TSOC Coronary Imaging and Physiology for young physician

時間：114 年 9 月 20 日(星期六) 13:45-17:00
地點：台北張榮發會議中心 8 樓 802 會議室(台北市中山南路 11 號)
主辦：中華民國心臟學會青年醫師工作小組

Time	Topic	Speaker	Chair
1345- 1350	Opening	李貽恒	
1350-1415	**Functional study for young physician**	楊欽文	陳政瑋
1415-1425	QA		
1425-1450	**Coronary imaging for young physician**	董穎璋	柯呈諭
1450-1500	QA		
1500-1510	Break		
1510-1535	**Traps when utilizing coronary imaging**	何明昀	陳玠宇
1535-1545	QA		
1545-1610	**The Present and Future of coronary image**	陳昱瑋	曾致學
1610-1620	QA		
1620-1645	**Rapid firing on clinical cases**	尤士豪	劉宜學
1645-1655	QA		
1655-1700	Closing	陳政瑋	

Functional study for young physician

楊欽文 醫師

摘要

侵入式冠脈病灶之功能性缺氧評估，可藉由需充血測量之血流儲備係數（Fractional flow reserve，FFR)，及無需充血之靜息指數-iFR / RFR / DFR 之測量來提供後續治療建議。雖然這些指數已在常規心導管檢查中執行多年，但這些指數之測量準確性鮮少於國內外被提及。各家醫院之操作與測量方式略有不同，到底哪家的說法才是正確的呢？功能性測量結果不符冠脈影像檢查之結果，您是否會懷疑自己所測量之數據正確性？ FFR 與事前核醫灌注掃描結果並不一致，該如何決定治療策略？當 FFR 與靜息指數結果不一的時候又該如何作決定？

本次演講藉由介紹這些功能性指數之設計原理，針對重點步驟引用文獻來闡釋正確之操作觀念。求得準確之 FFR 與靜息指數結果再進一步說明兩者結果不一之原理所在，以供臨床治療決策之參考依據。最後，介紹 FFR 是如何成為冠脈介入領域裡跨時代之技術，以及其近期相關研究所面臨之挑戰。

Coronary imaging for young physician

董穎璋 醫師

Coronary intravascular imaging has become an essential tool in modern PCI practice, offering insights far beyond conventional angiography. In daily workflows, intravascular ultrasound (IVUS) and optical coherence tomography (OCT) are invaluable for lesion assessment, guiding procedural strategy, and ensuring optimal stent deployment. Their impact is particularly evident in complex PCI—whether tackling calcified lesions, chronic total occlusions, or stent failure—where imaging guides plaque modification, device selection, and complication management.

Beyond technical optimization, imaging has transformed our understanding of acute coronary syndrome (ACS) and the concept of vulnerable plaque. Angiography often fails to fully characterize culprit lesions, but IVUS and OCT allow detailed visualization of the underlying pathology. OCT can differentiate plaque rupture, erosion, and calcified nodules, while IVUS defines plaque burden and vessel remodeling. These features provide not only mechanistic insights but also prognostic information.

For young physicians, mastering intravascular imaging means learning to recognize high-risk morphologies—thin fibrous caps, lipid pools, macrophage infiltration—that drive ACS events. Imaging in the acute setting informs immediate treatment decisions, optimizes stent outcomes, and reduces complications. This talk will review the role of coronary intravascular imaging across routine and complex PCI, with a focused discussion on ACS and vulnerable plaques, aiming to equip early-career physicians with practical skills and clinical perspective.

Traps when utilizing coronary imaging

何明昀 醫師

When using coronary imaging in daily practice, one of the most important messages is that seeing is believing, but not always true. Angiography provides only a two-dimensional silhouette of the vessel lumen, while intravascular imaging modalities such as IVUS and OCT reveal the vessel wall, plaque morphology, and lesion characteristics. This difference frequently leads to discordance: a lesion that looks severe on angiography may actually have a preserved minimal lumen area on imaging, while a lesion that appears mild on angiography may show a high plaque burden or a vulnerable plaque substrate. Calcified nodules or thrombus can also be misinterpreted as simple narrowing on angiography. Such discordances can trap the operator into over-stenting based on angiographic appearance alone, missing high-risk plaque when the angiogram looks benign, or misjudging complex segments such as bifurcations and ostial lesions. To avoid these pitfalls, imaging findings should be integrated with physiology and clinical context rather than taken in isolation. At the same time, we must remain aware that the imaging tools themselves carry potential complications. With IVUS, wire bias and catheter advancement in tortuous vessels can create artifacts or even induce vessel dissection. With OCT, contrast injection for blood clearance may lead to renal injury, pressure damping, or vasospasm, and poor clearance can result in misinterpretation of artifacts as disease. Inadequate pullback quality may similarly obscure the real lesion, and catheter-induced spasm may mimic a true stenosis. Rare but serious complications include vessel dissection, thrombosis during prolonged imaging, or distal embolization in thrombotic lesions. These issues highlight that while coronary imaging has become indispensable in guiding PCI, it is not infallible. The key is to recognize the limitations, anticipate possible complications, and interpret images with wisdom. Ultimately, seeing is believing, but careful judgment is required to prevent misbelief.

The Present and Future of Coronary Image

陳昱偉 醫師

Recent advances in coronary imaging have profoundly transformed the diagnosis, risk assessment, and management of coronary artery disease (CAD). Modern non-invasive modalities such as coronary computed tomography angiography (CCTA), coronary artery calcium scoring (CACS), and cardiac magnetic resonance imaging (CMR) now oHer enhanced anatomical and functional characterization of coronary vessels, enabling early detection and refined patient stratification. Intravascular imaging technologies—including high-definition intravascular ultrasound (IVUS) and optical coherence tomography (OCT)—deliver detailed insights into plaque morphology and vessel wall pathology, facilitating targeted therapeutic interventions. The integration of artificial intelligence into cardiac imaging is ushering in a new era of diagnostic precision, optimizing modality selection, workflow eHiciency, and patient outcomes. Looking ahead, emerging techniques such as AI-enabled plaque quantification, molecular imaging, and advanced fusion modalities promise to advance the early identification and personalized treatment of coronary pathology. As these innovations continue to evolve, coronary imaging is expected to play an increasingly central role in promoting individualized care and reducing the global burden of CAD.

CURRICULUM VITAE

A. Personal data

Name: 楊欽文　Jong Chien Boon

Email: jgboon0407@gmail.com

B. Academic training

Undergraduate: China Medical University (Taichung, Taiwan), 2008, M.D.

C. Traineeship

Residency: Internal medicine, National Taiwan University Hospital (2008-2011)

Clinical fellowship: Cardiology, National Taiwan University Hospital (2011-2013)

Interventional cardiology, National Taiwan University Hospital (2013-2014)

D. Board certification

Internal medicine, 2011；Cardiology, 2013；Interventional cardiology, 2014

E. Hospital appointments

Attending physician of cardiology, National Taiwan University Hospital, Hsinchu Branch (2013- present)

F. Publications

1. ***Jong CB***, Chen KY, Hsieh MY, Su FY, Wu CC, Voon WC, et al. Metformin was associated with lower all-cause mortality in type 2 diabetes with acute coronary syndrome: a nationwide registry with propensity score matched analysis. Int J Cardiol. 2019;291:152–7.
2. ***Jong CB***, Li HY, Pan SL, Hsieh MY, Su FY, Chen KC, Yin WH, Chan SH, Wu YW, Wang KY, et al. Relationship Between Body Mass Index, Antidiabetic Agents, and Midterm Mortality in Patients With Both Type 2 Diabetes Mellitus and Acute Coronary Syndrome. *J Am Heart Assoc*. 2019;8:e011215.
3. ***Jong CB***, Lu TS, Yan-Tyng Liu P, Hsieh MY, Meng SW, Huang CC, Kao HL and Wu CC. High dose escalation of intracoronary adenosine in the assessment of fractional flow reserve: A retrospective cohort study. PloS one. 2020;15:e0240699.
4. ***Jong CB***, Lu T.-S., Liu Y.-T., Chen J.-W. *, Huang C.-C., Kao H.-L. Long-Term Clinical Outcomes of Fractional Flow Reserve-Guided Coronary Artery Revascularization in Chronic Kidney Disease. Journal of Personalized Medicine; 2022:12, 21
5. ***Jong CB***, Liao M.-T., Lu T.-S., Meng S.-W., Chen C.-K., Tsai Y.-C., Kuo J.-C., Wu C.-C. Efficacy and safety of high-dose intracoronary adenosine in fractional flow reserve assessment. Acta Cardiologica Sinica. 2022 Sep; 38(5): 553–563
6. ***Jong CB***, Lu T.-S, Chen T.-Y., Chen C.-K., Liao M.-T., Lin I.-C., Chen J.-W. Subclinical myocardial injury increases the risk of heart failure in patients with and without type 2 diabetes post-acute coronary syndrome. International Journal Cardiology. 2023 Nov 1;390:131195

7. ***Jong CB***; Lu, T.S.; Lin, L.; Chen, T.Y.; Liao, M.T.; Kuo, J.C. Effect of prolonged pressure equalization on final drifting during pressure wire studies. Sci Rep 2024, 14, 11504. DOI: 10.1038/s41598-024-62440-1.
8. ***Jong CB***; Kuo, J.-C.; Lin, I.C. Kidney protection strategy lowers the risk of contrast-associated acute kidney injury. PLOS ONE 2024, 19, e0312618. DOI: 10.1371/journal.pone.0312618.
9. ***Jong CB***; Lu TS; Liao MT; Xu JL; Chen CK; Kuo JC; Wu CC. Comparison of Nitroglycerin-Induced Pressure Ratio Drop and Resting Full-Cycle Ratio in a Pressure Wire Study. *Journal of Clinical Medicine* 2024, *13*, 6716

Curriculum Vitae

Name: Ying-Chang Tung, 董穎璋

Education: July 2000-June 2007, National Cheng Kung University, Tainan, Taiwan.

Employment Record:

- July 2006-June 2007: Internship, National Cheng Kung University Hospital, Tainan, Taiwan
- August 2008- June 2011: Resident of Internal Medicine, Linkou Chang Gung Memorial Hospital, Taiwan
- July 2011-July 2013: Fellow of First Cardiovascular Division, Department of Internal Medicine, Linkou Chang Gung Memorial Hospital
- August 2013 till now: Attending physician, Department of Cardiology, Department of Internal Medicine, Linkou Chang Gung Memorial Hospital, Taiwan
- July 2017-June 2023: Assistant professor, Department of Cardiology, Department of Internal Medicine, Linkou Chang Gung Memorial Hospital, Taiwan
- July 2023 till now: Associate professor, Department of Cardiology, Department of Internal Medicine, Linkou Chang Gung Memorial Hospital, Taiwan

Board Certification:

- Internal Medicine Specialist, 2011, certificate No.: 041822
- Cardiovascular Specialist, 2013, certificate No.: (102)007

Licensers: Chinese National License of Medical Practice, NO.41822

Professional Affiliations:

- Taiwan Society of Internal Medicine
- Taiwan Society of Cardiology
- Taiwan Society of Cardiovascular Interventions (Jan 2024 till now)
  - Deputy Secretary-General
  - Member of the Academic Committee
  - Member of the Research and Registration Committee
- Taiwan Myocardial Infarction Society

Awards

- 2014 Taiwan Transcatheter Therapeutics, Case Competition, best case presenter (category: coronary CTO Interventions)
- 2017 Taiwan Transcatheter Therapeutics, Case Competition, best case presenter (category: complex coronary intervention)
- 2018 Transcatheter Cardiovascular Therapeutics Asia Pacific (TCTAP), Case Competition: best case presenter (category: complex coronary intervention)
- 2020 Taiwan Transcatheter Therapeutics, Case Competition: best case presenter (Category: complication)
- 2021 Taiwan Transcatheter Therapeutics, Case Competition: best case presenter (Category: image and physiology)
- 2022 Taiwan Transcatheter Therapeutics, Case Competition: best case presenter (Category: CTO)
- 2022 Taiwan Society of Lipids and Atherosclerosis Basic Medical Paper Award, Third Prize
- 2023 Taiwan Society of Cardiology Excellent Medical Paper Award, Third Prize
- 2024 Transcatheter Cardiovascular Therapeutics Asia Pacific (TCTAP), Case Competition: best case presenter (category: CTO)

Curriculum Vitae

Name: Ming-Yun Ho, M.D.

Current Affiliation: Linkou Chang Gung Memorial Hospital

Position: Attending Physician, Assistant Professor Level

Department: Division of Cardiology, Department of Internal Medicine

Research Interests

- Cardiovascular diseases
- Coronary artery intervention
- Intravascular imaging (coronary, peripheral)
- Peripheral vascular intervention
- Peripheral vascular ultrasound

Professional Experience

2010–2013: Resident, Department of Internal Medicine, Linkou Chang Gung Memorial Hospital

2013–2015: Chief Resident, Division of Cardiology, Linkou Chang Gung Memorial Hospital

2015–present: Attending Physician, Division of Cardiology, Linkou Chang Gung Memorial Hospital

2019–present: Committee Member, Smart Healthcare Committee, Taoyuan Chang Gung Memorial Hospital

2022: Deputy Secretary General, Interventional Cardiology Committee and Finance Committee, Taiwan Society of Cardiology

2023: Committee Member, Education and Training Committee, Taiwan Society of Interventional Cardiology

2023: Committee Member, Smart Healthcare, Organ Transplantation, and Health Promotion Committees, Linkou Chang Gung Memorial Hospital

2024: Deputy Secretary General, Cardiovascular Imaging Committee, Taiwan Society of Cardiology

2024: Committee Member, Preventive Medicine Committee, Taiwan Society of Cardiology

CURRICULUM VITAE

Date of preparation:

Yu-Wei Chen, MD
ilovemc329@yahoo.com.tw

Place of Birth: Taipei, Taiwan
Citizenship: Taiwan

Academic Appointments

08/2024 – Present	**College of Medicine, National Chung Hsing University** Assistant Professor at Department of Post-Baccalaureate Medicine	Taichung, Taiwan
07/2023 – 07/2024	**Cardiovascular Research Foundation** Intravascular Imaging Fellow	New York, NY
07/2023 – 07/2024	**Columbia University Vagelos College of Physicians & Surgeons** Postdoctoral Research Fellow of Medicine at CUIMC	New York, NY
08/2022 – 07/2023	**College of Medicine, National Chung Hsing University** Lecturer at Department of Post-Baccalaureate Medicine	Taichung, Taiwan

Hospital Appointments

12/2024 – Present	**Department of Pulmonary Hypertension, Cardiovascular Center, Taichung Veterans General Hospital** Director	Taichung, Taiwan
07/2018 – Present	**Cardiovascular Center, Taichung Veterans General Hospital** Attending Physician	Taichung, Taiwan
11/2016 – 06/2018	**Division of Cardiology, Department of Internal Medicine, Taichung Veterans General Hospital, Chiayi Branch** Attending Physician	Chiayi, Taiwan

Other Work Experience

2010/8 – 2011/7	**Mandatory military service in Army** Medical officer, Second Lieutenant	Taichung, Taiwan

EDUCATION

09/2003 – 06/2010	**Kaohsiung Medical University** MD, June 2010	Kaohsiung, Taiwan
04/2019	**University of Bologna Ospedale Sant'Orsola-Malpighi** Institute of Cardiology - the Masterclass on Pulmonary Arterial Hypertension	Bologna, Italy
04/2009	**Seoul National University Hospital** Exchange student (clerkship) at Department of Plastic Surgery	Seoul, Korea
04/2009	**Seoul National University Bundang Hospital** Exchange student (clerkship) at Department of Thoracic & Cardiovascular Surgery	Seoul, Korea
08/2007	**Maria Konopnicka Memorial Teaching Hospital No. 4** Exchange student (clerkship) at Department of Pediatrics	Łódź, Poland

TRAINING

8/2014 – 10/2016	**Cardiovascular Center, Taichung Veterans General Hospital** Cardiology and Interventional Cardiology Fellow	Taichung, Taiwan
8/2011 - 7/2014	**Department of Medicine, Taichung Veterans General Hospital** Internal Medicine Resident	Taichung, Taiwan