THE 10TH CENTRAL VIETNAM OPEN CONGRESS OF CARDIOLOGY

VALUE OF LIPID ACCUMULATION PRODUCTS AND VISCERAL FAT INDEX IN PREDICTING METABOLIC SYNDROME AMONG POPULATION IN TWO COMMUNES OF QUANG DIEN DISTRICT, THUA THIEN HUE PROVINCE

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CONTENTS

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INTRODUCTION

- Metabolic syndrome (MetS) is a cluster of metabolic abnormalities, characterized as central obesity, dysglycemia, raised blood pressure, elevated triglyceride (TG) level, and low high-density lipoprotein cholesterol (HDL-C) level. MetS is associated with cardiovascular disease, type 2 diabetes morbidity and mortality, and all-cause mortality.
- It is alarming that the prevalence of MetS is high and increasing in both developing and developed nations. Thus, early identification and treatment of individuals with MetS is essential to prevent the adverse consequences related to its development

INTRODUCTION

- The diagnostic criteria of MetS are complex to conduct, which makes early identification of individuals with MetS challenging.
- Of these components of MetS, central obesity is considered as the most important component.
- Several studies have pointed out that it is visceral obesity but not subcutaneous adiposity that relates with the metabolic abnormalities and visceral fat is more strongly associated with incident MetS than subcutaneous fat. Visceral adiposity index (VAI) and lipid accumulation product (LAP) are validated reliable markers of visceral obesity.

INTRODUCTION

Objective

To identify the optimal cut off values of lipid accumulation product (LAP), visceral adiposity index (VAI) for predicting metabolic syndrome (MetS) among population in Quang Dien District, Thua Thien Hue Province

METHODS

Study population

Adults aged from 25-84 who were able to listen and understand Vietnamese and agreed to sign an informed consent to participate in our study.

Study design

A cross-sectional study

Sample Size

386 people chosen from two communities from Quang Dien district by stratified sampling procedure

Data collection

1	2	3
Registration	**Laboratory test**	**Measurement**
Demographic information	Venous blood Sample	WC, Weight, Height
Trained health care	Storage, Transit	Blood Pressure
	Nursing/Technicians	Nursing/Technicians

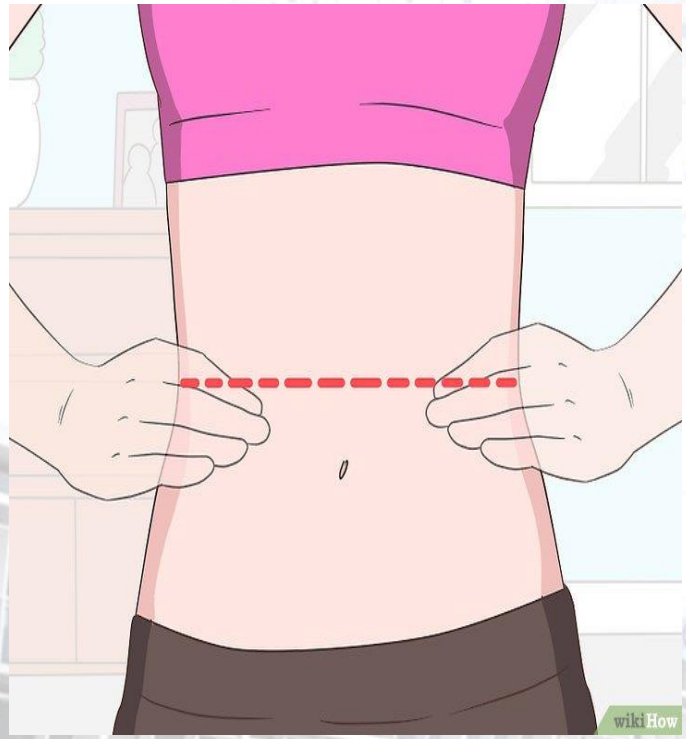
METHODS

Data collection

Registration and interview

METHODS

Data collection



Measurement

METHODS

Data collection

Venous blood Sample

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METHODS

Definition of MetS: According to the diagnosis criteria proposed by IDF/AHA/NHLBI in 2009. MetS was defined as the presence of three or more of those following features:

- Central obesity: WC ≥ 90 cm for males or ≥ 80 cm for females;
- Elevated BP: systolic blood pressure (SBP) ≥ 130 mmHg or diastolic blood Pressure (DBP) ≥ 85 mmHg, or ongoing antihypertensive medications;
- Elevated FPG: FPG ≥ 5.6 mmol/L, or ongoing anti-diabetic treatment;
- Elevated TG: TG ≥ 1.7 mmol/L;
- Reduced HDL-C: HDL-C < 1.0 mmol/L in males and < 1.3 mmol/L in females.

METHODS

LAP, VAI were calculated with the following formulas:

LAP male = (WC (cm)-65)xTG (mmol/l)

LAP female = (WC (cm)-58)xTG (mmol/l)

VAI male = WC/[39.68+(1.88XBMI]XTG/1.03X1.31/HDL

VAI female = WC/[36.58+(1.89XBMI]XTG/0.81X1.52/HDL

WC values below 65/58 cm in men/women were reassigned for 66.0/59.0 cm to avoid invalid data

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METHODS

Data analysis

- Statistical analyses: SPSS software

- The ROC analysis: MedCalc version 13.0 for Windows. The areas under the ROC curves (AUCs) with 95% confidence interval (CI) were calculated. Significance tests for comparison of AUCs from different obesity indices were analyzed.

- P values less than 0.05 were considered statistically significant

METHODS

Ethics in Research

- The study was approved by the Ethics Committee of Hue College of Medicine and Pharmacy
- All participants gave their written informed consent to participate before the start of the study.

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RESULTS-DISCUSSION

Male

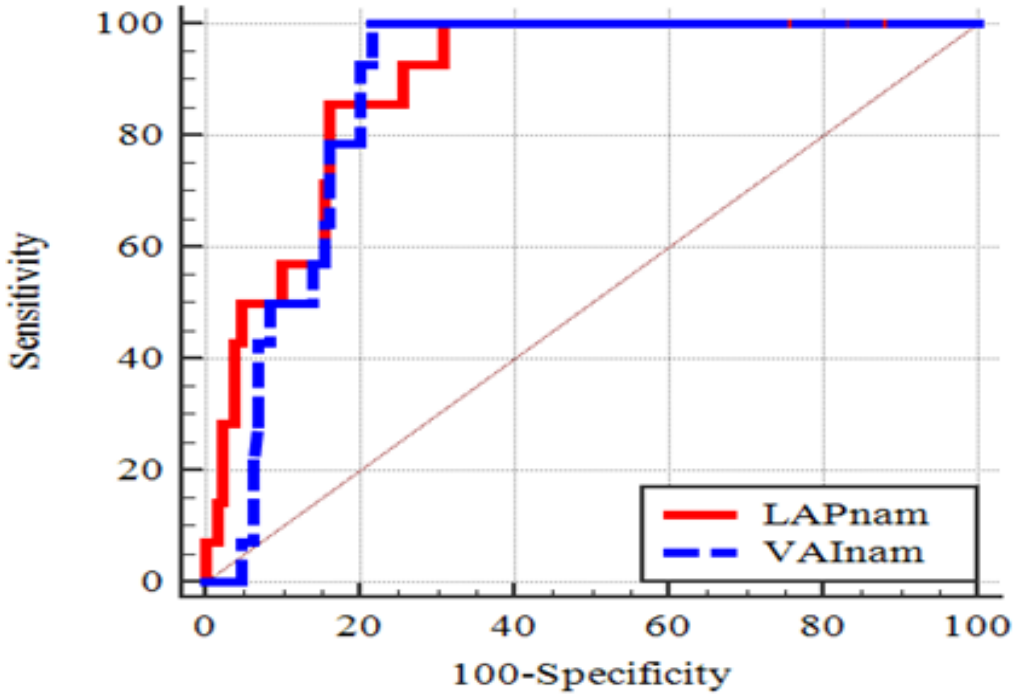

Fig 3.1. ROC comparing ability of LAP and VAI for predicting MetS in male

RESULTS-DISCUSSION

Male

Table 3.1. Ability of LAP, VAI for predicting MetS in male

Index	Cut-off value	Sensitivity (95%CI)	Specificity (95% CI)	AUC (95% CI)	p
LAP	**>37,8**	85,7 (57,2-98,2)	83,7 (76,2-89,6)	**0,894** (0,831-0,939	<0,001
VAI	**>1,71**	100,0 (78,29-100,0)	78,29 (70,2-85,1)	**0,878** (0,813-0,927)	<0,001

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RESULTS-DISCUSSION

Female

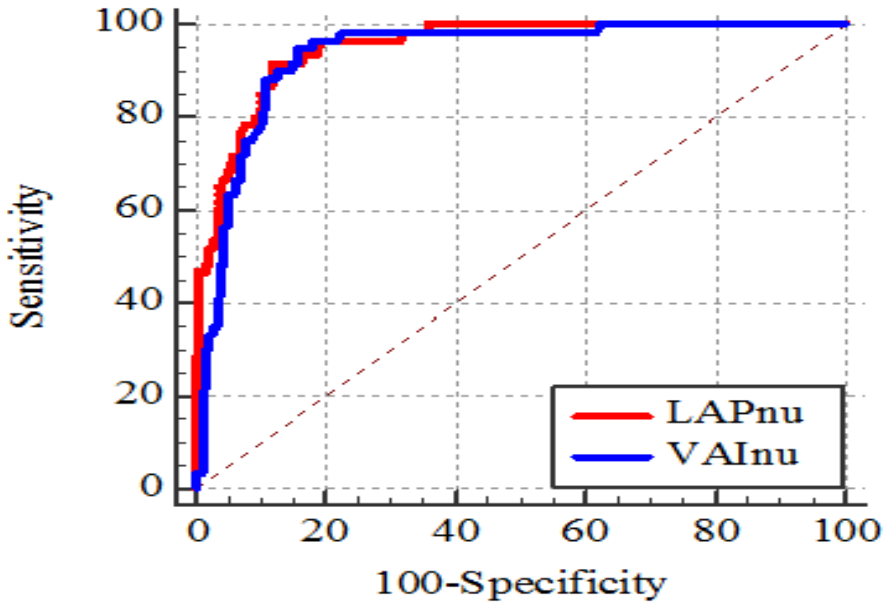

Fig 3.2. ROC comparing ability of LAP and VAI for predicting MetS in female

RESULTS-DISCUSSION

Female

Table 3.2. Ability of LAP, VAI for predicting MetS in female

Index	Cut-off value	Sensitivity (95%CI)	Specificity (95% CI)	AUC (95% CI)	p
LAP	**>36,66**	91,7 (81,6-97,2)	88,98 (82,4-92,3)	**0,951** (0,915-0,974)	<0,001
VAI	**>2,1**	95,0 (86,1-99,0)	84,2 (78,0-89,1)	**0,935** (0,896-0,962)	<0,001

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RESULTS-DISCUSSION

- In South West Nigeria, Adejumo E.N. (n=535): LAP was the best index for predicting MetS (2009) with AUC=0.801(Sensitivity: 81.1% and specificity: 61.4%)
- In Iran, Motamed: LAP was index which the highest value for predicting MetS
- In Acgentina, Tellechea ML: LAP is the best index for predicting MetS (ATPIII) with AUC were 0.88 in male and 0.91 in female respectively.

RESULTS-DISCUSSION

- In China, Zhan Gu (2018): Visceral adiposity index (VAI) and lipid accumulation product (LAP) were validated reliable markers of visceral obesity, the AUCs of LAP were the greatest among others in both genders (AUCs were 0.897 in males and 0.875 in females
- In Spain, Taverna MJ (2011): LAP was the best index for predicting MetS (IDF-2005) in male (AUCs: 0.92).

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RESULTS-DISCUSSION

Cut off LAP, VAI in male, female in some research

Nation	Researcher	Cut off LAP, VAI
South West Nigeria	Adejumo E.N	LAP:28.29; VAI: 1.15
China	Zhan Gu	LAP male: 26.35 LAP female: 31.04
China	Rui Li	LAP: 34.47 VAI: 2.015
Iran	Motamed	LAP male: 39.89 LAP female: 47.91
Spain	Taverna MJ	LAP male: 48.09 LAP female: 31.77
Acgentina	Tellechea ML	LAP male: 51.82 LAP female: 33.28

CONCLUSION

- LAP, VAI were reliable and surrogate markers for identifying MetS, LAP could be a better parameter than VAI.
- Cut off:

  Male: LAP: 37,8 and VAI: 1,71

  Female: LAP: 36,66 and VAI: 2,1.

Thank you for your atention!