TMU-Research Center of Urology and Kidney

Monthly Meeting

Times：**2023/4/21(Friday) 14:00-15:00**

Google meet link： https://meet.google.com/xmk-tzqg-dca

Meeting Chairperson：Mai-Szu Wu

Participant：

【TMUH】Ming-Che Liu、Yao-Chou Tsai、Shauh-Der Yeh、Chien-Chih Wu、Hsiao-Yu Lin、Jeng-Cheng Wu、Ching-Hsin Chang、Wei-Chieh Chen、Fang-Yu Ku、Shih-Hsiu Lo、Te-Chao Fang、Hsi-Hsien Chen、Yen-Chung Lin、Yueh-Lin Wu、Chih-Chin Kao、Ching-Yi Chen、Shu-Ching Yeh、TING-EN TAI

【WFH】Yu-Ching Wen、Liang-Ming Lee、Ke-Hsun Lin、Yung-Wei Lin、Chi-Hao Hsiao、Syuan-Hao Syu、Chung-Howe Lai、Chih-Chen Hsu、Tso-Hsiao Chen、Yuh-Mou Sue、Chung-Yi Cheng、Chung-Te Liu、Yun-Hong Yang、Ming-Che Lee、Cho-Hsing Chung

【SHH】Mai-Szu Wu、Chia-Chang Wu、Chia-Hung Liu、Yi-Te Chiang、Chia-Da Lin、Kai-Yi Tzou、Wei-Tang Kao、Su-Wei Hu、Wen-Ling Wu、Mei-Yi Wu、Lie-Yee Hung、Cai-Mei Zheng、I-Jen Chiu、Yu-Wei Chen、Chia-Te Liao、Cheng-Hsien Chen、Hui-Wen Chiu、Po-Han Yu

【SKMH】Yung-Ho Hsu、Chu-Lin Chou

Chief：Chien-Huang Lin (President, TMU)、Yen-Hua Huang (Dean, Research and Development, TMU)、Chih-Cheng Hsu (Professor, NHRI)、Ke-Hung Tsui (Vice President, SHH)

Agenda：1. Chronic kidney disease team

2. Integrated kidney intervention

慢性腎病團隊

萬芳: 鄭仲益、蘇裕謀
北醫: 林彥仲、葉曙慶
雙和: 鄭彩梅、廖家德、宋立勤
新國民: 許永和、鄒居霖

數位醫療、遠距監控、個人精準、腎臟再生

報告人：鄭仲益醫師

112.04.21

上期研究追蹤

- Artificial intelligence in predicting kidney interstitial fibrosis and tubular atrophy severity
- Status: Manuscript in submission

Corresponding author: Yen-Chung Lin

Clinical and pathological features of ANCA associated GN before and after COVID-19 epidemic

ANCA glomerulonephritis & vasculitis (ANCA-GN & AAV)

- ANCA: Anti-Neutrophil Cytoplasmic Antibody directly against cytoplasmic antigen.
- Necrotizing vasculitis affecting small vessels
- Myeloperoxidase (MPO-ANCA) mostly **p-ANCA**
- Proteinase 3 (PR3-ANCA) mostly **c-ANCA**

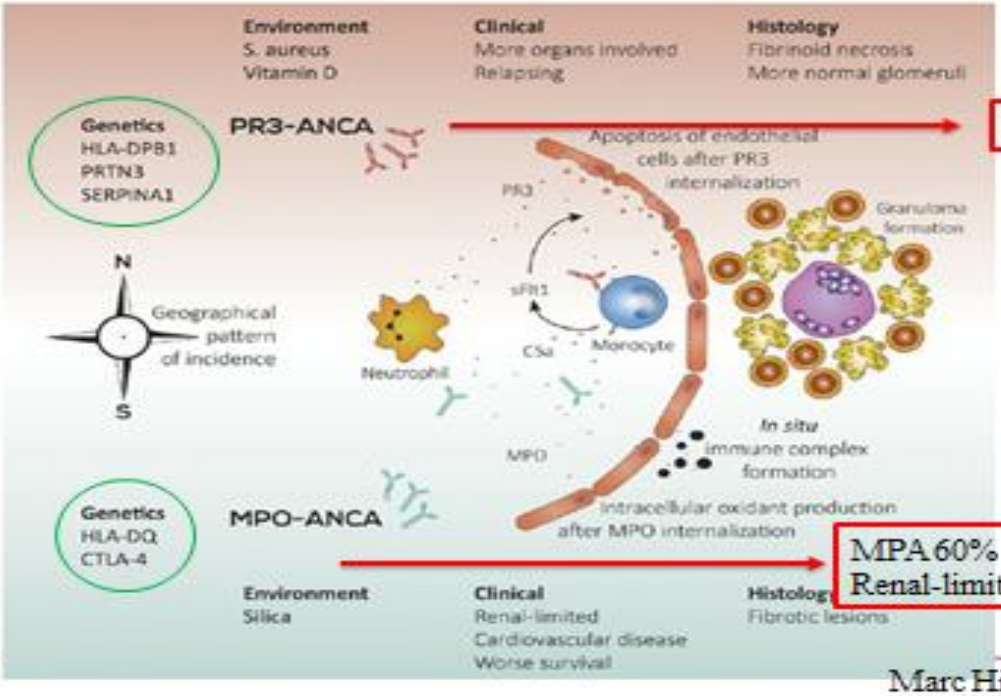
ANCA renal-limited vasculitis (RLV)	ANCA-associated vasculitis (AAV)
	1. Microscopic polyangiitis (MPA)
	2. Granulomatosis with polyangiitis (Wegener)
	3. Eosinophilic granulomatosis with polyangiitis (Churg-Strauss)

CHCC 2012 categories of ANCA-associated vasculitis

ANCA-GN

- 50% risk of death or renal failure at 5 yrs when eGFR < 50 ml/min.
- Often related to systemic vasculitis (AAV), MPA, GPA or RLV
- **RPGN**, subnephrotic range proteinuria, microhematuria, and hypertension over days to months.
- **Variable clinical courses:**
  1. Asymptomatic urinary abnormalities
  2. Indolent, remitting, and relapsing course
  3. Chronic remitting course, but cause chronic progressive renal failure
  4. Slowly progressive course for several years.

Pathogenic model highlighting the differences between PR3-ANCA and MPO- ANCA vasculitis.



Marc Hilhorst 2015

ANCA-associated glomerulonephritis (ANCA-GN)

- 20/million population
- Most common form of new-onset GN in adult > 50 years, peak 60- to 70- years
- More common in white and Asian
- Different spectrum of clinicopathologic phenotypes and serotypes of ANCA disease.
- Reported of HLA-DR4 and DRB4 as potential risk alleles for SARS-CoV2 vaccine-related ANCA-associated GN

Table 1. ANCA associated GN in Taiwan (2001-2016)[a]

TP series: bimonthly (15 years)	3.0%*
2001-2007	2.1% (7/326)
2008-2016.09	3.8% (13/340)
TMU series: monthly (4 years)	3.5%*
2012-2016.10	3.5% (8/229)
TC series: bimonthly (15 years)	11.7%*
2001-2007	8.9% (11/123)
2008-16.10	13.4% (27/202)

* *P*<0.0001 (TP *v.* TC); Geographic variation? Enviornment?
[a] Six anti-GBM/P-ANCA dual (+) cases are not included.

許輝吉 教授 整理資料

Proposal to categorize the glomerular lesions linked to treatment response:

Unrescuable:

Acute: Severe glomerular necrosis (NGN), global or circumferential to massive crescents (GC)

Chronic: Global sclerosis (GS)

Rescuable: Potential recovery from the re-expansion or preserved tufts after the halt of disease activity. (proven by rebiopsy)

Acute : FN and FC

Chronic: FS

許輝吉 教授 整理資料

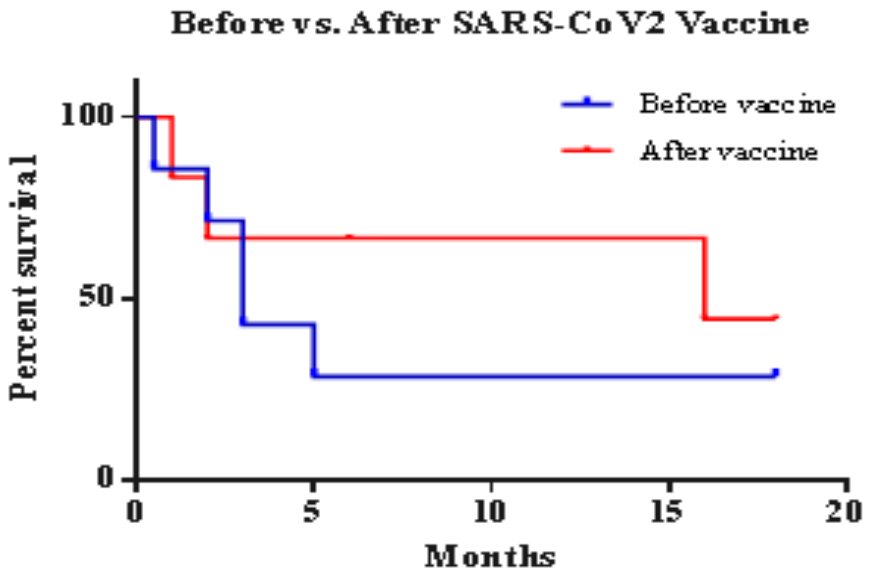
	ANCA	P-ANCA	C-ANCA	Atypical P-ANCA
Case no.	88	61 (1 double positive, anti-GBM and P-ANCA)	20	7
Renal biopsied	13	11	2	0
Female (%)	42(47.7%)	33 (53.2%)	6 (30%)	3 (42.9%)
Age (yrs)	66.5±15.5	67.0±15.6	62.9±15.2	72.0±15.7
Body weight (kg)	60.0±16.3	59.0±14.0	61.7±20.4	64.4±23.5
BMI	23.5±5.8	23.1±4.4	23.7±7.4	26.0±10.3
BUN (mg/dL)	36.6±33.4	34.3±28.3	48.8±47.1	22.1±18.1
Cr (mg/dL)	2.3±2.6	2.5±2.8	2.3±2.1	1.0±0.8

	ANCA-GN	Before COVID-19	After COVID-19
Renal biopsied	13	7	6
Female (%)	8 (61.5%)	4 (57.1%)	4 (66.7%)
Age (yrs)	63.9±10.9	64.6±13.1	63.2±8.9
Body weight (kg)	56.7±8.6	56.4±7.2	57.0±10.8
BMI	21.7±2.9	20.8±2.4	22.7±3.4
BUN	66.1±27.3	69.9±26.4	61.7±30.2
Cr	5.0±3.3	5.1±3.7	4.8±3.2
Manchester ANCA Renal Risk Score	7.2±2.3	7.3±2.7	7.2±1.9

Normal glomeruli: < 10% 10-25% > 25%
Tubular atrophy/interstitial fibrosis: ≤ 25% > 25%
Renal function eGFR (ml/min): > 15 ≤ 15

https://itunes.apple.com/us/app/anca-score/id1415367084?l=de&ls=1&mt=8

Percentage of patients without dialysis or death



Future work

- Recruit TMUH and SHH data
- IgA and MGN before and after COVID-19 era
- Genetic predisposition, HLA DR4 and HLA DRB4

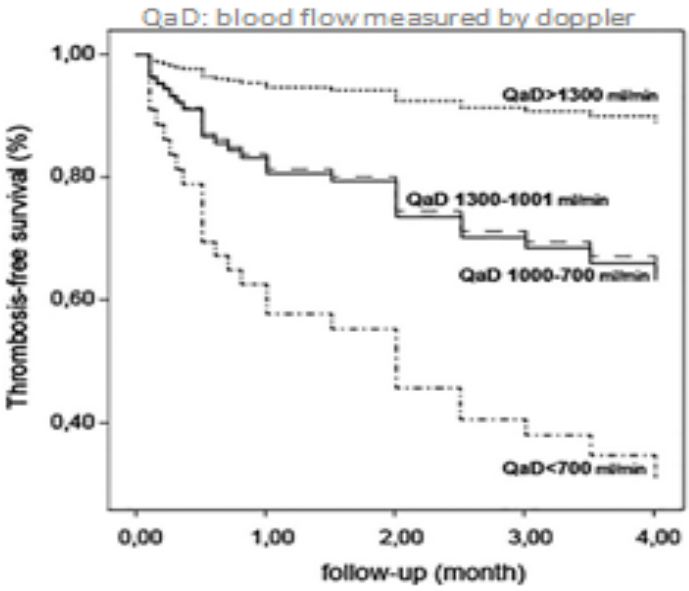
Progress Report

雙和醫院 腎臟內科 邱怡仁
整合介入性照護團隊
APR-21, 2023

Blood flow plays a role in AVG patency

- Thrombosis was one the main reason for the graft patency loss, which leads to increasing medical expense for rescue of the vascular access
- KDOQI (Kidney Disease Outcomes Quality Initiative) guidelines for vascular access suggest AVG surveillance by measuring access blood flow is supplementary to regular clinical monitoring, to improve AVG patency

Decreased blood flow in prosthetic vessels is associated with thrombosis

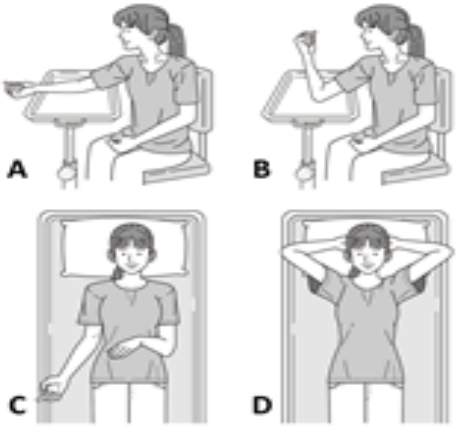


- Intimal hyperplasia over the venous-graft junction
- Systemic hemodynamics
  Blood pressure
  Cardiac output

J Vasc Access. 2020 Mar;21(2):195-203.

- KDOQI guidelines suggested arm exercise may be beneficial to vascular access maturation
- Scarce evidence focusing on the impact of the arm posture on the blood flow of the AVG

Method



49 HD patients using ***forearm AVG*** > 4 weeks from SHH dialysiscenter (IRB:N202104038; 2022/04-2023/01)

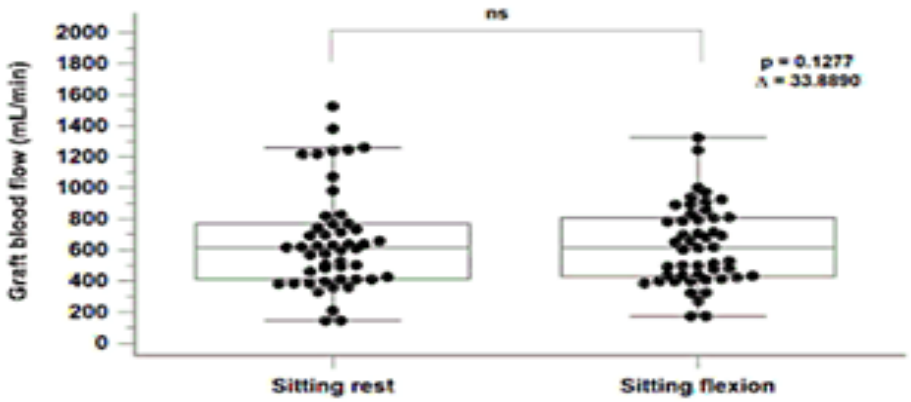
Four different position
A Sitting extension (rest) **B** Sitting flexion
C Lying extension (rest) **D** Lying flexion

Philips EPIQ 7 diagnostic ultrasound (USA) and an L12-3MHz Ultrasound transducer (WA, USA) and 60-degree Doppler angle, also same graft material

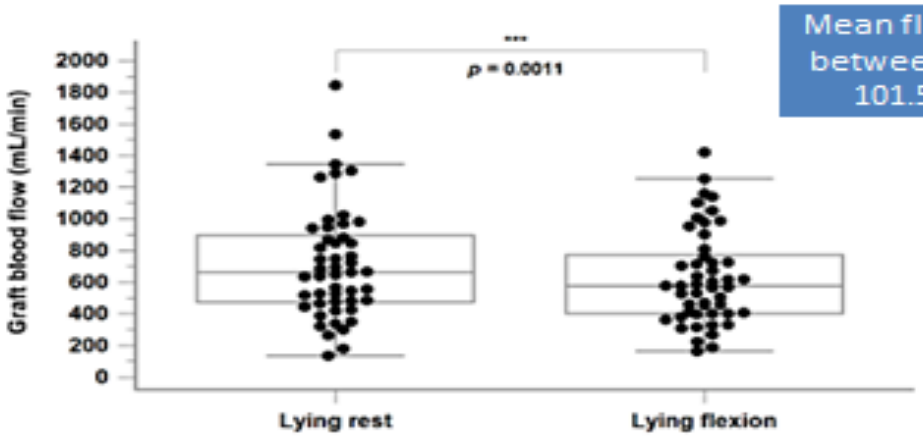
Preliminary results

Variables	all patients (n = 49)
Age (years)	65.96 ± 11.28
Sex	
Male (%)	22 (44.9)
female (%)	27 (55.1)
BMI	25.93 ± 6.87
Diabetes mellitus (%)	22 (44.9)
Hypertension (%)	36 (73.5)
Current smoker (%)	5 (10.2)
Coronary artery disease (%)	15 (30.6)
Cerebrovascular accident (%)	4 (8.2)
Peripheral vascular disease (%)	5 (10.2)
Graft sided (%)	
left	43 (87.8)
right	6 (12.2)
Graft configuration (%)	
loop	45 (91.8)
straight	4 (8.2)
Cross elbow (%)	
crossed	12 (24.5)
not crossed	37 (75.5)
Graft age (months), median (IQR)	15.00 (47.00)
History of graft thrombosis (%)	24 (49.0)
Systolic BP (mmHg)	149.59 ± 25.65
Diastolic BP (mmHg)	69.92 ± 17.94
Heart rate (beats per min)	79.45 ± 15.05

Sitting position does not alter AVG blood flow

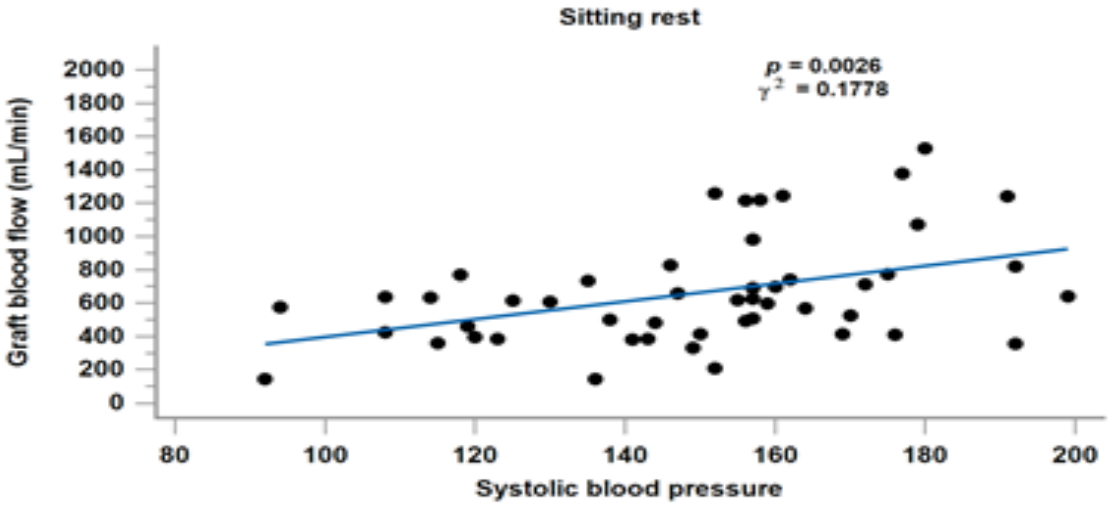


Lying with arm flexion reduces AVG blood flow



Mean flow difference between two groups 101.57 ml/min

Systolic BP may not correlate with AVG blood flow



Future works

- Subgroup analysis
  T2DM
  Age (65Y)
  Intervention