

LEVEL II

ASKLEPIOS Course

HEPATO-BILIO-PANCREATIC IMAGING BIOMARKERS

December 11-12, 2017

Valencia/Spain

Education in partnership

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Course information

This course aims to familiarise fourth and fifth year radiology residents and board-certified radiologists with cutting-edge clinical and quantitative imaging technology. The two-day course addresses the definition and development of imaging biomarkers in clinical practice, focusing on the multivariate and multiparametric analysis of liver tumours, diffuse liver diseases and bilio-pancreatic conditions. The course will cover the clinical needs, technical solutions and practical implementation aspects. Also, the main biases in validating and reporting imaging biomarkers will be covered. Moreover, the course will discuss the state of the art of imaging biomarkers in these abdominal organs and how they should be implemented in daily clinical practice. A unique group of European faculty members, well known for their experience in applying novel imaging biomarkers, will offer top quality didactic lectures followed by technical considerations and clinical impact discussions in small groups.

Learning objectives

- to understand different imaging biomarkers as spatially and temporally resolved surrogate indicators, representing virtual biopsies in different abdominal pathologies
- to critically evaluate the imaging biomarkers information related to individual patients' biological situation, clinical problems and treatment effects
- to assess the correlation, specificity and biases between subrogated imaging biomarkers and the different underlying processes



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PROGRAMME

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Monday, December 11, 2017

12:00-12:45	Registration
12:45-13:00	Welcome and introduction
	GENERAL CONCEPTS
13:00-13:30	Concept and development of imaging biomarkers and radiomics L. Marti-Bonmati, Valencia/ES
13:30-14:00	Measurement, accuracy, precision, confusion and validation A. Alberich Bayarri, Valencia/ES
14:00-14:30	Structure report in liver imaging and quantitation L. Marti-Bonmati, Valencia/ES
14:30-15:00	Coffee break
	LIVER: QUANTITATIVE ONCOLOGY
15:00-15:30	HCC and tumour hallmarks V. Vilgrain, Clichy/FR
15:30-16:00	Contrast Enhanced and perfusion metrics in oncology R. Quelevar, Clichy/FR
16:00-16:30	Metastases and tumour response V. Vilgrain, Clichy/FR
16:30-18:00	Workshops
18:00	Closing remarks

Host Organiser



L. Marti-Bonmati
Valencia/Spain

Venue

Hospital Universitario y
Politécnico La Fe
Avda Fernando Abril Martorell 106
46026 Valencia
Spain

Registration fee

ESR Members in training
EUR 200

ESR Members
EUR 300

Non-members in training
EUR 300

Non-members
EUR 400

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Tuesday, December 12, 2017

LIVER: QUANTITATIVE DIFFUSE DEPOSITS

- 08:30-09:00 **Liver fat and inflammation**
M. França, Porto/PT
- 09:00-09:30 **Quantitative diffuse liver biomarkers**
A. Alberich Bayarri, Valencia/ES
- 09:30-10:00 **Liver iron**
M. França, Porto/PT
- 10:00-11:30 **Workshops**

CLINICAL TRIALS

- 11:30-12:00 **Imaging biomarkers in drug toxicity**
J. Waterton, Manchester/UK
- 12:00-13:00 **Lunch break**

BILIAR AND PANCREAS: QUANTITATIVE ONCOLOGY

- 13:00-13:30 **Biliary tumours:**
prognosis tumour hallmarks and tumour response
C. Matos, Lisbon/PT
- 13:30-14:00 **Diffusion metrics in oncology**
N. Papanikolaou, Lisbon/PT
- 14:00-14:30 **Neuroendocrine tumours: hallmarks and tumour response**
C. Matos, Lisbon/PT
- 14:30-15:00 **Coffee break**
- 15:00-16:30 **Workshops**

CLINICAL TRIALS

- 16:30-17:00 **Imaging biomarkers in clinical trials and daily practice**
J. Waterton, Manchester/UK
- 17:00 **Closing remarks and certificate of attendance**

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GENERAL CONCEPTS

Concept and development of imaging biomarkers and radiomics

L. Marti-Bonmati, Valencia/ES

- to learn how quantitative imaging will impact the practice of radiology
- to understand the biological bases of the different imaging biomarkers
- to comment how radiomics and image analysis provide insights into disease phenotyping

Measurement, accuracy, precision, confusion and validation

A. Alberich-Bayarri, Valencia/ES

- to learn metrology basics applied to radiology and imaging biomarkers analysis
- to understand the differences of accuracy and precision
- to know how to control potential measurement bias and validation processes

Structure report in liver imaging and quantitation

L. Marti-Bonmati, Valencia/ES

- to learn how reports are performed, from organised text into structured repositories
- to understand how quantitative imaging data can be implemented in the reports
- to comment how structure reports and quantitative information can be implemented in liver MR studies

LIVER: QUANTITATIVE ONCOLOGY

HCC and tumour hallmarks

V. Vilgrain, Clichy/FR

- to know the most common hallmarks of HCC
- to understand their diagnostic value
- to be aware of other hallmarks

Metastases and tumour response

V. Vilgrain, Clichy/FR

- to know the advantages and limitations of RECIST
- to know other qualitative biomarkers
- to be aware of quantitative biomarkers assessing tumour response

LIVER: QUANTITATIVE DIFFUSE DEPOSITS

Liver fat and inflammation

M. França, Porto/PT

- to understand the clinical spectrum of non-alcoholic fatty liver disease, from simple steatosis to non-alcoholic steato-hepatitis and liver cirrhosis
- to understand the different imaging features related to the presence of liver fat
- to learn the best MR imaging methods to assess and to qualify liver steatosis and inflammation

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Quantitative diffuse liver biomarkers

A. Alberich Bayarri, Valencia/ES

- to learn how to model simultaneously fat and iron within a same signal
- to understand the basics of main quantification methods for diffuse liver disorders
- to learn models for fibrosis and inflammation characterisation

Liver iron

M. França, Porto/PT

- to understand the different clinical scenarios of hepatic iron overload
- to learn the imaging features related to the presence of iron overload
- to discuss the best MR imaging techniques to assess and quantify hepatic iron overload, understanding the strengths and limitations of each method
- to discuss the clinical relevance of MR for detection and quantification of liver iron deposits in different clinical scenarios, emphasising the role of MR patients' management and treatment monitoring

CLINICAL TRIALS

Imaging biomarkers in drug toxicity

J. Waterton, Manchester/UK

- to appreciate: (a) that many medicines carry a risk of Drug-Induced Liver Injury (DILI); (b) the impediment this creates for drug developers; (c) the public health concern this causes for regulatory authorities such as the European Medicines Agency (EMA); (d) the unmet need for biomarkers of DILI risk; (e) why such biomarkers must be sensitive and specific; and (f) why they must respond before irreversible harm to patients
- to appreciate the deep history of tracers and contrast agents in Radiology and Nuclear Medicine which are liver transporter substrates
- to learn how Radiology can provide absolute measurements of drug-induced perturbation of liver transporter flux as biomarkers of DILI risk to understand why, before a radiologic technique (such as dynamic gadoxetate-enhanced MRI) can provide a biomarker of DILI risk, it must be shown to be: (a) technically valid (repeatable, reproducible, and robustly available in every hospital where it is needed); (b) biologically valid (faithfully reports underlying perturbations in transporter biology); and (c) clinically valid (improves forecast of outcome)

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BILIAR AND PANCREAS: QUANTITATIVE ONCOLOGY

Biliary tumours: prognosis tumour hallmarks and tumour response

C. Matos, Lisbon/PT

- to learn the imaging features of different types of biliary malignancies
- to learn which imaging patterns of biliary malignancies may have prognostic significance
- to understand the optimal use of the different imaging modalities in relation to tumour localisation and staging

Diffusion metrics in oncology

N. Papanikolaou, Lisbon/PT

- to present basic and advanced technical aspects of diffusion weighted imaging
- to review quantification strategies and methodologies
- to review established and emerging clinical applications of quantitative diffusion biomarkers

Neuroendocrine tumours: hallmarks and tumour response

C. Matos, Lisbon/PT

- to learn how to recognise the specific imaging features of neuroendocrine tumours
- to learn about the strengths and weaknesses of the different imaging modalities
- to understand the optimal use of the different imaging modalities in relation to tumour localisation and staging

Imaging biomarkers in clinical trials and daily practice

J. Waterton, Manchester/UK

- to review current biomarker thinking, which characterises a biomarker as „a defined characteristic that is measured as an indicator of normal biological processes, pathogenic processes, or responses to an exposure or intervention, including therapeutic interventions...molecular, histologic, radiographic, or physiologic characteristics are types of biomarkers“ and to appreciate that many radiographic or imaging biomarkers (IBs) are already used routinely patient management while others are commonly used in medical research and drug development
- to understand why new biomarkers must jump across one or two „translational gaps“ before they can become established, either in research (useful tools for testing hypotheses in trials), or in healthcare (clinical decision-making tools)
- to understand the important differences that exist between IBs and conventional biospecimen-derived biomarkers and, why, therefore, their development and validation requires a tailored ‚roadmap‘. To learn that this roadmap involves parallel (rather than sequential) tracks of technical (assay) validation, biological/clinical validation, and cost-effectiveness assessment. To understand why special attention is given to multicentre standardization and accreditation, and to continuous reevaluation of precision, and to understand why the biological and clinical validation of IBs must be approached somewhat differently than for the more familiar biospecimen biomarkers



Please note that programmes are marked with a logo to indicate their classification according to the European Training Curriculum.

- LEVEL I** First three years of training
- LEVEL II** Fourth and fifth year of training (general radiologist standard)
- LEVEL III** Subspecialty training standard

<http://myesr.org/education/training-curricula>