出國報告（出國類別：論文發表）

2025 年西班牙馬拉加第 32 屆歐洲肥胖大會心得報告

服務機關：高雄榮民總醫院 /職安室、醫企部
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摘要

歐洲肥胖研究學會、年會是每年重要國際肥胖研討會之一。與會人員除歐洲各國學者專家外，美加地區、亞洲中、日、韓等國均有許多學者參加。此次大會約有 1000 餘位參與會議，兩個 Auditorium 及三個 Conference Room 與四個主題海報展區。

在會議期間幾乎高朋滿座。可見肥胖及基因相關合併症如心血管疾病、血糖代謝症病及脂肪肝等議題的重要性。內容從基礎研究到政策，從政策到最新科技運用，十分多元。大會有四個主題：

一、基礎研究

二、行為科學及公共衛生

三、兒童及青少年肥胖

四、肥胖介入

許多研究針對肥胖症特性及可能機轉，訂定不同治療方式與策略，肥胖精準治療效果(包括飲食、運動、藥物及手術介入與 AI/Big Data 整合運用)比傳統治療方式成效增加 15-20 倍以上，值得更深入研究探討。

關鍵字：肥胖基因、肥胖策略、肥胖治療、精準治療

目次

一、 目的

此次大會有四個主題：

(一) 基礎研究：粒腺體代謝、氧化壓力等是一重點，Brain-Gut interaction 也有許多新的發現。棕色脂肪代謝機轉與肥胖有密切相關。

(二) 行為科學及公共衛生：包括體能活動介入內容及方式，神經內分泌系統與精神對飲食行為的影響，及食品產業在肥胖扮演的角色。

(三) 兒童及青少年肥胖：近年來兒童及青少年肥胖在歐洲地區，突顯其重要性從家庭篩檢到學校，從非藥物治療到藥物治療等，從肥胖症到日後的合併症均有相當的研究。

(四) 肥胖管理及介入：最新肥胖的藥物治療，有相當的進步，特別是 SGLT2 i 及 GLP-1 RA 的一系列大型臨床研究使得肥胖藥物治療再度燃起一絲希望。

二、 過程

此次旅程，因沒有國內航空公司班機直飛西班牙，再加上飛歐洲班機皆滿載，因此只好搭乘土耳其航空公司班機先飛伊斯坦堡再轉機至西班牙馬拉加。再加上印度巴基斯坦戰爭，轉機飛行近約 24 小時才到達馬拉加。再到旅館 check in 後，簡單梳洗，就直接前往馬拉加國際會議中心參加開幕會議。此國際會議中心位於馬拉加郊區，高速公路旁，故無法步行前往，因此只能搭乘計程車前往，又是一筆不小開支，所幸馬拉加計程車或 Uber 十分方便。

在開幕式後就舉行一系列的研討會及專題。此次有非常多的議題，在討論肥胖症的精準治療。肥胖症的合併症是多面向的，而非藥物治療（如飲食及體能活動）及藥物治療（如 SGLT2 i 及 GLP-1 RA 等）其治療成效也不是一致的（非常大的變異）。因此，有許多研究針對肥胖症特性及可能機轉，訂定不同治療方式與策略，此種肥胖精準治療效果，比傳統治療方式成效增加 15-20 倍以上。肥胖症的外科治療及精準治療也是十分重要的議題，其術後心臟-血管-代謝合併症的改善，都值得深入探討。

這次大會有幾個議題，十分重要：

(一) 代謝異常相關的脂肪性肝臟疾病 metabolic dysfunction-associated steatotic liver disease (MASLD)，此一正式名稱，將脂肪肝或其他疾病都正名！此疾病盛行率約 25 到 35 %，美加較低 24 %，中東及非洲較高約 32 %。它是導致肝臟纖維化、肝硬化及肝癌的重要危險因子之一。然而卻與肥胖相關心血管疾病危險因子及死亡成負相關，但與 HFpEF

有關，且與粒腺體的均衡狀態有關。其治療可分為兩大部分，一是治療體重或體脂肪二是治療肝臟。

(二) 肥胖的精準治療（包括精準醫學及精準營養），起因是肥胖的相關疾病及組織學有密切關係。這對肥胖治療的前瞻性及未來有更進一步的探討，內容包括包括飲食、運動、藥物及手術介入一系列利用ＡＩ及ＭＬ來解決並探討此一問題。

(三) 基因對肥胖的貢獻從以前的單一 SNP 多基因到 GWS 後的 GRS，都有十分不同的貢獻，特別是最近 GWS 的發展，各個生物資料庫有許多基因 Genetic Data 釋放出來，如何判讀基因對肥胖的貢獻，就有不同發展，特別是 GRS 的計算與分組，增加研究的成果。

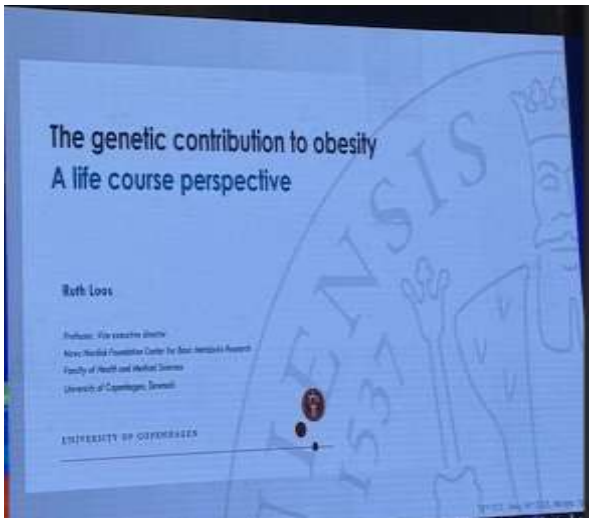
(四) 粒腺體在肥胖扮演的角色，越來越多的研究發現粒腺體在脂肪代謝及產熱效應扮演重要角色，此與肥胖的發生有密切相關。

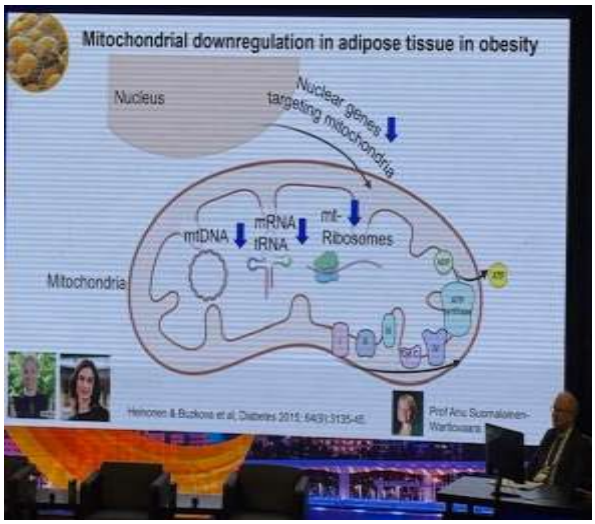
三、心得及建議

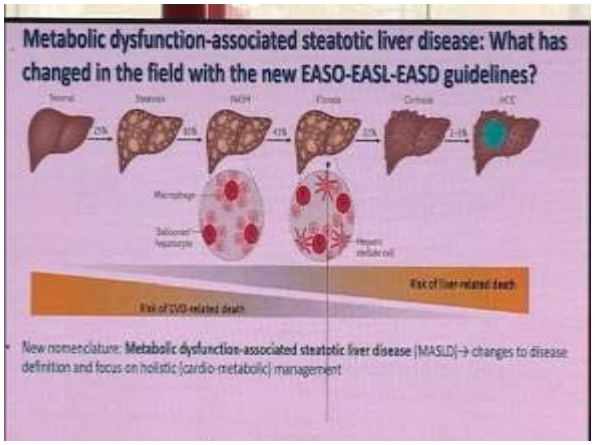
很高興有機會能到西班牙馬拉加參與盛大的研討會，提昇自己學術水準及迎頭趕上全球化的肥胖議題趨勢，給職許多值得深思的方向。建議本院鼓勵不同單位同仁踴躍投稿，或發表口頭報告，因國際研討會的議題非常廣泛，與日常醫療作為都有密切關係，若醫院同仁積極參與亦可呈現醫院另一風氣及特色，值得大家思考。這場研討會主要在探討關於肥胖治療、肥胖管理、肥胖研究等議題，透過來自不同國家不同領域的專家學者，對於多元的議題進行研究討論，近年來提倡跨領域的合作，在會議當中可以聽到來自不同國家的學者精彩的演講。許多研究針對肥胖症特性及可能機轉，訂定不同治療方式與策略，此種肥胖精準治療效果，如肥胖症的外科治療，包括 AI、ML 等人工智慧治療比傳統治療方式成效增加 15-20 倍以上，值得花更多心力深入研究探討並發展適合投入的治療方式，以解決此一世紀疾病。

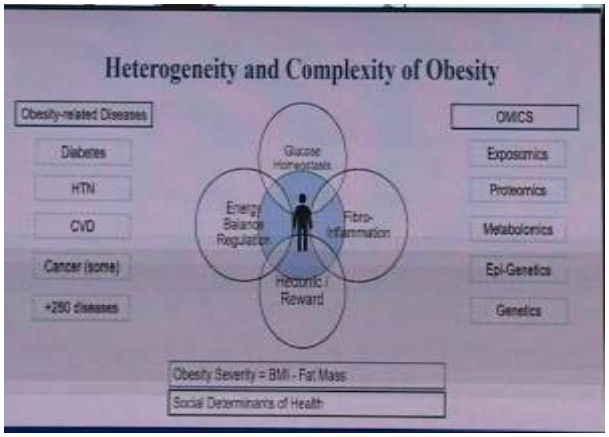
附錄

附錄 1-活動內容

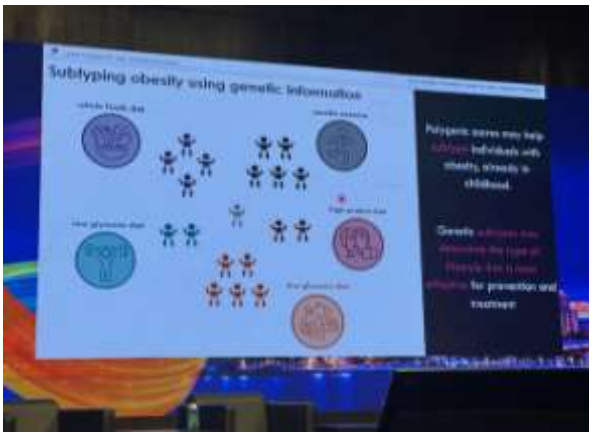

The genetic contribution to obesity
A life course perspective
Ruth Loos

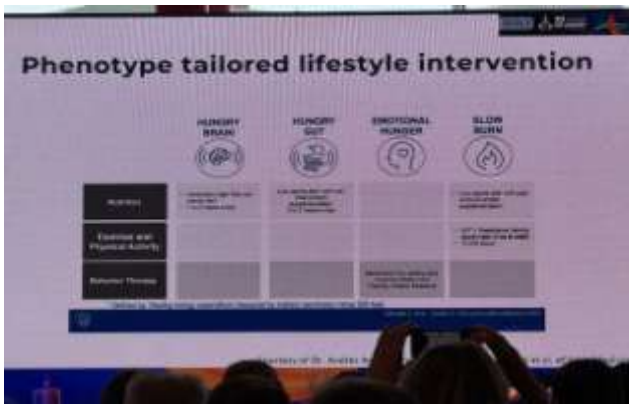

Mitochondrial downregulation in adipose tissue in obesity
Nucleus
Nuclear genes targeting mitochondria
mtDNA
mRNA tRNA
mt-Ribosomes
Mitochondria


Metabolic dysfunction-associated steatotic liver disease: What has changed in the field with the new EASO-EASL-EASD guidelines?
Risk of liver-related death
Risk of CVD-related death
New nomenclature: Metabolic dysfunction-associated steatotic liver disease (MASLD)→ changes to disease definition and focus on holistic (cardio-metabolic) management


Heterogeneity and Complexity of Obesity
Obesity-related Diseases
Diabetes
HTN
CVD
Cancer (some)
+280 diseases
OMICS
Exposomics
Proteomics
Metabolomics
Epi-Genetics
Genetics
Energy Balance Regulation
Fibro-inflammation
Hedonic / Reward
Obesity Severity = BMI - Fat Mass
Social Determinants of Health


Precision medicine and nutrition


Subtyping obesity using genetic information



附錄 2-參加證明及海報發表

Appendicular Muscle Mass Ratio in Relation to Metabolic Syndrome among Community-dwelling Elderly Population in Taiwan

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INTRODUCTION

Metabolic syndrome (MS) is one of the most important risk factors for cardiovascular diseases and diabetes mellitus.

The relationship between obesity, body fat and body composition on MS was not consistent in elderly.

The concurrence of decreases in muscle mass and accumulation in adipose tissue play an important role in sarcopenic obesity, which is also contributing to MS. The accumulation of adipose tissue and loss of muscle are core mechanisms which linking obesity and MS.

AIM

The sarcopenic obesity was widely studied recently because its relationship to many cardiometabolic diseases and risk factors.

In a Taiwanese study, low muscle mass was only positively associated with MS in females, but not in males.

This study is to evaluate the association between BMI, waist circumference (WC), and appendicular muscle mass (AMM) to body weight ratio (AMMW) in relation to MS among community-dwelling elderly population between difference genders in Taiwan.

RESULTS

- Prevalence of MS was around 47.1% for male and 50.0% for female among elder population in Taiwan.
- The subjects with MS had higher BMI, WC, AMM, but lower AMMW than those without MS (all p<0.001).
- Among males, the AMMW was 0.632±0.027 and 0.663±0.032 (p<0.001) for those with/ without MS.
- A comparison of BMI, WC and AMMW indicates that BMI was positively associated with the risk MS and MS summary score.
- However, AMMW is negatively associated with MS (OR=0.877, 95% CI 0.818-0.941 for males and OR=0.885, 95% CI 0.831-0.943 for females) and every 10% increased of AMMW is correlated with a decreased MS summary score of 0.73 points in males and 0.54 points in females (p< 0.001).
- Among subjects with hypertension and/or diabetes, the higher the AMMW, the lower the prevalence of MS when compared to subjects with lower AMMW.

Table1. Characteristics of anthropometrics, BP, lipid profiles and AMMW among female elder population (n=2,139)

	MS(+) (n=1,069)	MS(-) (n=1,070)	p-value
	Mean ± SD	Mean ± SD	
Age (years)	73.1 ± [illegible]	73.4 ± [illegible]	[illegible]
BMI (kg/m²)	26.8 ± 3.7	23.9 ± 3.3	<0.001**
Body waist (cm)	87.9 ± 8.8	79.9 ± 8.7	<0.001**
GS (kg)	21.8 ± 5.1	21.8 ± 5.6	0.875
AMM (kg)	16.1 ± 3.8	15.8 ± 3.9	<0.001**
AMMW	[illegible]	[illegible]	<0.001**
SBP (mmHg)	145.3 ± 16.7	138.7 ± 18.1	<0.001**
DBP (mmHg)	80.2 ± 10.4	77.7 ± 10.8	<0.001**
AC (mg/dl)	120.8 ± 40.4	99.8 ± 18.8	<0.001**
TG (mg/dl)	137.8 ± 83.0	102.4 ± 46.0	<0.001**
HDLC (mg/dl)	54.8 ± 13.1	60.5 ± 14.2	<0.001**

Table2. Characteristics of anthropometrics, BP, lipid profiles and AMMW among female elder population (n=1,600)

	MS(+) (n=758)	MS(-) (n=842)	p-value
	Mean ± SD	Mean ± SD	
Age (years)	73.1 ± 6.1	73.3 ± 6.8	0.503
BMI (kg/m²)	26.5 ± 3.2	23.5 ± 3.8	<0.001**
Body waist (cm)	93.0 ± 8.0	84.2 ± 7.8	<0.001**
GS (kg)	82.1 ± 7.4	82.8 ± 6.8	0.125
AMM (kg)	44.3 ± 5.4	46.7 ± 4.1	<0.001**
AMMW	0.6321 ± 0.0272	0.6633 ± 0.0321	<0.001**
SBP (mmHg)	142.2 ± 18.9	135.6 ± 18.7	<0.001**
DBP (mmHg)	82.8 ± 11.3	88.8 ± 10.0	<0.001**
AC (mg/dl)	124.4 ± 35.4	96.4 ± 22.2	<0.001**
TG (mg/dl)	189.3 ± 95.3	94.5 ± 47.2	<0.001**
HDLC (mg/dl)	45.1 ± 11.1	57.7 ± 12.0	<0.001**

Table 3. Multiple regression coefficients for AMMW variables on metabolic syndrome with gender specifications (n=3,739)

	Model I'			Model II'		
	OR	95% CI		OR	95%CI	
Male(n=1,600)						
MS-1 factor	OR=0.889	95%CI=	0.823-0.961	OR=1.013	95%CI=	0.901-1.139
MS-2 factors	OR=0.716	95%CI=	0.657-0.781	OR=0.913	95%CI=	0.789-1.054
MS-3 factors	OR=0.549	95%CI=	0.494-0.612	OR=0.738	95%CI=	0.621-0.879
MS	OR=0.698	95%CI=	0.668-0.728	OR=0.877	95%CI=	0.818-0.941
MS (summary score)	-28.906	0.818	p<0.001**	-7.279	1.836	p<0.001**
Female(n=2,139)						
MS-1 factor	OR=0.803	95%CI=	0.765-0.922	OR=1.023	95%CI=	0.881-1.183
MS-2 factors	OR=0.570	95%CI=	0.521-0.699	OR=0.857	95%CI=	0.757-0.981
MS-3 factors	OR=0.403	95%CI=	0.186-0.584	OR=0.795	95%CI=	0.628-1.005
MS	OR=0.702	95%CI=	0.672-0.733	OR=0.885	95%CI=	0.831-0.943
MS (summary score)	-20.503	0.536	p<0.001**	-5.367	1.686	p<0.001**

METHOD

✓ Total of 3,739 subjects (1,600 males and 2,139 females) older than 65YO were recruited from a series of community-based surveys that were conducted from 2017 to 2019 in Taiwan.

✓ We collected anthropometric characteristics, handgrip strength, blood pressure and blood biochemistry using standard methods. AMM was calculated with an equation.

✓ History of chronic disease and lifestyle profiles were collected using questionnaires.

✓ The estimated AMM was calculated according to the following equation:

AMM = −9.833 + 0.397 x weight (kg) + 4.433 x sex + 0.121 x height (cm) + 0.061 x hand GS (kg).

CONCLUSIONS

- Obesity and central obesity were positively associated with MS.
- Subjects with MS had higher BMI but lower AMMW than those without MS. Also, BMI was positively associated with MS while AMMW was negatively associated with MS.
- The lean body mass ratio alone with obesity is an important element to MS. Also, in those in the same disease status of DM and HTN, body composition may be an independent factor to MS.
- The AMMW had a protective effect on MS even among elderly population in Taiwan.

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