

心臟科 Cardiology

October 19, 2025 (Sun)
Room 103

Moderator: 林中生 Chung-Sheng Lin 中山醫學大學附設醫院

14:00-14:20 H-S07	Echocardiography in the Detection of Infective Endocarditis after Transcatheter Aortic Valve Replacement	林維文 Wei-Wen Lin 臺中榮民總醫院
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Moderator: 蔡惟全 Wei-Chuan Tsai 成大醫院

14:20-14:40 H-S08	Echocardiography in the Detection of Valve Thrombus after Transcatheter Aortic Valve Replacement	王俊力 Chun-Li Wang 林口長庚醫院
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Moderator: 楊甯貽 Ning-I Yang 基隆長庚醫院

14:40-15:00 H-S09	Stress Echocardiography in Patients with Aortic Stenosis	梁馨月 Hsin-Yueh Liang 中國醫藥大學附設醫院
15:00-15:10	Q & A	演講者及主持人
15:10-15:30	Coffee Break	

Moderator: 洪國峻 Kuo-Chun Hung 林口長庚醫院

15:30-15:50 H-S10	How to Use Echocardiography and Computerized Tomography to Evaluate Risks of Left Ventricular Outflow Obstruction in Various Mitral Valve Interventions	楊荔丹 Li-Tan Yang 臺大醫院
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Moderator: 謝宜璋 I-Chang Hsieh 林口長庚醫院

15:50-16:10 H-S11	Echocardiographic Imaging for Transcatheter Tricuspid Valve Intervention	陳素真 Su-Chan Chen 臺北榮民總醫院
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Moderator: 洪明銳 Ming-Jui Hung 基隆長庚醫院

16:10-16:30 H-S12	Handheld Ultrasound for Surveillance of Left Ventricular Function: Focus on Cancer Therapy–Related Cardiac Dysfunction (CTRCD)	林隆君 Lung-Chun Lin 臺大醫院
16:30-16:40	Q & A	演講者及主持人
16:40-16:50	Closing Remarks	江正文 Cheng-Wen Chiang 國泰醫院

ePoster

H-P01	Usefulness of Echocardiography in Assessing the Cardiac Condition of a Patient with Uncompensated Cirrhosis of Liver, Gastro-intestinal Bleeding, and Severe Anemia- Report of an Interesting Case	林少琳 Shoa-Lin Lin 高雄阮綜合醫院
H-P02	Nonsurgical Management of a Complicated Iatrogenic Pseudoaneurysm of the Superficial Femoral Artery	楊國雲 Kwok-Wan Yeung 輔英科技大學附設醫院

H-S07

Echocardiography in the Detection of Infective Endocarditis after Transcatheter Aortic Valve Replacement*Wei-Wen Lin, MD, PhD**Cardiovascular Center, Taichung Veterans General Hospital*

Infective endocarditis (IE) remains a rare but catastrophic complication in patients with transcatheter aortic valve replacement (TAVR). Post-TAVR IE poses unique diagnostic, therapeutic, and prognostic challenges compared with native or surgically implanted prosthetic valves. Incidence of IE is low, reported between 0.3–1.2 cases per 100 patient-years, comparable to or slightly lower than surgical aortic valve replacement (SAVR). Most cases occur within the first 12 months post-implantation, though late presentations beyond 1 year are increasingly recognized. In-hospital mortality ranges from 30–40%, with 1-year mortality exceeding 50% in some series. Risk factors including advanced age, frailty, and multiple comorbidities (CKD, diabetes or immunosuppression), poor dental health and prior IE history. Echocardiographic diagnosis of IE after TAVR remain challenging, including the following

1. Acoustic Shadowing and Prosthetic Artifacts. The metallic stent frame and bioprosthetic leaflets of TAVR valves generate significant reverberations and acoustic shadowing. This masks vegetations, abscesses, and pseudoaneurysms, especially in the peri-annular and subvalvular regions.
2. Atypical Morphology of Vegetations. Vegetations after TAVR may be flat, small, or irregular due to turbulent flow and altered hemodynamics across the prosthesis. They may adhere to struts or the sewing ring rather than to free leaflets, making them less conspicuous on 2D imaging.
3. Role of Advanced echocardiographic Techniques. Sensitivity of transthoracic echocardiography (TTE) is low; transesophageal echocardiography (TEE) is superior but still limited compared to native valve IE. Current guidelines recommend multimodality imaging when echocardiography is inconclusive but suspicion remains high. In conclusion,

echocardiography, while first-line, has lower sensitivity and specificity for diagnosing IE after TAVR compared with native valve IE. Acoustic artifacts, prosthesis design, and atypical vegetation morphology all contribute. A multimodality imaging approach (TEE + PET/CT + cardiac CT) is now standard for accurate diagnosis in suspected TAVR-IE.

H-S08

Echocardiography in the Detection of Valve Thrombus after Transcatheter Aortic Valve Replacement*Chun-Li Wang^{1,2}**¹Cardiovascular Division, Department of Internal Medicine, Chang Gung Memorial Hospital, Linkou Medical Center, Taoyuan, Taiwan**²Chang-Gung University, College of Medicine, Taoyuan, Taiwan*

Transcatheter aortic valve replacement (TAVR) has become a preferred treatment for severe aortic stenosis across a wide range of patient risk profiles. Nevertheless, thrombosis of the transcatheter heart valve has become a notable complication that can adversely affect clinical outcomes. This presentation emphasizes the importance of echocardiography in identifying valve thrombosis post-TAVR, underscoring both its diagnostic strengths and limitations. Valve thrombosis after TAVR is often subclinical initially, making early detection challenging. Key echocardiographic signs include increased transvalvular gradients, decreased valve area, and altered leaflet motion. Although multidetector computed tomography is considered the gold standard for detecting hypo-attenuated leaflet thickening and leaflet motion, transthoracic echocardiography serves as the primary, non-invasive tool for initial assessment and routine follow-up, especially in symptomatic patients where findings often correlate with worsening dyspnea or heart failure. Importantly, regular echocardiographic surveillance enables timely initiation of oral anticoagulation therapy, which has

proven effective in resolving thrombus, normalizing valve hemodynamics, and mitigating the risk of severe complications such as stroke and heart failure, thereby improving long-term outcomes.

H-09

Stress Echocardiography in Patients with Aortic Stenosis

Hsin-Yueh Liang

China Medical University Hospital

Stress echocardiography refines assessment and guides management in aortic stenosis (AS) when symptoms are equivocal or resting indices are discordant. This lecture synthesizes contemporary indications, standardized acquisition, and interpretation for both exercise and low-dose dobutamine testing. Exercise echocardiography identifies abnormal blood-pressure response, exertional symptoms, dynamic rises in mean gradient, exercise-induced pulmonary hypertension, and changes in mitral regurgitation or LV systolic/diastolic function—features that improve risk stratification in moderate–severe and asymptomatic severe AS. In low-flow, low-gradient AS with reduced ejection fraction, dobutamine testing evaluates flow/contractile reserve (stroke-volume increase $\geq 20\%$), clarifies gradient–area behavior, and enables projected AVA at a standardized flow of 250 mL/s; projected AVA ≤ 1.0 cm² supports true severe AS and consideration of valve intervention, whereas enlargement of AVA with modest gradient rise suggests pseudo-severe disease and prioritizes medical therapy. Technical pearls include precise LVOT sizing, rigorous Doppler alignment, consistent hemodynamic control during testing, and integration of global longitudinal strain and valvuloarterial impedance to contextualize afterload and myocardial reserve. Common pitfalls (hypertension during testing, suboptimal LVOT measurement, coexistent valve disease) and a practical algorithm for decision-making will be presented. Overall, stress echocardiography provides mechanism-anchored, quantitative

evidence that resolves diagnostic ambiguity, refines prognosis, and personalizes timing and modality of intervention in AS.

H-S10

How to Use Echocardiography and Computerized Tomography to Evaluate Risks of Left Ventricular Outflow Obstruction in Various Mitral Valve Interventions

Li-Tan Yang

National Taiwan University Hospital

Left ventricular outflow tract (LVOT) obstruction is a potentially life-threatening complication of transcatheter and surgical mitral valve interventions, particularly in patients undergoing mitral valve replacement or repair in anatomically complex settings. Accurate pre-procedural risk stratification is essential to optimize procedural planning and improve patient outcomes. In this talk, we will review the complementary roles of echocardiography and cardiac computed tomography (CT) in evaluating LVOT obstruction risk across various clinical scenarios, including transcatheter mitral valve replacement (TMVR), valve-in-valve or valve-in-ring procedures, and surgical repair in hypertrophic or calcified anatomies.

We will discuss how transthoracic and transesophageal echocardiography enable dynamic assessment of LVOT geometry, mitral-septal contact, and anterior leaflet motion, particularly in atrial functional mitral regurgitation or systolic anterior motion-prone anatomies. Cardiac CT provides precise 3D measurements of neo-LVOT area, mitral-aortic angle, and anterior leaflet length, which are critical for virtual valve modeling and predicting post-implantation flow dynamics.

Through illustrative cases and published data, we will explore key parameters such as neo-LVOT threshold values (<1.7 cm²), the influence of septal hypertrophy or sigmoid septum, and the role of intentional strategies such as LAMPOON or

anterior leaflet resection. We will also examine how multimodal imaging informs clinical decision-making—guiding device selection, access route, and preventive interventions.

This session aims to equip cardiologists, interventionalists, and cardiac imaging specialists with a structured framework for integrating echocardiography and CT in procedural planning. Emphasis will be placed on reproducible workflows, interdisciplinary communication, and emerging evidence that supports personalized risk mitigation in mitral interventions.

H-S11

H-S12

Handheld Ultrasound for Surveillance of Left Ventricular Function: Focus on Cancer Therapy–Related Cardiac Dysfunction (CTRCD)

Lung-Chun Lin

National Taiwan University Hospital

Cancer therapy–related cardiac dysfunction (CTRCD) is an increasingly recognized complication of modern cancer treatments, including anthracyclines, HER2-targeted therapies, tyrosine kinase inhibitors, and immune checkpoint inhibitors. These agents, while effective in improving cancer outcomes, pose significant risks of myocardial injury that may appear as asymptomatic declines in left ventricular ejection fraction (LVEF) or more subtle changes in myocardial strain, especially global longitudinal strain (GLS). Since CTRCD can progress silently before overt heart failure develops, early detection and regular monitoring of left ventricular (LV) function are essential for starting cardioprotective strategies and making informed decisions about continuing or adjusting cancer therapy.

While standard transthoracic echocardiography (TTE) remains essential for cardiac

monitoring, it can be resource-heavy, time-consuming, and sometimes impractical for frequent assessments. Handheld ultrasound (HHU) has become a groundbreaking tool in cardio-oncology, providing real-time, bedside evaluation of cardiac function with exceptional portability and ease of use. Its low cost, small size, and user-friendly design allow quick serial assessments, particularly in outpatient oncology clinics, infusion centers, and community settings where traditional echocardiography may be logistically difficult.

The integration of artificial intelligence (AI) into HHU platforms has further enhanced their usefulness by improving image acquisition consistency, automating LVEF and GLS measurements, and enabling cloud-based image sharing for expert review. These developments make HHU a practical solution not only for early detection of CTRCD but also for ongoing monitoring during and after cancer treatment. Regular HHU assessments can detect early subclinical myocardial changes, allowing for timely initiation of cardioprotective agents such as beta-blockers or ACE inhibitors and reducing the risk of irreversible dysfunction.

HHU can be easily integrated into cardio-oncology care paths to enable proactive, patient-focused cardiovascular monitoring. As HHU advances, it promises to democratize cardiac care, support earlier interventions, and ultimately enhance the cardiovascular safety of cancer treatment.

H-P01

Usefulness of Echocardiography in Assessing the Cardiac Condition of a Patient with Uncompensated Cirrhosis of Liver, Gastro-intestinal Bleeding, and Severe Anemia- Report of an Interesting Case

Shoa-Lin Lin, Chih-Neng Hsu

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Background:

Portopulmonary hypertension (PoPH) is a rare but significant complication in patients with hepatic cirrhosis, with a reported prevalence of 0.73% for pulmonary arterial hypertension. Transthoracic echocardiography is crucial for assessing pulmonary artery pressure and hemodynamic characteristics in these patients.

Case presentation:

A 73-year-old female with a history of hypertension, type 2 diabetes, cardiomegaly, and chronic kidney disease presented with altered consciousness, hematemesis, melena, and weakness. Initial evaluation in the emergency room revealed cardiomegaly, atrial fibrillation with rapid ventricular response, severe anemia (Hb 6.8 g/dL), acute kidney injury, and elevated ammonia. Suspecting hepatic encephalopathy and upper gastrointestinal bleeding, she was admitted to our ICU.

During her ICU stay, she received empirical antibiotics, terlipressin, pantoprazole, and tranexamic acid for suspected variceal bleeding. Lactulose was administered for hepatic encephalopathy, and multiple packed red blood cell transfusions were performed. An abdominal ultrasound confirmed decompensated liver cirrhosis with ascites and pleural effusion. An echocardiogram revealed moderate dilation of the left and right atria and right ventricle, with preserved left ventricular systolic function (LVEF: 70.1%). Doppler echocardiography showed severe tricuspid regurgitation (TR) and a trans-tricuspid pressure gradient of 45.05 mmHg, highly suggestive of significant pulmonary hypertension and which was consistent with PoPH.

Following aggressive treatment for liver cirrhosis, her consciousness improved, and gastrointestinal bleeding resolved. Hemoglobin levels gradually rose to 10.8 g/dL. Sildenafil was initiated and titrated to manage the pulmonary hypertension, leading to a gradual improvement in her overall condition. She was subsequently transferred from the ICU to the general ward.

Conclusion:

Portopulmonary hypertension should be considered in cirrhotic patients presenting with dyspnea, altered consciousness, or signs of right heart failure. Transthoracic echocardiography is an invaluable tool for diagnosing and assessing the severity of pulmonary hypertension in this population.

H-P02**Nonsurgical Management of a Complicated Iatrogenic Pseudoaneurysm of the Superficial Femoral Artery**

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Background:

Pseudoaneurysm (PSA) results from disruption of all three layers of the arterial wall. Postcatheterization PSA is a common vascular complication of cardiac and peripheral angiographic procedures. The incidence of PSA ranges from 0.05% to 2% after diagnostic catheterization, but increases to 2% to 6% after coronary or peripheral intervention. One of the risk factors for PSA formation is catheterization of the superficial femoral artery or profunda femoris artery. Nonsurgical treatment such as ultrasound-guided compression is effective for treatment of PSA smaller than 2 cm. PSA size greater than 6cm failed in compression. Patients with complicated femoral PSA (e.g. expanding hematoma) generally require open surgical repair or endovascular repair.

Materials and methods:

A 89 year-old female patient suffered from chest pain, dyspnea and elevated blood hs Troponin I level during hospitalization for treatment of anemia and gastric ulcer bleeding. Echocardiography showed mildly impaired systolic function of left ventricle. Under the impression of myocardial infarction, the patient underwent coronary arteriography (CAG) from the right femoral arterial approach, with the CAG result of insignificant

coronary artery disease. The puncture site was compressed by using a manual compression device. However, a large, rapidly expanding area of skin ecchymosis and swelling were noted in the right groin and right upper medial thigh, in spite of persistent puncture wound compression for several 15-minute sessions per day lasting for several days. Color Doppler sonography of the right inguinal area showed an oval and anechoic mass with interior Doppler signal communicating with the right superficial femoral artery, suggesting extravasation within a hematoma. Contrast-enhanced CT was immediately performed to confirm a PSA with a diameter of 7.3 cm arising from the right superficial femoral artery.

Results:

The manual compression technique was persisted to apply on the puncture site. The cardiac surgeon was consulted and recommended operation. Repeated sonography of the right inguinal area on

the 4th day after CT performance showed no more Doppler signal in the hematoma, and the scheduled operation was cancelled. The ecchymosis of the right groin gradually improved and was resolved on the 46th day post-CT performance.

Conclusion:

Although an expanding hematoma is considered as a complicated PSA requiring surgical intervention, nonsurgical management such as manual compression may be useful for the treatment of this complication, but at the expense of pain of the patient during the procedure and prolonged time of treatment. Color Doppler sonography is important to evaluate the status of the PSA.

Key words:

Nonsurgical management, Complicated iatrogenic pseudoaneurysm, Superficial femoral artery