulmonary imaging researcher/PI (TLRC-Translational Lung Research Center Heidelberg; DZL-German Lung Research Center)
2014-2019	Head of Radiology, Groß Gerau County Hospital (private practice)
2012-2014	Head of the section Pulmonary Radiology and head of the Division Imaging in the Dpt. of Internal Medicine, UH Heidelberg
2011-2014	Ethics Committee Member/Faculty of Medicine Kiel
2007-2012	Vice Director of the Department of Diagnostic Radiology in Kiel
2005-2006	Head of the Emmy-Schmidt-Research Group „Image guided individual therapy of chest disease“ in Heidelberg
2005-2006	Fellowship in the Department of Radiology at German Cancer Research Center (DKFZ) of the Helmholtz Society (Heidelberg)
2003	Assistant Professor of Diagnostic Radiology
2001	Board certification in „Diagnostic Radiology“
1998	United States Medical License Examinations
1997-2005	Residency and Fellowship, Dpt. of Diagnostic Radiology, UH Kiel
1997	German License to Practice Medicine “Approbation“
1995-1996	Neurosurgery at Paracelsus-Klinik Osnabrück
1996	Thesis: ”Differenzierung der elektrophysiologischen Merkmale cerebellärer Körnerzellen in der Ontogenese: Patch-Clamp-Untersuchungen an Primärkulturen aus Hühnerembryonen” (”magna cum laude”)
1991-1995	Scholarship of Studienstiftung des Deutschen Volkes
1989-1995	Medical School of Christian-Albrechts-University, Kiel

Selected Projects

2014-today Principal Investigator (PI) of the MR-COPD II-study (MRI-based multicenter-trial)
2012-2020 Principal Investigator (PI) within sub-project 7 (Imaging) of ASCONET/ COSYCONET
2015-today Scientific project manager within Heidelberg Thoracic Imaging Platform (HTIP)
2013-today Scientific collaboration as guest scientist at the Department of Radiology at German Cancer Research Center (DKFZ) of the Helmholtz-Society (Heidelberg)
2012-2014 German Research Foundation (DFG) Project "MRI-based parameterization of tissue in interstitial lung disease"- DFG BI 1297/ 2-2
2011-2013 German Reasearch Foundation (DFG) Project "Analysis of regional lung motion with time-resolved MRI" DFG EI 804/ 2-1
2008-2011 German Research Foundation (DFG) Project "Sequence development for MRI of inflammatory lung disease" - BI 1297/ 2-1
2005-2006 Leading the Project DIRO-Lung, strategic alliance between DKFZ and Siemens Medical Solutions
2003-today Further projects regarding cooperation with industry (e.g. Siemens, Kodak/Carestream, Lilly, Medicsight)

Honors and Awards

2007 Felix-Wankel-Tierschutz-Award 2007 of the Ludwig Maximilians-University Munich
2003 Inventors Award of the German Radiologic Society for "Artificial Chest for Diagnostic Radiology"
2002 German patent No. 1011159.7. Künstlicher Thorax.
4 congress prizes awarded to the supervised groups

Memberships

Radiological Society of North America (RSNA)
European Society of Radiology (ESR)
- 2009-2011 ESR Research Committee
- 2013-2015 ECR Program Committee Chest
- 2022-2023 ESR Subspecialties and Allied Sciences Committee

International Workshop for Pulmonary Functional Imaging (IWPFI)
- Committee member since 2010

European Society of Thoracic Imaging (ESTI)
- 2007-2013 Scientific Committee member
- 2007-today Member of the Executive Committee
- 2020 and 2021 President-Elect of ESTI
- 2022-2023 ESTI President

European Society of Hybrid Imaging (ESHI)
European Society of Cardiovascular Radiology (ESCR)
Deutsche Röntgengesellschaft (DRG)
- since 2002 as member of the AG Thoraxdiagnostik
- since 2010 as board member of the AG Thoraxdiagnostik

Norddeutsche Röntgengesellschaft (NDRG)

EVA CASTAÑER GONZÁLEZ, CASTELLDEFELS/ES

- Consultant senior radiologist and Coordinator of the Cardiothoracic radiology section at UDIAT-Centre diagnostic, Hospital Universitari del Parc Taulí, Sabadell (Barcelona).
- Associate professor of the Faculty of Medicine of the Institut Universitari del Parc taulí de Sabadell (Universitat Autónoma de Barcelona).
- ESTI Board member.
- From 2014 until October 2020, member of the European Board of Radiology in the Clinically Oriented Reasoning Evaluation (CORE) Committee (Chest Radiology).

GUILLAUME CHASSAGNON, PARIS/FR

Current Position

Associate professor at Cochin Hospital, Paris – Université Paris Cité

Education

2015-2019	**PhD degree**, CentraleSupelec, Paris Saclay University, FRANCE
2016	**Medical Doctor degree** – with honors, Francois Rabelais University, Tours - FRANCE, Specialty: Radiology
2015	**Master's degree** – with honors, BioMedical Engineering (BME-Paris) – BioImaging track, Paris Descartes University, Paris - FRANCE
2002-2010	**Medical school** at Pitié-Salpêtrière - University of Paris VI, Paris – FRANCE

Five Main Publications

- Campredon A, Battistella E, Martin C, Durieu I, Mely L, Marguet C, Belleguic C, Murris M, Chiron R, Fanton A, Bui S, Reynaud-Gaubert M, Reix Philippe; Hoang-Thi TN; Vakalopoulou M, Revel MP, Da Silva J, Burgel PR, **Chassagnon G**. Using chest CT scan and unsupervised machine learning for predicting and evaluating response to lumacaftor-ivacaftor in people with cystic fibrosis. Eur Respir J. 2022
- Revel MP, Boussouar S, de Margerie-Mellon C, Saab I, Lapotre T, Mompoint D, **Chassagnon G** et al. Study of Thoracic CT in COVID-19: The STOIC Project. Radiology. 2021 Oct;301(1):E361-E370.
- **Chassagnon G**, Vakalopoulou M, Régent A, Sahasrabudhe M, Marini R, et al. Elastic Registration-driven Deep Learning for Longitudinal Assessment of Systemic Sclerosis Interstitial Lung Disease at CT. Radiology. 2021 Jan;298(1):189-198.
- **Chassagnon G**, Vakalopoulou M, Battistella E, Christodoulidis S, Hoang-Thi TN et al. AIdriven quantification, staging and outcome prediction of COVID-19 pneumonia. Med Image Anal. 2021 Jan;67:101860.
- **Chassagnon G**, Martin C, Marini C, Vakalopoulou M, Régent A et al. Use of Elastic Registration in Pulmonary MRI for the assessment of Pulmonary Fibrosis in Systemic Sclerosis patients , Radiology 2019;291(2):487-492.

Patent

Chassagnon G, Revel MP, Rene A, Chemouny S : « Algorithme de scoring automatique des lésions tomodensitométriques thoraciques dans la mucoviscidose ». PCT/EP2017/075246

TOMÁS FRANQUET, BARCELONA/ES

Education

M.D. University of Navarra, Pamplona, Spain, 1976
Ph.D. Pathologic-radiologic correlation of epithelial metastases to bone. Histomorphometric analysis. Cum Laude
Residency: 1980-84 Radiology University Clinic, Pamplona. **Fellowship in Thoracic Imaging (Dr Nestor L. Müller):** 2002 Vancouver General Hospital
Associated Professor of Radiology (1996-2014) in the Universitat Autónoma de Barcelona, Member of the Fleischner Society (2006-), Member of RSNA (Radiological Society of North America), STR (Society of Thoracic Radiology), ESTI (European Society of Thoracic Imaging), ARRS (American Roentgen Ray Society) and SERAM (Sociedad Española de Radiología Médica), Sociedad Española de Imagen Cardio-Torácica (SEICAT)

Past-President – 2010 SEICAT (Sociedad Española de Radiología Cardiotorácica)
Past-President – 2015 ESTI (European Society of Thoracic Imaging)
Honorary Member: ESTI (European Society of Thoracic Imaging), BSTI (British Society of Thoracic Imaging), SEICAT (Sociedad Española de Imagen Cardio-Torácica)

Director of the Section of Thoracic Radiology. Hospital de Sant Pau, Barcelona (Spain)

Research Grants

European Association of Radiology (EAR) Research Grant (ECR 2002) Research Fellowship (2002)
Research Project "Diagnostic accuracy of gadolinium-enhanced MR angiography vs. contrast-enhanced multislice helical CT in the diagnosis of distal segmental and subsegmental pulmonary emboli. A comparative study." Vancouver General Hospital, BCU, Vancouver, Canada. Director: Nestor L. Müller MD

Publications

Correlations. 2nd Ed. Kyung Soo Lee, Tomás Franquet, Joungho Han and Takeshi Johkho),
Contributions to Key Clinical Questions. Pulmonary Imaging. Sujal Desai MD, Tomás Franquet MD, Thomas Hartman MD, Athol Wells MD, and **Imaging of Pulmonary Infections.** Nestor L. Müller MD, Tomás Franquet MD & Kyung Soo Lee MD. **Contributing Author:** 38 Book Chapters.
Published articles: 127 Peer reviewed articles

BENOIT GHAYE, BRUSSELS/BE

Belgian, born in Liège in 1965

MD degree in University of Liège in 1990

Radiologist diploma in University of Liège in 1995

Fellowship in Universities of Liège and Lille (France) : 1995-2001

Head of Cardio-thoracic radiology in University Hospital of Liège : 1995-2009

Head of Cardio-thoracic radiology in Cliniques Universitaires St Luc, Catholic University of Louvain : 2009-2023

Professor of Radiology : 2015

Phd thesis : Acute pulmonary embolism : CT diagnosis and prognosis in Université libre de Bruxelles

Author or coauthors of 141 papers, 4 books and 23 book chapters

Board member of European Society of Thoracic Radiology, French society of Thoracic Radiology, Belgian Radiological Society and Club Thorax (France)

FERGUS GLEESON, OXFORD/UK

Professor Fergus Gleeson is a Consultant Radiologist and Professor of Radiology in Oxford. He trained in Cambridge, Papworth and London, and was a Fellow in Radiology at UCLA in America. He was appointed to Oxford in 1992, is Head of Academic Radiology in Oxford, and is the Director of the Oxford Radiology Research Unit at Oxford University Hospitals NHS Foundation Trust. He is a past President of the European Society of Thoracic Imaging, and has published over 200 peer review papers and book chapters, has a h-index of 62, and currently has more than £30 million in grant income.

He is the PI for IDEAL and DART, two multicentre studies investigating the use of Artificial Intelligence in pulmonary nodules and lung cancer, and the PI for EXPLAIN, a multicentre study investigating Long COVID using hyperpolarised Xenon MRI. His specialist interests are in Artificial Intelligence, Thoracic Imaging, PET-CT and Hyperpolarized xenon MRI. He is also the Chief Medical Officer of the National Consortium of Intelligent Medical Imaging (NCIMI): which aims to bring together the NHS, and University and industry partners to promote the development and implementation of artificial intelligence in medicine.

IENEKE HARTMANN, ROTTERDAM/NL

Ieneke Hartmann is a radiologist at Maasstad Hospital Rotterdam. After graduation at Erasmus University Medical School Rotterdam/NL, she was a PhD candidate (1996-2000) and served as a resident radiologist (2000-2004) both at UMC Utrecht/NL. After spending one year as a clinical fellow in thorac radiology in Lille, France (2005), she became head of thoracic radiology at the Erasmus MC Rotterdam (2006-2011) and since 2011 at the Maasstad Hospital Rotterdam.
She was co-founder and president of the Thoracic Section of the Radiological Society of the Netherlands (2011-2018), and was and currently is a member of various committees and study groups of the Radiological Society of the Netherlands, European Society of Thoracic Imaging and European Society of Radiology.
Since her residency, she has been active in teaching and speaks at national and international meetings including the Radiological Society of the Netherlands, ESTI and ECR.

ANASTASIA OIKONOMOU, TORONTO/CA

Dr. Anastasia Oikonomou completed her radiology residency and PhD in Aristoteles and Democritus University in Greece. She subsequently completed clinical and research fellowships in thoracic imaging in Royal Brompton Hospital in London, UK, in the University of Ottawa and in the University of British Columbia in Vancouver, Canada. She also pursued later a cardiac imaging fellowship in the University of Ottawa, Canada.
She is a Staff Cardiothoracic radiologist and the Head of the Cardiothoracic Imaging Division in Sunnybrook Health Sciences Centre in Toronto. She is an Associate Professor at the University of Toronto and an affiliated Scientist at the Sunnybrook Research Institute. She is an active contributing member of ESTI, ECR, STR, RSNA and she has presented in multiple conferences nationally and internationally. Her research interests are mainly focused on classification and prognostication of lung malignancies using artificial intelligence with CT, PETCT and lung MRI, on interstitial lung diseases and lung infections.

ANAGHA P. PARKAR, BERGEN/NO

Anagha P. Parkar is a radiologist at Haraldsplass Deaconess Hospital in Bergen, Norway.
She received her medical degree from the Ruhr Universität Bochum, Germany, in 1998. After the obligatory clinical internships in surgery and medicine, as well as general practice in Northern Norway from 1999 to 2001, she commenced her radiology training in Bergen. After completing radiology training in 2006, she stayed on for two years at the Haukeland University Hospital, Bergen in the section of Thoracic Radiology.

Since 2008, she has worked as a general radiologist at Haraldsplass Deaconess Hospital, Bergen, with a special interest in musculoskeletal, chest and cardiac imaging. She is actively involved in teaching radiology to medical students from the University of Bergen, and research in the musculoskeletal and chest imaging field. She defended her PhD thesis on post-operative ACL imaging in 2021. Her publications can be viewed here.
She has served on the boards of the Norwegian Society of Radiology, Norwegian Society of Musculoskeletal radiology and European Society of Musculoskeletal Society. Currently, she is Treasurer for the Norwegian Society of Thoracic imaging, President Elect of the European Society of Thoracic Imaging, member of the ISS Diversity, Equity and Inclusion Working Group. In the family of European Society of Radiology, she is active on several boards and committees.

MATHIAS PROKOP, NIJMEGEN/NL

Mathias Prokop studied Medicine and Physics in Marburg and Hannover, Germany. He trained in radiology at Hanover Medical School and continued as staff member, becoming one of the pioneers in digital radiography and CT, introducing CT angiography and optimizing scanning techniques. In 1998, he transferred to the University of Vienna as an Associate Professor. His book on Spiral- and Multislice CT Imaging had substantial influence in the field.
After his move to the Netherlands in 2002 to become Full Professor of Radiology at the University Medical Center Utrecht, he worked on lung screening as one of the main contributor to the NELSON trial. In 2009 he was appointed Chairman of the Department of Radiology at Radboud University Medical Center. By 2020, Radiology, Nuclear Medicine and Anatomy were fused to form the Department of Medical Imaging. In 2022 Prokop also became Chairman of the Department of Radiology at University Medical Center Groningen. His departments in Nijmegen and Groningen focus on impactful innovations in care, forming some of the largest research groups in Europe. Mathias has published over 400 scientific articles, and is honorary member of various Radiological Societies, most recently, the Japan Radiological Society.

HELMUT PROSCH, VIENNA/AT

Helmut Prosch, MD, is an Associate Professor at the Department of Biomedical Imaging and Image-guided Therapy at the Medical University of Vienna, Vienna, Austria. He serves as the Deputy Head of the Division of General and Paediatric Radiology and is the Section Chief of Thoracic Imaging. His research primarily focuses on the diagnosis and staging of lung cancer, as well as the application of deep learning in diagnosing diffuse parenchymal lung diseases. He is the Vice President of the European Society of Thoracic Imaging (ESTI) and serves as the Deputy Editor of the journal European Radiology. He has published more than 220 articles, reviews, or book chapters.

CORNELIA SCHAEFER-PROKOP, AMERSFOORT/NL

Cornelia Schaefer-Prokop received her radiology training from 1987 to 1993 in Germany. From 1988 to 89 she worked as a research fellow in Chest Radiology at Harvard Medical School, Boston. She received her professor of Radiology at Hannover Medical School, Germany in 2007. After having worked for 6 years at the General Hospital of Vienna, she moved in 2004 to the Netherlands where she works in the Meander Medical Center, Amersfoort and in Radboud University, Nijmegen.
Prof. Schaefer-Prokop is known for her research in Chest Radiology applications of artificial intelligence in CT and radiography, CT of interstitial lung diseases and lung cancer screening. She is editorial board member of Radiology and European Radiology. She is author of some 200 articles in peer reviewed journals and more than 40 book chapters, is co-editor or editor of 3 books (Computed Tomography of the Body, Critical Care Radiology and the 6th/7th edition of the Grainger & Allison).
Cornelia Schaefer-Prokop has given more than 250 invited lectures at international conferences and postgraduate teaching courses including the ECR, RSNA, ERS and the IDKD. She was president of the European Society of Thoracic Imaging (ESTI) in 2014 and president of the Fleischner society in 2022.

ANNEMIEK SNOECKX, EDEGEM/BE

Annemiek Snoeckx, MD, PhD is Associate Professor at the University of Antwerp and Chair of the Radiology Department of the Antwerp University Hospital in Belgium.
Professor Snoeckx's clinical and research interests are in the field of chest imaging, in particular thoracic oncology (in general), lung cancer, pulmonary nodules, lung cancer screening and implementation of artificial intelligence.
She is an active member of numerous committees within the European Society of Thoracic Imaging, European Society of Radiology, European Respiratory Society and Belgian Society of Radiology.
Professor Snoeckx is passionate about education on thoracic oncology topics. She authored or co-authored more than 85 papers in peer-reviewed journals and has lectured at many national and international meetings and courses.

V. VASILEVSKA NIKODINOVSKA, SKOPJE/MK

Undergraduate/Medical/Graduate
1992 College/Medical School, University "Ss. Cyril and Methodius" Skopje, Republic of Macedonia
1993-1996 Master degree in Medicine, Medical School, University "Ss. Cyril and Methodius" Skopje, Republic of Macedonia. Defended Master Thesis (MSc.) "Ultrasound diagnosis of appendicitis" Medical School, University "Ss. Cyril and Methodius" Skopje, Republic of Macedonia

2009 Defended Doctoral (PhD) Thesis: "Assessment of Radiological Staging and Histopathological Correlation in Management of Soft Tissue Musculoskeletal Tumors" Medical School, University "Ss. Cyril and Methodius" Skopje, Republic of Macedonia

Professional Experience

1992-1995 General Practitioner, Surgery Department, Orthopedics and Traumatology, Department of Urology, University Surgical Clinic "St. Naum Ohridski" Skopje, Macedonia
2000-present Specialist in Diagnostic Radiology, Department for diagnostic radiology, University Surgery Clinicv"St. Naum Ohridski", Skopje
Field of interest - Musculoskeletal Imaging
2000- Introduced the technique of "Ultrasound diagnosis of appendicitis" in her routine practice at the Radiology department at the University Surgical Clinic "St.Naum Ohridski" Skopje, Macedonia, which is now routinely used by other radiologist at the department
2003 Introduced the technique of "Ultrasound and CT guided core biopsy of musculoskeletal tumors", in her routine practice at the Radiology department at the University Surgical Clinic "St.Naum Ohridski" Skopje, Macedonia, which from 2015 is routinely used by some of the radiologist at the department
2003 Introduced the technique of "Ultrasound percutaneous drainage of hydatid cysts", in her practice at the Radiology department at the University Surgical Clinic "St. Naum Ohridski" Skopje, Macedonia
2003-present Working at Interventional Extravascular procedures, Imaging guided biopsy of musculoskeletal system
2014 Introduced the technique of "CT guided core biopsy of bone tumors", in her routine practice at the Radiology department at the University Surgical Clinic "St.Naum Ohridski" Skopje, Macedonia.
2015–present Subspecialist in Musculoskeletal diagnostic and interventional radiology fellowship, University Institute of Radiology, Clinical Center "Mother Theresa" University "Ss.Cyril and Methodius" in Skopje.

Research Projects

1995 "Verbal expression of born Macedonian speakers with brain damage from different etiology" Clinic for Neurosurgery, Medical Faculty, University "Ss. Cyril and Methodius", Skopje.
1998 "Macedonian multicenter study for lethal skeletal dysplasia"
Clinic for Radiology, Medical Faculty, University "Ss. Cyril and Methodius", Skopje.
2003 Diagnostic quality of digital and conventional radiographs of the hip and knee in the assessment of endoprotheses. University Clinic for Radiodiagnostic, Department of Osteology, AKH Vienna, Austria, Prof.H.Imhof
2003 MDCT versus digital radiography in the evaluation of bone healing in orthopedic patients. University Clinic for Radiodiagnostic, Department of Osteology, AKH Vienna, Austria, Prof. H. Imhof
2010 "Environmental and health Impact of fly-ash nanoparticles and their inertization into polymer based nanocomposites" ID=248136
2010 "Development of Eco-Innovative, sustainable and green technologies, products and practical onsite system solutions for environmentally friendly recycling and reuse of construction and demolition wastes" ID=265349.

2017 "Sarcopenia imaging biomarkers and clinical application" Main proposer Iwona Sudol-Szopinska – Proposal Reference: OC-2017-1-22209 international project, representative for Macedonia Vasilevska Nikodinovska Violeta
2018 "Sarcopenia imaging biomarkers and clinical application" Main proposer Iwona Sudol-Szopinska – Proposal Reference: OC-2018-1-22515 international project, representative for Macedonia Vasilevska Nikodinovska Violeta
2018 Ongoing project: "Incidental lesion of the breast on chest computed tomography", Medical Faculty, University "Ss. Cyril and Methodius", Skopje, Macedonia
2019 „Application of Ionizing Radiations in Nanotechnology for Environmental, Energy and Health purposes (Acronym: NANO IRRA NET)" - 2018-2019 (2-four years)
2021 Project reviewer of bilateral project Macedonia – Austria, Ministry of Education and Science of the Republic of North Macedonia "Implementation of innovation models to the process

J. WILDBERGER, MAASTRICHT/NL

Joachim Ernst Wildberger (1966) is full Professor of Radiology and Chairman of the Department of Radiology and Nuclear Medicine at Maastricht University Medical Center (MUMC+), the Netherlands. In addition, he serves as Medical Director of the Division of Medical Imaging and Clinical Laboratories at MUMC+.
Graduated at the Rhenian-Westphalian Technical University (RWTH) in Aachen, Germany, he received his medical degree in 1994 from RWTH. After internships in Cardiology and Diagnostic Radiology (Mönchengladbach/Leipzig), he started his residency in Diagnostic Radiology at the University Hospital Aachen. He was board certified for Diagnostic Radiology in December 1998 and became a fellow/staff member at this department thereafter. He received his Ph.D. in Radiology in 2002, and received a professorship at the RWTH Aachen in 2007. In July 2007 he became Head of Department, Diagnostic Radiology, HELIOS Klinikum Berlin-Buch, Charité Berlin, Campus Buch, Germany, before moving to his present position in July 2008.
Joachim E. Wildberger is principal investigator "Imaging" at the Cardiovascular Research Institute Maastricht (CARIM) and chair of the imaging cluster within Maastricht University; Faculty of Health, Medicine and Life Sciences (FHML). He is author and co-author of ~450 scientific papers in peer-reviewed international journals. His main research topics are technical developments and functional imaging in computed tomography, contrast media research, cardiovascular and thoracic imaging as well as image-guided interventions.
Within the European Sociecty of Thoracic Imaging (ESTI), he is currently chairing the Industry Relation Committee.

PROGRAMME OVERVIEW

THURSDAY, DECEMBER 7

09:00-10:40 Session 1: Lung Cancer
Moderator: A.P. Parkar, Bergen/NO

09:00 Welcome
A.P. Parkar, Bergen/NO

09:05 Lung cancer screening
M. Prokop, Nijmegen/NL

09:40 Imaging evaluation after immunotherapy
A. Snoeckx, Edegem/BE

10:10 Difficult cases of lung cancer MDTs
A. Snoeckx, Edegem/BE

10:40-10:55 Break

10:55-11:40 Session 2: Back to Basics
Moderator: A. Snoeckx, Edegem/BE

10:55 CT of trachea and large airways
M. Prokop, Nijmegen/NL

11:17 CT of small airways
J. Biederer, Heidelberg/DE

11:40-12:35 Lunch

12:35-14:05 Session 3: Vessels
Moderator: A.P. Parkar, Bergen/NO

12:35 Pulmonary embolism and pulmonary hypertension
B. Ghaye, Brussels/BE

13:05 Vasculites
E. Castañer González, Castelldefels/ES

13:35 Acute aortic syndrome, diagnosis/ post treatment
A.P. Parkar, Bergen/NO

13:55 Q&A

14:05-14:20 Coffee Break

14:20-15:20 Session 4: ILD I
Moderator: A.P. Parkar, Bergen/NO

14:20 HRCT patterns (nodular, linear, mosaic)
G. Chassagnon, Paris/FR

14:50 Interstitial lung disease in collagenosis
C. Schaefer-Prokop, Amersfoort/NL

15:20-15:40 Coffee Break

15:40-17:05 Session 5: ILD II
Moderator: A.P. Parkar, Bergen/NO

15:40 Pneumoconioses
H. Prosch, Vienna/AT

16:05 Drug induced pulmonary disease, incl. HP
C. Schaefer-Prokop, Amersfoort/NL

16:30 Sarcoidosis and granulomatous disease
H. Prosch, Vienna/AT

16:55 Q&A

FRIDAY, DECEMBER 8

08:00-09:20 Session 6: Smoking related disorders
Moderator: A. Snoeckx, Edegem/BE

08:00 Pulmonary infections
T. Franquet, Barcelona/ES

08:35 Differential diagnosis of cavitary lung diseases
A.P. Parkar, Bergen/NO

09:20-09:35 Break

09:35-11:15 Session 7: Neoplasms
Moderator: I. Hartmann, Rotterdam/NL

09:35 Lung cancer staging
J. Biederer, Heidelberg/DE

10:05 Pleural neoplasms
A. Snoeckx, Edegem/BE

10:35 Mediastinal tumors
I. Hartmann, Rotterdam/NL

11:15-11:20 Break

11:20-12:05 Industry sponsored symposium: AI for lung nodule detection: Insights and results from 3 years of clinical usage of Veye Lung Nodules at Hospital Cochin
G. Chassagnon, Paris/FR

12:05-13:00 Lunch

13:00-14:30 Session 8: AI, cystic lung diseases, infections
Moderator: J. Biederer, Heidelberg/DE

13:00 Artificial intelligence in chest radiology
F. Gleeson, Oxford/UK

13:30 Cystic lung diseases
A.P. Parkar, Bergen/NO

14:00 Pleural disease infection
F. Gleeson, Oxford/UK

14:30-15:00 Coffee Break

15:00-16:30 Session 9: Infections, AI
Moderator: A.P. Parkar, Bergen/NO

15:00 Imaging of mycobacterial infection
F. Gleeson, Oxford/UK

15:30 Imaging smoking related disease
G. Chassagnon, Paris/FR

16:00 Sarcopenia in COPD
V. Vasilevska Nikodinovska, Skopje/MK

SATURDAY, DECEMBER 9

08:15-09:45 Session 10: LCS, Intervention, MRI
Moderator: A.P. Parkar, Bergen/NO

08:15 Management of nodules, LCS
J. Biederer, Heidelberg/DE

08:45 Lung ultrasound and Thoracic interventions
J. Wildberger, Maastricht/NL

09:15 MRI of the lungs applications/ future
A. Oikonomou, Toronto/CA

09:45-10:15 Coffee Break

10:15-11:00 Industry sponsored symposium: Optimizing Lung Cancer Screening: A Clinical Approach with Artificial Intelligence Integration

10:15 Update on lung cancer screening programs
S. Schmidt, Forchheim/DE

10:30 From Data to Diagnosis: Unleashing AI in Thoracic Radiology (including Q&A)
B. Sabel, Munich/DE

11:00-11:05 Short Break

11:05-12:45 Session 11: Trauma
Moderator: A.P. Parkar, Bergen/NO

11:05 Thoracic trauma imaging
A. Oikonomou, Toronto/CA

11:35 Quiz cases
J. Wildberger, Maastricht/NL

12:05 Information about future ESTI meetings
A.P. Parkar, Bergen/NO

12:35 Farewell
A.P. Parkar, Bergen/NO

12:45-13:45 Lunch/Farewell

ABSTRACT SYLLABUS

LUNG CANCER SCREENING

M. Prokop, Nijmegen/NL

Description

Lung cancer deaths overall will fall in Europe in 2023, but lung cancer is still the main cause of cancer deaths in men and is rising among women in France, Italy and Spain. With advances in immunotherapy, lung cancer survival has improved but comes with a hefty price tag of several 10 to 100,000 Euro per person per year. Early detection and treatment can reduce lung-cancer related deaths and excessive rise in healthcare costs, which is why the UK is implementing lung screening and the EU is exploring how to implement it in its member states.

This presentation will focus on some of the basic principle of lung screening, its results and practical aspects on how to successfully implement it. With three screening rounds, lung cancer mortality reductions of some 20-25 % can be achieved overall. However, the effect in women can be substantially larger (>50 %) but will fade 3 years after stopping the screening programs. Longer screening may even result in an all-cause mortality reduction (Italian MILD trial).

Modern low-dose CT screening techniques require substantially less than 0.5 mSv, with the most modern techniques providing a radiation exposure similar to a flight from Europe to Japan via the polar route. By adopting modern nodule management guidelines, such as LungRADS, ESTI or ILSCT, the biopsy rate can be reduced to roughly 2 %, of which 50 % will show cancer. Less frequent screening in individuals with a lower post-test risk for cancer, high-throughput screening and the use of AI for reading support can cut costs substantially. Recruitment needs to be optimized, readers need to be trained to recognize less frequent forms of cancer, and registries need to be set up to ensure optimum quality and continuous improvement of screening programs.

IMAGING EVALUATION AFTER IMMUNOTHERAPY

A. Snoeckx, Edegem/BE

Immunotherapy using immune-checkpoint inhibitors as emerged as an effective treatment for advanced lung cancer. Because of the distinct mechanisms of immunotherapy, unconventional immune-related findings are encountered. These are related to response to treatment, tumor progression and diagnosis/monitoring of immune-related adverse events. In this lecture, the current status of cancer immunotherapy will be discussed as well as iRECIST and imaging features and pitfalls of immune-related responses (including the concept of pseudo- and hyperprogression) and toxicities.

DIFFICULT CASES OF LUNG CANCER MDTS

A. Snoeckx, Edegem/BE

Description

Lung cancer is the leading cause of cancer-related mortality worldwide. Despite advances in treatments, the 5-year survival rate remains low reflecting the still large proportion of patients receiving a diagnosis in a metastatic stage of disease. Therefore to improve lung cancer outcome is a high priority. On the other hand, the survival rate for localized disease increased up to 57 %, underlining the great potential of the early diagnosis and screening programs. Changes in the therapeutic scenario, especially for NSCLC (non-small cell lung cancer), have emphasised the need for a multidisciplinary team (MDT) approach in lung cancer. Indeed, MDT approach has emerged as the standard of care in cancer management in the last two decades, and it is now considered a medical intervention in its own right. MDT management, by timely delivering best evidence-based practice care, has been shown to improve patient-centered outcomes and survival, and to influence providers' initial plans in substantial proportions of patients. The most common clinical scenarios presented at the MDT are pulmonary nodule management and stage III-IV lung cancer, the latter characterized by extreme heterogeneity. Other issues commonly discussed by MDT are response assessment and differential diagnoses among lung toxicity - induced by targeted therapies and immunotherapy - and lung infections or recurrence. In this lecture, all these issues will be discussed by presenting challanging cases approached by MDT.

Learning Objectives

- To learn how to optimize by imaging lung cancer staging and to properly address patients to the best therapeutical option.
- To highlight by cases how multimodality treatments have changed the needs of oncologists and the answers from radiologists in patients with advanced lung cancer.
- To provide imaging clues helpful in recognizing lung toxicity due to novel treatments respect to infections or disease recurrence in advanced lung cancers.

CT OF TRACHEA AND LARGE AIRWAYS

M. Prokop, Nijmegen/NL

Description

CT evaluation of the trachea and large airways can be performed on routine thin-section CT but expiratory or dynamic scans may be required to optimally evaluate tracheobronchial stability in certain diseases. Simple and more complex visualization techniques, including thin-slab volume rendering and cinematic rendering techniques will be discussed. Understanding the tracheobronchial anatomy is crucial for diagnosing diseases that differentially affect the cartilaginous and membranous components. The course will discuss congenital variants and findings in trauma, infections, inflammatory disorders, neoplasms. It will cover a wide spectrum of tracheal diseases and provide guidance on how to best establish the most likely diagnosis in patients with abnormalities in the tracheobronchial system.

CT OF SMALL AIRWAYS

J. Biederer, Heidelberg/DE

Description

Imaging of the airways and their diseases plays an increasing role for scientific investigation and clinical monitoring. Specific therapeutic approaches, for example in chronic obstructive lung disease or cystic fibrosis, have raised the need for following local alterations of lung morphology and function beyond the scope of global tests such as spirometry – in particular for small airways that contribute only little to total airway resistance and thus can hide a significant amount of disease from conventional pulmonary function tests.

Despite their differences in etiology and pathophysiology, airway diseases have common radiological manifestations. Computed tomography (CT) is typically the technique of choice to study diffuse diseases and small airways involvement with high spatial resolution.

In healthy subjects, multi-slice computed tomography (MSCT) depicts peripheral airways down to the 8th generation. Even smaller airways disease may become directly visible with bronchiectasis or with intrinsic contrast enhancement, for example from retained mucus in patients with cystic fibrosis. Such alterations become visible as centrilobular nodules when airways are oriented perpendicular to the imaging plane or as tree-in-bud sign when they are oriented parallel to the imaging plane. Dysfunction of small airways (for example expiratory collapse or occlusion) can become visible as mosaic pattern or air trapping on expiratory scans as indirect signs of bronchiolar involvement.

More differentiated functional imaging is achieved with contrast enhancement. Intravenous application of a contrast bolus can show perfusion deficits due to airway obstruction and hypoxic vasoconstriction as an indirect functional test. Dual energy CT (DECT) is capable to show these effects in clinical use. Direct visualization of ventilated airspace can be achieved with DECT and Xenon- (alternatively Krypton) inhalation, however, these technologies are usually not readily available for clinical imaging.

Take-home messages

With MSCT, airways are directly visualized to the 8th (CT) order.
Bronchiectasis and mucous plugging increase the visibility of even smaller airways.
Mosaic perfusion and air trapping are indirect signs of bronchiolar involvement.
Perfusion deficits after i.v.-contrast reflect hypoxic vasoconstriction in ventilation disorders.
Inhaled Xenon may be used to directly visualize pulmonary airspace with DECT.

PULMONARY EMBOLISM AND PULMONARY HYPERTENSION

B. Ghaye, Brussels/BE

Description

Pulmonary embolism (PE) is the third cardiovascular emergency after myocardial ischemia and stroke. CT pulmonary angiography (CTPA) has become the gold standard for the diagnosis of PE and has the advantage of 24/7 availability. In patients with PE, CTPA may also contribute to patient risk stratification mainly using sign suggestive of right heart dysfunction. CTPA acquisition requires proper technique tailored to each patient condition. CTPA interpretation requires knowledge of many artifacts that may simulate PE and also differential diagnosis including non-thrombotic pulmonary embolism.

VASCULITES

E. Castañer González, Castelldefels/ES

Description

We will emphasize the importance of combine radiological signs with the clinical features and laboratory results, as vasculitis may mimic other disorders and sometimes the clinical features arte the clue.

First, we talk about large vessel vasculitis; aortic wall thickening (aortitis) is the sign that leads us to suspect large-vessel vasculitis, but this sign is nonspecific and can be seen in many other entities. To establish a differential diagnosis, we need to consider factors such as vessels involved, other radiological findings, age, symptoms or if there is known previous disease.

Second, we will talk about small vessels vasculitis. We will describe the findings in granulomatosis with polyangitis (GPA, Wegener disease) and eosinophilic granulomatosis with polyangiitis (Churg-Strauss disease), highlighting the differences.

To finalize we will discuss about diffuse alveolar hemorrhage (DAH) that is one of the manifestations of primary pulmonary vasculitis, among other entities (idiopathic alveolar hemorrhage, collagen vascular diseases, drug reactions, anticoagulation disorders). Radiologic signs of DAH are nonspecific and variable but must be considered in patients with otherwise unexplained alveolar infiltrates, particularly when seen with new-onset renal insufficiency or a connective tissue disease.

Learning objectives

- To review the vasculitis that more frequently affects the thoracic vessels, respiratory system and also the causes of diffuse pulmonary hemorrhage.
- To familiarize radiologist with helpful CT findings and clinical features that can help in the differential diagnosis.

ACUTE AORTIC SYNDROME, DIAGNOSIS/POST TREATMENT

A.P. Parkar, Bergen/NO

Description

The term acute aortic syndrome includes 3 types of aorta pathology:

1. Aortic dissection
2. Penetrating aortic ulcer
3. Intramural hematoma

Aortic pathology usually occurs in the course of atherosclerotic disease, other causes include (endothel) medial degeneration, trauma or infection (mycotic). The symptoms are similar, thus imaging plays a vital role in diagnosis.

Imaging criteria to differentiate the types of aortic syndromes will be explained and illustrated with cases.

Post operatively, endo-leak is the most common finding, but dilatation, pseudo- aneurysms and re-rupture may also occur.

Learning objectives

- To learn about the protocols to examine the aorta
- To recognise the types of acute aortic syndromes, to recognise the post-operative complications

HRCT PATTERNS (NODULAR, LINEAR, MOSAIC)

G. Chassagnon, Paris/FR

Description

This presentation will discuss nodular, linear and mosaic patterns. We will discuss how to differentiate between centrilobular, perilymphatic, and random pulmonary nodules, as well as the differential diagnosis based on these distribution patterns. For the reticular pattern, we will review the main differential diagnoses based on location and accuity. Finally, this presentation will focus on mosaic attenuation and how to differentiate between ground glass opacities and mosaic perfusion of vascular or bronchial origin.

INTERSTITIAL LUNG DISEASE IN COLLAGENOSIS

C. Schaefer-Prokop, Amersfoort/NL

Description

Patterns of interstitial pulmonary pathology seen in collagenosis include fibrotic patterns such as UIP and NSIP but also more rare patterns such as LIP or potentially reversible findings such as organizing pneumonia (OP). There is no specific pattern characterizing a specific collagenvascular disease. However, there are differences in how frequently one or the other pattern is seen in certain diseases. The focus of the presentation will lie on the combination of findings suggestive for an underlying systemic disease. Prognostic factors such as signs of pulmonary hypertension or signs of progressive fibrosis will be discussed. The diagnosis of collagenvascular diseases relies on an interdisciplinary approach that involves not only CT findings but also the consideration of serological markers and of the cytological findings seen in the bronchoalveolar lavage (BAL).

Learning objectives

- To get familiar with the patterns of interstitial parenchymal disease in combination with airways and pleural pathology, seen in collagenvascular diseases
- To learn which CT findings are suggestive for an underlying systemic disease as opposed to an idiopathic lung fibrosis
- To learn about CT findings that have prognostic implication with special emphasis on progressive fibrosis and pulmonary hypertension

PNEUMOCONIOSES

H. Prosch, Vienna/AT

Description

Pneumoconiosis, resulting from dust inhalation in occupational settings, remains a global health concern. As industrial occupations rise, timely diagnosis and monitoring of pneumoconiosis are crucial, with imaging playing a central role.

Traditionally, chest radiographs (CXR) have been fundamental in pneumoconiosis detection. The International Labour Organization (ILO) classification, based on CXR, offers a standardized diagnostic approach. However, CXR's sensitivity in early-stage detection, especially in silicosis, is limited.

High-resolution computed tomography (HRCT) has proven superior, offering detailed lung parenchyma visualization. HRCT identifies early fibrotic changes, small nodules, and ground-glass opacities often overlooked on CXR. Its ability to distinguish between pneumoconiosis types, such as asbestosis and silicosis, enhances its diagnostic prowess.

Emerging imaging techniques, like dual-energy CT and advanced algorithms, provide morphological and functional insights, aiding in understanding disease progression and functional impairment.

DRUG INDUCED PULMONARY DISEASE, INCL. HP

C. Schaefer-Prokop, Amersfoort/NL

Description

The presentation will focus on pulmonary pathology induced by immunotherapy and targeted cancer therapy. Findings include patterns known from idiopathic interstitial lung disease such as UIP, NSIP, OP and DAD. There are no specific patterns related to specific drugs. Diagnosis requires an interdisciplinary approach with information about timeline and type of chemo / immunotherapy and radiation therapy as well as acute clinical parameters including laboratory findings, renal insufficiency, or fever. Preexisting lung disease affects the CT findings. Most challenging differential diagnosis include infection, cardiogenic edema, and primary tumor progression.

Hypersensitivitypneumonitis (HP) can present as non-fibrosing or as fibrosing lung disease. The key finding to differentiate fibrosing HP from other fibrosing lung diseases is the "three-density-sign" referring to secondary lobules with decreased density due to overinflation, normal density and increased density caused by fibrosis. Progressive fibrosing HP is an indication for antifibrotic treatment.

Learning objectives

- To get familiar with the most frequent CT patterns of drug-related pneumotoxicity
- To learn about the challenges of differentiating pneumotoxicity from other underlying diseases by discussing representative cases
- To learn about typical patterns of non-fibrosing and fibrosing HP and what are helpful signs to differentiate them from other interstitial lung diseases

SARCOIDOSIS AND GRANULOMATOUS DISEASE

H. Prosch, Vienna/AT

Description

Sarcoidosis is a multisystem granulomatous disorder of unknown etiology, with the lungs being the most commonly affected organ. Accurate diagnosis and monitoring of pulmonary sarcoidosis are essential for patient management and prognosis. Imaging modalities play a pivotal role in these processes.

Chest radiography (CXR) has traditionally been the first-line imaging modality for suspected sarcoidosis. It offers a broad overview of lung architecture and can classify the disease into stages based on parenchymal and nodal involvement. The Scadding system, based on CXR findings, categorizes sarcoidosis into five stages or types, providing a standardized approach to diagnosis and aiding in prognostication.

However, high-resolution computed tomography (HRCT) has emerged as a more sensitive tool, especially for detecting early and subtle changes. HRCT can visualize specific patterns like nodular opacities, ground-glass opacities, and fibrotic changes, offering a detailed assessment of disease

extent and activity. It is particularly valuable in cases where CXR findings are inconclusive or when extrapulmonary manifestations are suspected.

PET/CT has shown potential in assessing disease activity, identifying occult sites of involvement, and guiding biopsy sites. PET-CT can also play a role in differentiating active inflammation from fibrosis, which has therapeutic implications.

PULMONARY INFECTIONS

T. Franquet, Barcelona/ES

Description

Despite advances in diagnosis and treatment, respiratory tract infection continues to be a major cause of morbidity and mortality. Pneumonia is the leading cause of death due to infectious disease. In the absence of clinical information, radiologists cannot reliably distinguish between pneumonia and other pulmonary processes. Although CT scan is not recommended for the initial evaluation of patients with pneumonia, it is a valuable adjunct to conventional radiography, being helpful in better characterizing complex pneumonias and in detecting complications.

Unfortunately, the clinical data and radiographic findings often fail to lead to a definitive diagnosis of pneumonia because there is an extensive number of noninfectious processes associated with febrile pneumonitis, including drug-induced pulmonary disease, acute eosinophilic pneumonia, organizing pneumonia, and pulmonary vasculitis that may mimic pulmonary infection.

In the last decades there has been an increase in not only the prevalence of various infections but also the recognition of several important new viral pathogens such as hantaviruses, human metapneumovirus, avian influenza A viruses, and coronavirus (COVID-19).

DIFFERENTIAL DIAGNOSIS OF CAVITARY LUNG DISEASES

A.P. Parkar, Bergen/NO

Description

There are many differentials, when assess cavitary lung lesions, ranging from infections, chronic systemic diseases to malignancies. Knowledge of common and uncommon radiological findings in correlation with relevant clinical history and findings is necessary to make the right diagnosis. The presentation will give a guideline /algorithm for differentiating cavitary lung lesions.

LUNG CANCER STAGING

J. Biederer, Heidelberg/DE

Description

Prognosis and stage-adapted management of lung cancer are defined and guided by detailed staging. The current 8th TNM classification includes descriptors for early stages of the primary tumor such as atypical adenomatous hyperplasia (AAH – T0), adenocarcinoma in situ (AIS - Tis), lepidic predominant adenocarcinoma (LPA – T1a), minimally invasive adenocarcinoma (MIA - Tmi), part solid nodules with a solid component up to 5 mm (T1a) and solid tumors up to 3 cm (T1 a/b/c). Larger lesions are staged for sizes of up to 4 cm (T2a), 5 cm (T2b) and 7 cm (T3). Very large lesions over 7 cm in diameter and lesions with invasion of the diaphragm are considered T4, while involvement of the main bronchus regardless of tumor distance to carina as well as atelectasis define T2 disease. Lung metastases on the same side of the chest are described as T3 (within the same lobe) or T4 (within other lobes).

The classification of lymph node involvement (N-staging) integrates findings from PET, if available. Hilar (N1), ipsilateral mediastinal or sub-carinal (N2) and contralateral nodules (N3) are differentiated. Typically, N2 defines a worse prognosis compared to T1 while N3 defines a change in management (typically no more resectable and indicating the need for systemic therapy). Staging of distant metastases differentiates between metastases inside the contralateral lung (M1a) and lesions inside other organs or extra-pleural lesions (if single, M1b; if multiple M1c). Typically, T4, N3 and any M1 staging are indicators for no more resectable disease.

The recommended imaging technologies for lung cancer staging comprise CT (T, N, M), PET (N-staging) and MRI (M-staging). Other important methods (endobronchial ultrasound) and thoracic interventions will be addressed. The diagnostic scope of all modalities individually, in combination or as hybrid technology for T/N/M-staging will be discussed against the background of the current guidelines.

Take-home Messages

T-staging differentiates early lesions (T0, Tis, Tmi, T1a), small tumors up to 2 cm (T1b) or 3 cm (T1c), and larger lesions up to 4 cm (T2a), 5 cm (T2b), 7 cm (T3) and above (T4).
N-staging differentiates hilar (N1), ipsilateral mediastinal or sub-carinal (N2) and contralateral nodes (N3).
M-staging differentiates intra-pulmonary (M1a), oligo-metastatic disease (M1b) and multiple distant metastases (M1c).
Typically, T4, N3 and M1 are indicators for no more resectable disease.

PLEURAL NEOPLASMS

A. Snoeckx, Edegem/BE

Description

Malignant pleural mesothelioma is the commonest primary pleural malignancy. In majority of cases it is associated with asbestos exposure. Imaging plays an important role in diagnosis, staging and assessment of therapy response. CT remains the primary imaging modality of choice: it demonstrates the extent of primary tumor, intrathoracic lymphadenopathy and extrathoracic metastatic spread. MR may play a role in identifying chest wall invasion, mediastinum and diaphragm. Pleural malignancies, other than mesothelioma and metastases, are very rare. According to the latest World Health Organization Classification these tumors can be further divided into lymphoproliferative disorders and mesenchymal tumors. The latter includes malignant solitary fibrous tumor, desmoid-type fibromatosis, sarcomas. In this lecture, imaging features for diagnosis and staging of the most common primary pleural malignancies will be discussed, including diagnostic pitfalls and challenges.

MEDIASTINAL TUMORS

I. Hartmann, Rotterdam/NL

Description

For the diagnostic approach of mediastinal masses the lesion location and features of the lesion on CT and MRI are key. Several compartment classification systems based on either anatomy, radiography or CT are being used. The major advantages of the CT-based 3-compartment classification system as proposed in 2017 by the International Thymic Malignancy Interest Group (ITMIG) are the relatively simple design and the use of true anatomic planes. The prevascular (or anterior) mediastinum is the most common location of mediastinal tumors, whereas the involvement of the visceral (middle), paravertebral (posterior) or in some instances more than one compartment occurs less frequently.

Once it is decided in which compartment the mass is located, imaging features of the lesion such as the shape, margin, invasion to the surrounding structures, presence of cystic components, fat and calcification are important to further narrow the differential diagnosis.

For the majority of lesions CT is the imaging method of choice. MRI is used for problem-solving and for masses in the paravertebral compartment. The role of PET-CT is limited and it is mainly used for assessment of disease extent in specific situations.

In this presentation the diagnostic approach, the mediastinal compartments, the most common tumors per compartment and their differential diagnoses will be discussed.

ARTIFICIAL INTELLIGENCE IN CHEST RADIOLOGY

F. Gleeson, Oxford/UK

Description

This presentation will discuss the background to developing, testing and validating artificial intelligence algorithms. Common problems with the development of artificial intelligence algorithms and their use in clinical practice will be discussed. The need for ensuring that the algorithms are used appropriately and those using them are adequately trained and the techniques available to ensure this will be presented. The presentation will also include potential future developments.

CYSTIC LUNG DISEASES

A.P. Parkar, Bergen/NO

Description

Pulmonary cystic disease encompass many different differential diagnosis, from acute infections, to chronic diseases and even malignancies.

The four most common cystic diseases include LAM, LCH, LIP, Birt Hogg Dube whereas one may also encounter rarer entities such as amyloid or light chain deposition disease in clinical practice.

Incidental cysts must be differentiated from cystic lung diseases, and emphysema should not be confused with cysts.

Learning Objectives

- To understand various presentations of cysts on imaging.
- To learn when cysts are incidental and when they are pathological.
- To learn the differential diagnosis of cystic lung diseases.

PLEURAL DISEASE INFECTION

F. Gleeson, Oxford/UK

Description

Pleural infection is often unsuspected and slow to be diagnosed. This presentation will focus on its US, CT and MRI features. I will discuss its association with pulmonary infection and the need for intervention and the use of anti-viscosity therapies. Drain size and the risks of drain insertion and techniques will also be discussed.

IMAGING OF MYCOBACTERIAL INFECTION

F. Gleeson, Oxford/UK

Description

This presentation will discuss the background to mycobacterial infection, including the increase in drug resistant mycobacterial infection. It will cover the global burden of disease, screening protocols and common appearances on CXR and CT. It will discuss the techniques available for obtaining a tissue diagnosis, and also cover non-tuberculous mycobacterium, and its diagnosis on CT. It will also cover some areas of research and the use of PET-CT.

IMAGING SMOKING RELATED DISEASE

G. Chassagnon, Paris/FR

Description

This presentation will discuss the main manifestations of smoking-related lung diseases, including chronic obstructive pulmonary disease (COPD) and smoking-related interstitial lung disease (ILD). It will cover the different subtypes of emphysema, CT-definable phenotypes of COPD and CT findings of the main smoking-related ILDs, including respiratory bronchiolitis with ILD, desquamative interstitial pneumonia, Langerhans cells histiocytosis and Combined Pulmonary Fibrosis and Emphysema (CPFE) syndrome.

SARCOPENIA IN COPD

V. Vasilevska Nikodinovska, Skopje/MK

Description

Sarcopenia is frequently associated with chronic diseases, affecting about one-quarter of COPD patients. In COPD as the amount of activity decreases, muscle mass decreases and eventually oxygen cannot be used effectively, resulting in a vicious cycle of deterioration of exercise capacity. Therefore, it is crucial on time recognition and assessment of severity of associated sarcopenia.

Dual-energy X-ray absorptiometry can be used to measure skeletal muscle mass. Handgrip strength is use to assess muscle strength, and as a measurement of physical performance, the 6-min walk distance is used. On ultrasound can be assessed muscle quantity and muscle quality. The measurements most commonly are performed on rectus femoris and quadriceps femoris muscles. CT is most commonly used technique for sarcopenia evaluation which is a gold standard for muscle mass and muscle quality evaluation. MRI gives the best soft tissue contrast in muscle mass assessment.

Imaging techniques provides complementary and relevant information that could be useful in the case-finding and assessment of the severity of sarcopenia in COPD patients.

MANAGEMENT OF NODULES, LCS

J. Biederer, Heidelberg/DE

Description

Management of pulmonary nodules identified at low-dose computed tomography (CT) scans strictly depends on the diverse attenuation appearance of the nodule (solid, non-solid, part-solid), which is associated with different probability of malignancy and prognosis. The prevalence of screen-detected solid nodules (SNs) and subsolid nodules (SSNs) – which include non-solid and part-solid nodules - largely varied according to the different nodule size cutoff used in lung cancer screening (LCS) trials published so far. In the context of LCS, the goal for the radiologists should be to early identify malignant nodules and, at the same time, to avoid unnecessary CT follow-up or invasive procedures in subjects with benign nodules. Morphologic characteristics, size and growth are the major determinants of nodule malignancy. In regards to morphologic appearance, the first step is to recognize and exclude from further evaluation nodules with frank benign appearances (intrapulmonary lymph nodes, benign tumours, inflammatory lesions). Spiculated/irregular margins, pleural indentation, cystic-airspace and appearance/increase of solid component within a SSN are characteristics suggestive of malignancy. The assessment of nodule growth on CT is a major issue, considering that measurements with electronic calipers are subject to variability and variability increases with the increasing complexity of nodule morphology. Volumetry has been accepted as the best option to determine nodule size and growth. Furthermore, there are evidence that nodule mass (volume x mean attenuation) may be the optimal way to evaluate if a SSN is growing. Therefore, guidelines for screen-detected nodule management have included volume and volume doubling time in the attempt to optimize nodule stratification and management.

Learning objectives

- To learn about key radiological features suggesting a benign cause.
- To highlight the methods allowing identifying malignant nodules.
- To understand how to manage nodules in LCS.

LUNG ULTRASOUND AND THORACIC INTERVENTIONS

J. Wildberger, Maastricht/NL

Description

This presentation will cover two different topics. In the first part, the current role of thoracic ultrasound, and point-of-care ultrasound (POCUS) in particular, will be discussed.

In the second part, an overview on current vascular and non-vascular thoracic interventions is provided. The potential of interventional methods will be outlined.

Learning objectives

- To understand the technical prerequisites of ultrasound of the chest.
- To define the current role of transthoracic ultrasonography and POCUS in the diagnostic workup of thoracic disorders.

- To become familiar with the variety of diagnostic and therapeutic interventional procedures for thoracic disorders.
- To critically reflect on the clinical value of radiological interventions for patient care.

MRI OF THE LUNGS APPLICATIONS/FUTURE

A. Oikonomou, Toronto/CA

Description

MRI of the lungs has undergone the last fifteen years ground-breaking technological developments.

Undoubtedly the biggest advantage of MRI has been the lack of ionizing radiation offering an alternative diagnostic modality to extreme ages such as women at child-bearing age and pediatric patients as well as in patients with allergy to iodinated contrast medium.

With major technological advances related to fast sequence and parallel imaging, gating and signal enhancement MRI has gained the unique ability of assessing lung function in addition to higher resolution of morphologic and anatomic imaging.

MRI has classically been the mainstay in the management of superior sulcus tumors, tumors where chest wall invasion is suspected and for further characterization of mediastinal tumors and pleural mesothelioma.

However MRI is increasingly gaining recognition in clinical practice in fields where CT used to be unbeatable such as diagnosis of pulmonary embolism, pulmonary arterial hypertension, staging of lung cancer, detection of early lung cancer and small pulmonary nodules, emphysema and airways disease such as cystic fibrosis.

Learning objectives

- To review the main clinical indications for which thoracic MRI is widely used.
- To review the clinical indications and MRI findings for which thoracic MRI is increasingly used such as pulmonary embolism, lung cancer staging, detection of early lung cancer, emphysema and cystic fibrosis.
- To review basic clinical MRI protocols for the most common clinical indications.
- To understand the persisting limitations of thoracic MRI and anticipated future progress.

THORACIC TRAUMA IMAGING

A. Oikonomou, Toronto/CA

Description

Thoracic injury overall is the third most common cause of trauma following injury to the head and extremities. More specifically, penetrating thoracic injury is the cause of 4-15% of admission to major trauma centers. Blunt and penetrating thoracic trauma has a high morbidity and mortality accounting for approximately 25% of trauma-related deaths, second only to head trauma. More than 70% of cases of

blunt thoracic trauma are due to motor vehicle collisions with the remaining caused by falls or blows from blunt objects. Penetrating thoracic injury is mainly caused by knives and handgun bullets. Mechanisms of injury are discussed and spectrum of abnormalities and radiologic findings encountered in blunt and penetrating thoracic trauma are categorized in injuries of pleural space (pneumothorax, hemothorax), lungs (pulmonary contusion, laceration, herniation), airways (tracheobronchial lacerations, Macklin effect), esophagus, heart, aorta and great vessels, diaphragm and chest wall (rib, scapular, sternal fractures and sternoclavicular dislocations). The possible coexistence of multiple types of injury in a single patient is stressed and therefore systematic exclusion after thorough investigation of all types of injury is warranted. Chest radiography plays an important role in the initial emergency work-up of the chest trauma patient, facilitating detection of tension pneumothorax, large-volume hemothorax, flail chest, or malpositioned instrumentation. Multidetector computed tomography (MDCT) has, however, established itself as the preferred imaging method for the evaluation of polytrauma patients allowing for significantly reduced scanning times to a few seconds allowing more time for post-diagnosis appropriate care. Finally, high-quality multiplanar and volumetric reformatted CT images greatly improve detection of injury and enhance the understanding of mechanisms of trauma-related abnormalities.

Learning objectives

- To discuss epidemiology, mortality - morbidity, significance, pathophysiologic features and mechanisms of injury in blunt chest trauma.
- To discuss the typical radiologic findings as well as pitfalls associated with the wide spectrum of types of injury in the thorax, including injury of the lung parenchyma, trachea and airways, aorta (and aortic vessels), heart and pericardium, esophagus, pleura, diaphragm and thoracic wall. Possible coexistence of multiple types of injury is stressed.
- To review the advantages and diagnostic impact of CT/MDCT for selected injuries over other modalities and discuss recommended imaging protocols and algorithms

QUIZ CASES

J. Wildberger, Maastricht/NL

Description

Interesting and educational cases from our daily practice in Maastricht will be presented in an interactive format. Furthermore, the attendees are invited to test their knowledge in the category "around town".

The winners will receive a small price – so don't miss it. I'm really looking forward to this session, it will be fun!

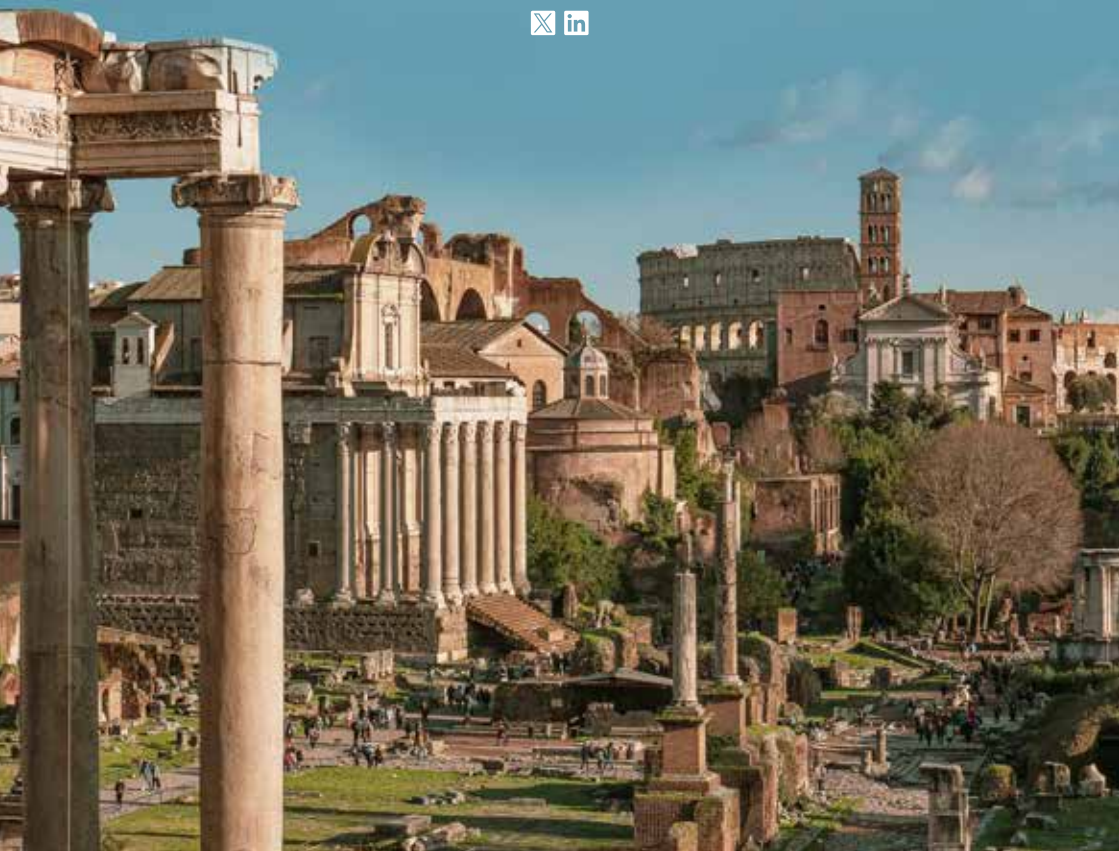
ESTI European Society of Thoracic Imaging

ESTI 2024

30th ANNUAL SCIENTIFIC MEETING OF THE EUROPEAN SOCIETY OF THORACIC IMAGING

MAY 09-11, 2024
ROME, ITALY

www.myESTI.org



ACCREDITATION

UEMS – CME ACCREDITATION

The ESTI Winter Course 2023, Reykjavik, Iceland, 07/12/2023-09/12/2023 has been accredited by the European Accreditation Council for Continuing Medical Education (EACCME®) with 14.0 European CME credits (ECMEC®s). Each medical specialist should claim only those hours of credit that he/she actually spent in the educational activity.

Through an agreement between the Union Européenne des Médecins Spécialistes and the American Medical Association, physicians may convert EACCME® credits to an equivalent number of AMA PRA Category 1 Credits™. Information on the process to convert EACCME® credit to AMA credit can be found at www.edhub.ama-assn.org/pages/applictations.

Live educational activities, occurring outside of Canada, recognised by the UEMS-EACCME® for ECMEC®s are deemed to be Accredited Group Learning Activities (Section 1) as defined by the Maintenance of Certification Program of the Royal College of Physicians and Surgeons of Canada.

Breakdown of ECMEC®s per day:

7.12.2023	5.50
8.12.2023	5.50
9.12.2023	3.00

DISCLOSURE STATEMENT

POTENTIAL CONFLICT OF INTEREST DISCLOSURES

It is the policy of ESTI (European Society of Thoracic Imaging) to ensure balance, independence, objectivity, and scientific rigour in the course programme. Knowledge of possible relationships with sponsors of any kind is mandatory in order to reinforce the educational and scientific message and to relieve any suspicion of bias.

Any potential conflict of interest involving the organising committee should be made known so that the audience may form their own judgements about the presentation with a full disclosure of the facts. It is for the audience to determine whether the presenter's external interest may reflect a possible bias in either the work carried out or the conclusions presented.

The ESTI Winter Course 2023 Organiser, Dr. Anagha P. Parkar, did not disclose any relationships.

GENERAL INFORMATION

Course Venue
Fosshotel Reykjavík
Þórunnartún 1
105 Reykjavík
Iceland

Organising Secretariat
ESTI – European Society of Thoracic Imaging
Am Gestade 1
1010 Vienna, Austria
Phone: +43 1 5334064-900
Email: office@myESTI.org

Onsite Office
In case of any questions, kindly consult the registration desk, staff persons will be happy to assist you.

Registration Desk Opening Hours

Thursday, December 7	08:00-17:05
Friday, December 8	07:30-16:30
Saturday, December 9	08:00-12:45

Course Language
The course will be held in English. No simultaneous translation will be offered.

Registration fee for delegates includes
- admittance to all sessions
- admittance to the industry symposia
- admittance to the industry exhibition
- course programme including abstract syllabus
- certificate of attendance
- coffee breaks & lunch

Mobile Phones
Please do not forget to switch off your mobile phones before entering any of the lecture room.

Breaks
Complimentary coffee, tea and refreshments will be served during the official coffee breaks to all meeting delegates. Lunch is offered during the lunch breaks.

Recording
Photo-, video- or audio-recording of any sessions or presentations is not allowed without the speaker's/organiser's prior written permission.

Future Meeting Desk
This area offers you an overview of future meetings in the field of radiology and related disciplines, from all over the world. Feel free to contribute flyers and posters to promote your own meetings and courses.

Onsite Payment
Onsite payment can only be made by credit card (Visa or Mastercard) or in cash (Euro). Please be informed that no other payment facilities such as debit cards, cheques, etc. will be accepted.

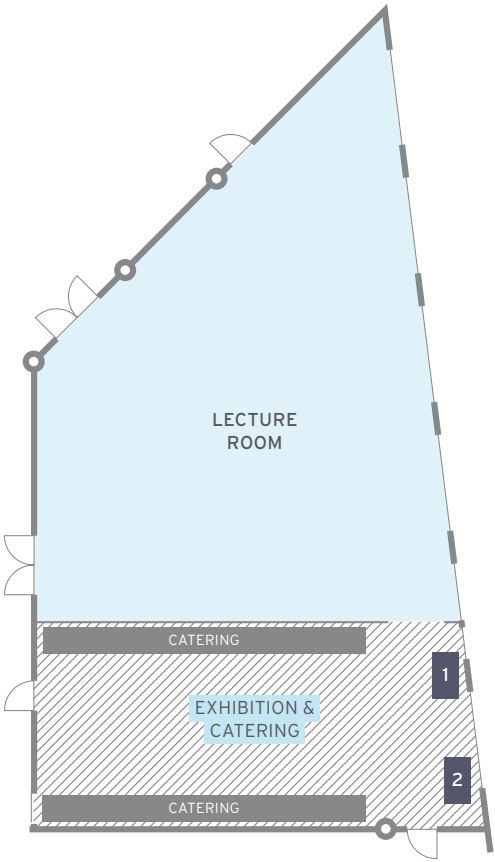
Certificate of Attendance
Each participant who attended the live event will receive a confirmation of attendance end of December. The CME credits are only available for those who successfully complete the evaluation.

CME Certificate
Persons who attended the live event (December 07-09) AND who successfully evaluated the congress will receive their UEMS CME certificate end of December.

QR code for UEMS online evaluation

Floor plan

BOOTH 1 CORELINE
BOOTH 2 DEEPHEALTH



Safety

The safety of all congress delegates and participants is of utmost importance to ESTI. Security measures and precautions at the ESTI Winter Course venue have been tightened to ensure maximum security for all attendees. Badges must be worn visibly on the congress grounds at all time. ESTI reserves the right for staff to check participants' identification upon admission to and/or inside the course venue. Participants may at any time be requested to present adequate proof of identity in the form of a passport, driver's license, national or military identification or student ID. Documents for the proof of identity must include a photograph and signature.

Disclaimer/Liability

ESTI cannot accept any liability for the acts of the suppliers to this meeting or the attendee's safety while travelling to or from the course. All participants and accompanying persons are strongly advised to carry adequate travel and health insurance, as ESTI cannot accept liability for accidents or injuries that may occur. ESTI is not liable for personal injury and loss or damage of private property.

INDUSTRY SPONSORED SYMPOSIA

FRIDAY, DECEMBER 8, 2023, 11:20-12:05

AI for lung nodule detection: Insights and results from 3 years of clinical usage of Veye Lung Nodules at Hospital Cochin
G. Chassagnon, Paris/FR

Lunch will be served after the symposium from 12:05-13:00.

SATURDAY, DECEMBER 9, 2023, 10:15-11:00

Optimizing Lung Cancer Screening: A Clinical Approach with Artificial Intelligence Integration

11:15 **Update on lung cancer screening programs**
S. Schmidt, Forchheim/DE

10:30 **From Data to Diagnosis: Unleashing AI in Thoracic Radiology (including Q&A)**
B. Sabel, Munich/DE

SPONSORS

We thank our industry partners for their highly appreciated support of the ESTI Winter Course 2023:

ESTI – European Society of Thoracic Imaging

Am Gestade 1
1010 Vienna, Austria
Phone: +43 1 5334064-900
Email: office@myESTI.org

www.myESTI.org