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介入性栓塞技術的最新進展與應用

Recent Advances and Applications of Interventional Embolization Therapy

時　　間：114 年 6 月 28 日(星期六) 08:20~12:00
地　　點：臺北榮民總醫院 第三門診大樓 9 樓 *CiC* 創意谷

08:20-08:30	***Opening Remarks***	邱宏仁教授/理事長 Hong-Jen Chiou
	座長：李潤川 醫師 (Rheun-Chuan Lee)	
08:30-09:00	釔-90 放射栓塞治療肝細胞癌的現狀與進展 Current Status and Advances in Yttrium-90 adioembolization for Hepatocellular Carcinoma	柳建安醫師 Chien-An Liu
	座長：邱宏仁 教授 (Hong-Jen Chiou) TBD	
09:00-09:30	周邊動靜脈畸形處理的三大支柱：影像學、方法與栓塞劑 The Three Pillars of Managing Peripheral AVM: Imaging, Approaches, and Embolization Agents	Prof. Sang-Yub Lee (韓國)
	座長：黃群耀 教授 (Chun-Yao Huang)	
09:30-10:00	當前列腺動脈栓塞術：挑戰、技巧與臨床展望 Prostate Artery Embolization: Challenges, Tips, Tricks, and Perspectives	林俊宇醫師 Chun-Yu Lin
10:00-10:30	***Coffee Break***	
	座長：張碧倚 理事長 (Pi-Yi Chang)	
10:30-11:00	高風險區域：如何治療手足動靜脈畸形 The Frightening Zones: How to Treat Hand and Foot AVM	Prof. Sang-Yub Lee (韓國)
	座長：蔣恩榮 副教授 (En-Rung Chiang)	
11:00-11:30	動脈內栓塞術在慢性肌肉骨骼疼痛治療的進展：見解與 TPVGH 經驗 Advances in Transarterial Embolization for Chronic Musculoskeletal Pain: Insights and TPVGH Experience	吳慶蘭醫師 Ching-Lan Wu
	座長：徐博奎 教授 (Po-Kuei Hsu)	
11:30-12:00	當前淋巴系統、淋巴造影及介入治療的最新概念概述 Introduction to Current Concepts in Lymphatics, Lymphan -giography, and Interventions	劉顯慈醫師 Hsien-Tzu Liu

Current status and advances in Yttrium-90 radioembolization for hepatocellular carcinoma

釔 -90 放射栓塞治療肝細胞癌的現狀與進展

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Yttrium-90 (Y-90) radioembolization, also known as selective internal radiation therapy (SIRT), has emerged as a well-established locoregional therapy for hepatocellular carcinoma (HCC), particularly in patients who are not suitable candidates for surgical resection or transplantation. Over the past decade, Y-90 SIRT has demonstrated promising efficacy in tumor control, with favorable safety profiles, making it an essential option in the multidisciplinary management of intermediate to advanced-stage HCC.

Current clinical applications of Y-90 radioembolization include bridging to transplantation, downstaging for resection, and palliative therapy in unresectable cases. Advances in imaging and dosimetry have significantly improved treatment planning and personalization. The use of personalized dosimetry, especially with glass microspheres, has led to better tumor targeting and higher radiation doses to the tumor while sparing healthy liver tissue. Moreover, evidence from trials such as DOSISPHERE-01 has reinforced the importance of achieving sufficient absorbed doses for improved outcomes.

Recent innovations include the integration of Y-90 SIRT with systemic therapies, including tyrosine kinase inhibitors and immune checkpoint inhibitors, opening new avenues for combined modality treatment. Ongoing trials are evaluating its role in earlier disease stages and in combination with immunotherapy, which may further expand its therapeutic potential.

Despite these advancements, several challenges remain, including optimal patient selection, standardization of response assessment, and long-term outcome data. As the treatment landscape for HCC evolves, Y-90 radioembolization continues to hold a pivotal role, with ongoing research aiming to refine indications and maximize therapeutic benefit.

The three pillars of managing peripheral AVM: Imaging, approaches, and embolization agents

周邊動靜脈畸形處理的三大支柱：影像學、方法與栓塞劑

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Background: Peripheral arteriovenous malformations (AVMs) are complex vascular anomalies that can lead to significant morbidity, including pain, ulceration, bleeding, and high-output cardiac failure. Due to their dynamic nature and high recurrence rates, precise imaging, strategic procedural planning, and appropriate embolization techniques are critical for effective management.

Purpose: This lecture will provide an in-depth review of the three fundamental pillars of AVM management: imaging modalities for accurate diagnosis and treatment planning, procedural approaches for safe and effective intervention, and embolization agents tailored to lesion morphology and flow dynamics.

Content:

1. Imaging for Diagnosis and Treatment Planning
    - Doppler ultrasound, CT angiography (CTA), and time-resolved MRA for lesion characterization and flow dynamics assessment.
    - Catheter angiography as the gold standard for treatment planning, including selective arteriography and venography.
    - Metal artifact reduction techniques (MARTs) to improve post-embolization imaging in patients treated with coils.
2. Approaches to Peripheral AVM Treatment
    - Cho-Do AVM Angiographic Classification as a critical tool in guiding intervention strategies.
    - Access techniques: transarterial, direct puncture, and transvenous approaches based on AVM architecture.
3. Embolization Agents and Techniques
    - Selection of embolic materials: liquid embolics (ethanol, n-BCA, Onyx), coils, and plugs tailored to flow characteristics.
    - How to use flow control techniques.

Conclusion: Peripheral AVM management requires accurate imaging, Cho-Do classification-driven procedural planning, and tailored embolization strategies to optimize outcomes and minimize complication. This lecture will present an evidence-based, multidisciplinary approach to improving treatment efficacy.

Prostate artery embolization: Challenges, tips, tricks, and perspectives

當前列腺動脈栓塞術：挑戰、技巧與臨床展望

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台安醫院 影像醫學科

Prostatic artery embolization (PAE) consists of blocking the blood supplying the prostate to treat benign prostate hypertrophia (BPH). Its effectiveness on low urinary tract symptoms (LUTS) has now been published around hundreds of studies. The main advantage of this procedure is the very low rate of urinary and sexual sequelae, including ejaculatory, with an excellent tolerance profile. The arterial anatomy is a key element for the realization of PAE. Its knowledge makes it possible to anticipate obstacles and prevent potential complications related to nontarget embolization. Nontarget embolization can occur with a small intraprostatic shunt or reflux. This talk offers a step-by-step review of the various anatomical and technical key points to ensure technical and clinical success, while avoiding the occurrence of adverse events.

The frightening zones: How to treat hand and foot AVM

高風險區域：如何治療手足動靜脈畸形

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Background: Arteriovenous malformations (AVMs) of the hand and foot are among the most challenging vascular anomalies to manage due to their complex hemodynamics, functional significance, and high recurrence rates. These lesions frequently cause pain, ulceration, bleeding, and progressive tissue destruction, often requiring intervention to prevent severe complications such as limb ischemia or amputation. Given the delicate anatomical structures, treatment must be meticulously planned to ensure both efficacy and safety. Multidisciplinary collaboration between interventional radiologists and surgeons is essential to optimize patient outcomes.

Purpose: This lecture will present a comprehensive strategy for treating hand and foot AVMs, focusing on angiographic classification, access methods, embolization techniques, and the role of surgical collaboration. Key principles, including flow control, minimizing complications, and optimizing functional outcomes, will be discussed using case-based examples and recent clinical data.

Content:

1. Understanding Hand and Foot AVMs: Anatomy and Classification
    - Unique anatomical and functional challenges of hand and foot AVMs.
    - Cho-Do AVM Angiographic Classification as a decision-making tool.
2. Intervention Strategies
    - Access techniques: transarterial, direct puncture, and transvenous approaches.
    - Balancing aggressive treatment with functional preservation to avoid tissue loss.
    - The importance of flow control techniques in preventing non-target embolization.
    - Surgical collaboration: When to consider adjunctive surgical resection, debridement, or skin
    - grafting after embolization.
3. Embolization Techniques and Optimizing Outcomes
    - How to use liquid embolic materials.
    - Use of coils for venous outflow control in high-flow lesions.
    - Complication management: Strategies to reduce skin necrosis, nerve injury, and ulcer
    - formation.

Conclusion: Hand and foot AVMs require a multifaceted approach integrating angiographic classification, precise intervention strategies, and tailored embolization techniques. Collaboration with vascular and plastic surgeons plays a crucial role in improving treatment efficacy, managing complications, and optimizing functional outcomes in these high-risk vascular territories.

Advanced in transarterial embolization for chronic musculoskeletal pain: insights and TPVGH experience

動脈栓塞治療在慢性肌肉骨骼疼痛的進展和 TPVGH 的經驗

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Chronic musculoskeletal pain is a common condition that significantly impacts patients' quality of life and daily function. Conventional treatments such as analgesic medications, physical therapy, and corticosteroid injections often provide only temporary relief or fail to address the underlying pathophysiology. In recent years, transarterial embolization (TAE) has emerged as a novel, minimally invasive treatment for chronic pain syndromes, targeting pathological neovascularization and inflammatory hyperemia associated with refractory musculoskeletal conditions.

TAE involves selective embolization of abnormal arterial networks supplying pain-generating structures, such as tendons, joints, and soft tissues. By reducing pathological blood flow and suppressing inflammatory mediators, TAE provides long-term pain relief while avoiding the side effects and limitations of systemic therapies. Advances in embolic agents, such as microspheres and liquid embolics, as well as improved angiographic imaging techniques, have enhanced procedural precision and outcomes. Emerging clinical evidence supports TAE as an effective intervention for conditions such as chronic tendinopathies, osteoarthritis, frozen shoulder, and myofascial pain syndrome.

At Taipei Veterans General Hospital (TPVGH), we have implemented and refined TAE protocols to optimize patient selection, procedural planning, and follow-up care. Our experience highlights critical factors influencing procedural success, including the identification of hypervascularization patterns on digital subtraction angiography (DSA), the choice of embolic agents tailored to specific pathologies, and post-procedure rehabilitation strategies. Our retrospective studies and case series indicate significant improvements in pain scores, functional outcomes, and quality of life following TAE. Through case-based discussions and TPVGH's institutional insights, we aim to offer a comprehensive understanding of TAE's role in the evolving landscape of interventional pain management. As the field advances, TAE holds promise as a transformative approach for patients with chronic musculoskeletal pain, offering durable relief with minimal invasiveness.

Introduction to current concepts in lymphatics, lymphangiography, and interventions

當前淋巴系統、淋巴造影及介入治療的最新概念概述

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Since the introduction of intranodal lymphangiography in 2012, the once underappreciated lymphatic system quickly gained the attention of interventional radiologists. This breakthrough enables the lymphatic system to be mapped out more efficiently than before, and the once sparse framework is now transformed into a detailed and intricate anatomical network, revealing connections and complexities previously unseen. This knowledge further became the basis of many innovative, minimally invasive lymphatic procedures designed to treat a wide range of lymphatic-related conditions. Including traumatic and non-traumatic causes of lymphatic or chylous leakage across various anatomic locations. Most of these conditions were previously left untreated, required extensive surgery, or demanded prolonged conservative management lasting months.

As the acceptance and development of lymphatic interventions continue to advance at a rapid speed, this presentation will begin with an overview of the fundamental anatomy and physiology of the lymphatic system. Then review cases performed with state-of-the art imaging and interventional treatment techniques, concluding with a discussion of future directions in this field.