Physician connect

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Dear Doctor,

Greetings from Micro Labs Limited. We are happy to bring you **'Physician connect'** which contains latest and interesting news in the field of Medicine.

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- ACC vs ESC Guidelines on Hypertension: The Case of White Coat Hypertension
- A Population-Based Cross Sectional Study on Birthweight and Lipids in Adult Life
- Case Report of Acute Cor Pulmonale in Critically Ill Patients with Covid-19

Should you require any specific article or medical information, please feel free to contact us at medicalservices@microlabs.in

Looking forward to your valuable feedback

Best Regards,

Medical Team, Micro Labs Limited

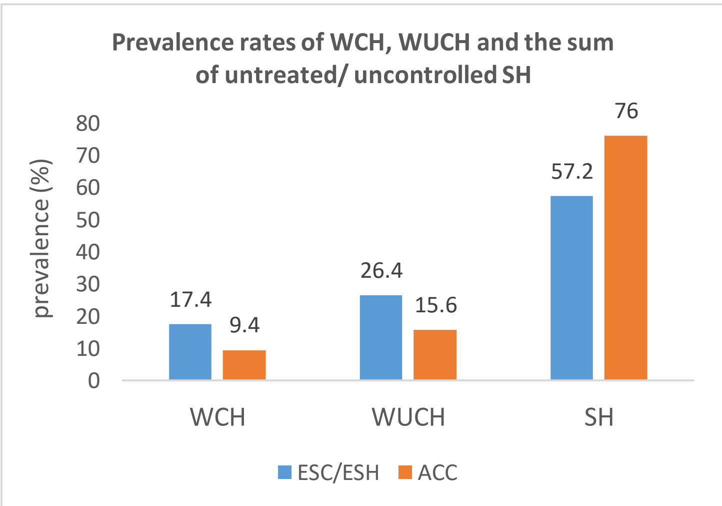
ACC vs ESC Guidelines on Hypertension: The Case of White Coat Hypertension

In the last decades, several cross-sectional and longitudinal studies as well as their meta-analyses have been addressing the clinical and prognostic significance of WCH targeting a variety of outcomes such as metabolic alterations, subclinical cardiac and extracardiac target organ damage cardiovascular morbidity and mortality as well as all-cause death.

The prognostic significance of WCH is often ignored in clinical practice and, consequently, contributes to the high burden of CV diseases worldwide

The impact of the 2017 American College Cardiology/American Heart Association guidelines on reclassification of white coat hypertension (WCH) and white coat uncontrolled hypertension (WUCH) phenotypes has not been thoroughly investigated, so far. The aim of the present analysis was to compare the prevalence rates of WCH and WUCH according to either 2018 European Society Hypertension/European Society Cardiology and 2017 ACC/AHA hypertension guidelines.

A large database of individual 24-hour ambulatory blood pressure (BP) recordings from untreated and treated hypertensive individuals with office BP ≥140 and/or 90 mm Hg was analyzed. A total of 7,353 individual 24-hour ambulatory BP recordings (ABPM) from untreated individuals with a history of hypertension and treated hypertensive individuals. As many as 3,223 (39% men) out of 7,353 (47% men) fulfilled diagnostic criteria for WCH (n = 1,281) and WUCH (n = 1,942) according to the 2018



ESH/ESC guidelines (mean 24-hour BP <130/80 mm Hg), the prevalence rate being 17.4% and 26.4%, respectively. The corresponding figures according to the 2017 ACC/AHA guidelines (mean 24-hour BP <125/75 mm Hg) were 15.6 and 9.4%, respectively. Thus, a total of 1,378 patients (42.7%) either defined as WCH and WUCH by ESH/ESC guidelines, were classifiable as untreated sustained and uncontrolled sustained hypertensives by ACC/AHA guidelines.

Data suggest that adopting the ambulatory BP criteria recommended by ACC/AHA guidelines as an alternative to those endorsed by ESH/ESC guidelines, lead to a marked decrease in the prevalence of WCH/WUCH and to a consequent increase in the fraction of patients with untreated sustained hypertension and uncontrolled sustained hypertension. This reclassification may have a relevant impact on cardiovascular prevention at the community level, as in current practice WCH and WUCH represent a controversial and widely undertreated portion of the hypertensive population, thus contributing to the high burden of cardiovascular diseases. These BP phenotypes, in spite of the growing evidence in the opposite direction, are considered at low cardiovascular risk by the majority of healthcare professionals and this consideration favors clinical inertia.

Source: Cuspidi C et al. Am J Hypertens. 2020;hpaa029. doi:10.1093/ajh/hpaa029. [published online ahead of print].

A Population-Based Cross Sectional Study on Birthweight and Lipids in Adult Life

This study was conducted to examine the association of birthweight with lipid profile in the general adult population. Participants in the second-wave of a nationally representative cross sectional AusDiab-study were asked to complete a birthweight questionnaire. Fasting total cholesterol

(TC), LDL-C, HDL-C, and triacylglycerol levels were modeled against birthweight.

Of 7157, 4502 reported a value for their birthweight, with the others unable to give a value. Over 90 % of respondents who reported a birthweight considered it as "accurate" and only 6 % mentioned that their birthweights were based on a "guess." Among those who reported their birthweight, 80% obtained their birthweight from a family member (67% of participants had a living natural mother and 46% had a living natural father) and 10% obtained their birthweight from medical records.

Females with low birthweight higher risk for high LDL-C , high triglycerides levels. Males had high risk for low HDL-C

As shown in Fig. 1, reported birthweights ranged from 0.4 to 7.0 kg with a mean (SD) of 3.37 (0.7) kg was similar for those reported from family members and from medical records 3.35 (0.6) vs. 3.37 (0.7), with adjustment for age and sex, p = 0.36. Mean birthweight was lower for females, 3.28 (0.7) kg, when compared to males, 3.5 (0.7) kg. The prevalence of low birthweight (<2.5 kg) was 8.0% (9.1% in females and 6.1% in males), 1 % had a birthweight less than 1.5 kg and less than 1 % had a birthweight of five kilograms and over.

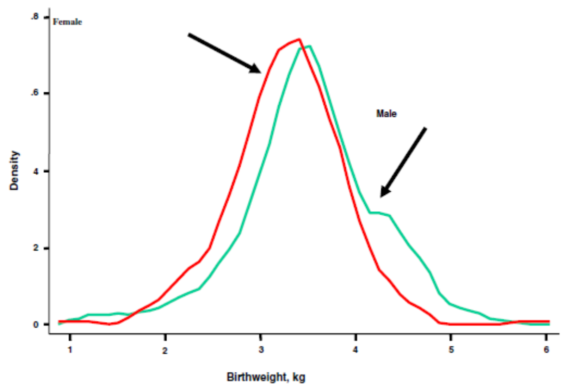


Fig 1 Birth weight distribution

Four thousand five hundred and two people reported their birthweights, mean (SD) of 3.4(0.7) kg. Females with low birthweight-LBW had higher levels of TC, LDL-C, and triglycerides, but no difference in HDL-C, than those with normal-birthweight-NBW;≥2.5 kg. People with LBW showed a trend toward increased risk for high TC (≥5.5 mmol/L) compared to NBW. Among females with LBW, the risk for high LDL-C (≥3.5 mmol/L) was increased compared to those of NBW. The risk for low HDL-C (<0.9

mmol/L) was increased among males with LBW compared to those with NBW.

Means (95% CI) of various cardiovascular risk factors

Females	<2.81	2.81–	3.19–	3.41–	>3.72 kg	p
Number	546	637	526	466	536	
Cholesterol	5.64 (5.55, 5.73)	5.59 (5.51, 5.67)	5.54 (5.45, 5.63)	5.54 (5.44, 5.63)	5.50 (5.42, 5.59)	0.216
LDL	3.45 (3.38, 3.53)	3.40 (3.33, 3.47)	3.39 (3.31, 3.47)	3.36 (3.28, 3.45)	3.34 (3.27, 3.42)	0.364
HDL	1.54 (1.52, 1.58)	1.58 (1.55, 1.61)	1.57 (1.53, 1.60)	1.59 (1.56, 1.63)	1.58 (1.55, 1.61)	0.367
LDL-HDL	2.34 (2.27, 2.42)	2.29 (2.22, 2.35)	2.31 (2.23, 2.38)	2.23 (2.15, 2.31)	2.25 (2.17, 2.32)	0.248
Triacylglycerol	1.20 (1.16, 1.25)	1.13 (1.08, 1.18)	1.09 (1.04, 1.14)	1.10 (1.05, 1.16)	1.11 (1.06, 1.17)	0.012
BMI, kg/m^2	26.8 (26.3, 27.2)	26.2 (25.8, 26.6)	26.3 (25.8, 26.7)	26.3 (25.9, 26.8)	26.7 (26.3, 27.2)	0.253
FPG	5.44 (5.37, 5.51)	5.34 (5.27, 5.42)	5.28 (5.20, 5.36)	5.28 (5.19, 5.36)	5.28 (5.19, 5.37)	0.004
PLG	6.41 (6.25, 6.57)	6.10 (5.94, 6.27)	5.93 (5.75, 6.10)	5.87 (5.68, 6.06)	5.97 (5.77, 6.17)	<0.001
HbA1c	5.21 (5.17, 5.24)	5.09 (5.05, 5.13)	5.07 (5.03, 5.12)	5.07 (5.02, 5.11)	5.07 (5.02, 5.11)	<0.001
Males	<3.06	3.06–	3.37–	3.64–	≥4.05 kg	p
Number	364	355	408	311	353	
Cholesterol	5.61 (5.50, 5.71)	5.62 (5.51, 5.73)	5.68 (5.58, 5.78)	5.64 (5.53, 5.76)	5.66 (5.55, 5.77)	0.899
LDL	3.67 (3.58, 3.76)	3.61 (3.52, 3.71)	3.57 (3.48, 3.67)	3.62 (3.52, 3.72)	3.60 (3.50, 3.69)	0.643
HDL	1.23 (1.20, 1.26)	1.27 (1.23, 1.30)	1.26 (1.23, 1.29)	1.25 (1.22, 1.28)	1.27 (1.23, 1.30)	0.569
LDL-HDL	3.03 (2.94, 3.13)	2.96 (2.86, 3.07)	2.98 (2.88, 3.09)	3.02 (2.91, 3.13)	2.96 (2.86, 3.07)	0.809
Triacylglycerol	1.56 (1.45, 1.67)	1.48 (1.40, 1.58)	1.40 (1.32, 1.49)	1.40 (1.32, 1.48)	1.43 (1.36, 1.50)	0.131
BMI, kg/m^2	26.9 (26.5, 27.3)	26.9 (26.5, 27.3)	27.0 (26.6, 27.4)	27.9 (27.4, 28.3)	27.8 (27.4, 28.3)	<0.001
FPG	5.81 (5.75, 5.95)	5.71 (5.60, 5.82)	5.67 (5.58, 5.76)	5.64 (5.53, 5.74)	5.62 (5.53, 5.71)	0.059
PLG	6.48 (6.20, 6.77)	6.04 (5.78, 6.30)	6.03 (5.79, 6.26)	6.01 (5.75, 6.26)	5.83 (5.62, 6.04)	0.016
HbA1c	5.28 (5.21, 5.35)	5.23 (5.16, 5.29)	5.18 (5.11, 5.24)	5.17 (5.11, 5.23)	5.19 (5.13, 5.23)	0.061

Examination of the relationship on the continuum showed no differences except for high triacylglycerol levels among females with the lowest birthweight quintile compared to the higher birthweight quintile. However, the risk for various abnormalities by birthweight quintiles was similar to that when we used the traditional definition of LBW vs. NBW. Females and males with low birthweight differ in their risk for lipids abnormalities. Females had higher risk for high LDL-C, whereas males had high risk for low HDL-C (<0.9 mmol/L). In addition, females with low birthweight had the highest t triglycerides levels. High LDL-C, low HDL-C, and high triglycerides are well-recognized risk factors for cardiovascular disease.

Source: Al Salmi I et al. Lipids. 2020;10.1002/lipd.12242. doi:10.1002/lipd.12242 [published online ahead of print, 2020 May].

Case Report of Acute Cor Pulmonale in Critically Ill Patients with Covid-19

A 42-year-old man with a body-mass index (the weight in kilograms divided by the square of the height in meters) of 34 and a history of asthma presented to the hospital with hypoxemic respiratory failure and was admitted to the ICU for invasive mechanical ventilation. Testing to detect SARS-CoV-2 infection was positive. Other laboratory values on admission of this patient (Patient 1) are summarized in Table 1; these values were notable for normal levels of B-type natriuretic peptide, troponin, and d-dimer. The patient did not have a personal or family history of hypercoagulability and had received enoxaparin for prophylaxis against venous thromboembolism. Previous outpatient echocardiographic findings showed a normal biventricular size and function.

On ICU day 8, the patient became acutely hypotensive and had rapid progression to cardiac arrest with pulseless electrical activity. He received cardiopulmonary resuscitation with administration of epinephrine and intravenous thrombolytics and spontaneous circulation returned. Echo showed acute right ventricular dilatation with impaired systolic function (see Video: https://www.nejm.org/do/10.1056/NEJMdo005762/full/?requestType=popUp&relatedArticle=10.1056%2FNEJMc2010459), and subsequent computed tomography confirmed the presence of thromboembolism obstructing the left pulmonary artery. Over a 48-hour period, five patients who were admitted to ICUs within our hospital system had profound hemodynamic instability due to the development of acute cor pulmonale (clinical details are summarized in Table). Cardiac arrest with pulseless electrical activity occurred in four patients, and three of these patients had died. In one patient, acute cor pulmonale developed without cardiac arrest; this patient's condition improved with thrombolytic therapy. At the time of hemodynamic instability, one patient was receiving therapeutic anticoagulation with intravenous heparin according to a non–citrate-based anticoagulation protocol, and the remaining patients were receiving prophylactic anticoagulation.

Myocardial dysfunction and hypercoagulability have been reported in patients with Covid-19; however, the true incidence and clinical implications of these events remain unclear. Although acute pulmonary thromboembolism was the most likely cause of right ventricular failure in these patients, this was not definitively confirmed in all cases. Acute cor pulmonale causing obstructive shock should be included in the differential diagnosis in critically ill patients with Covid-19. The role of thrombolytics and advanced manage ment options such as extracorporeal life support for hemodynamic instability or cardiac arrest requires further investigation

Table 1. Demographic, Clinical, and Laboratory Data for Five Patients with Covid-19 and Acute Cor Pulmonale.*

Variable	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5
Age (yr)	42	51	63	76	53
Sex	Male	Female	Female	Male	Male
BMI†	34	33	NA	22	38
Smoker	No	No	No	No	No
Medical history					
Conditions	Asthma	Diabetes, hypertension, hyperlipidemia	Hypertension, Sjögren's syndrome	Diabetes, hypertension, CKD	Hyperlipidemia
Medications	Budesonide	Hydrochlorothiazide, losartan, glipizide, simvastatin	Hydrochlorothiazide, meloxicam	Aspirin, NPH insulin, simvastatin, hydralazine	Naproxen
Immobile before admission	No	No	No	Yes	No
Personal or family history of coagulopathy	No	No	No	No	No
Anticoagulation	Enoxaparin prophylaxis	Therapeutic heparin (non–citrate-based renal replacement therapy protocol)	Enoxaparin prophylaxis	Enoxaparin prophylaxis	Heparin prophylaxis
Duration of ICU stay before right ventricular collapse	8(days)	5(days)	2(days)	5(days)	9(days)
Transthoracic echocardiographic findings on admission	Preserved EF; normal right ventricular size and function; tricuspid annular plane systolic exertion, 2.9 cm	Not performed	Grade 1 diastolic dysfunction; normal right ventricular cavity size and global systolic function	Preserved EF; normal right ventricular size and function	Not performed
Transthoracic echocardiographic findings on day of right ventricular collapse					
Right ventricular dilatation during systole	Yes	Yes	Yes	Yes	Yes
Right ventricular hypokinesis	Yes	Yes	Yes	Yes	Yes
Pulmonary-valve insufficiency	NA	No	No	No	NA
Tricuspid-valve regurgitation	NA	Yes	Yes	No	Yes
Abnormal tricuspid annular plane systolic exertion	NA	Yes	Yes	Yes	NA
Septal deviation	Yes	Yes	Yes	Yes	Yes
Intracardiac thrombus	No	Yes	No	Yes	No

Variable	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5
Cardiac arrest with pulseless activity	Yes	Yes	Yes	No	Yes
Use of thrombolytics	Yes	No	No	Yes	Yes
Survived	Yes	No	No	Yes	No
Values on admission to ICU					
Creatinine (mg/dl) 0.60–1.20	1.12	3.70	0.92	1.12	1.10
Troponin (ng/ml) <0.04	0.03	0.03	0.04	0.05	0.03
B-type natriuretic peptide (pg/ml) <99	29	66	30	130	16
White-cell count (per 4000–10,000	96,000	13,000	172,000	18,000	44,000
C-reactive protein (mg/liter) <10	174	254	255	NA	NA
d-dimer (ng/ml) <574	304	41,900	11,700	18,900	3450
Platelet count (per) 150,000– 400,000	134,000	252,000	131,000	373,000	93,000
International normalized ratio ≤1.10	1.35	1.10	1.26	1.57	1.18
Values on day of right ventricular collapse					
Creatinine (mg/dl) 0.60–1.20	0.84	1.70	3.35	0.95	1.75
Troponin (ng/ml) <0.04	<0.03	0.04	0.27	0.27	0.16
B-type natriuretic peptide (pg/ml) <99	NA	184	NA	NA	184
White-cell count (per) 4000–10,000	81,000	13,000	178,000	217,000	154,000
C-reactive protein (mg/liter) <10	7	310	386	NA	348
d-dimer (ng/ml) <574	4690	3350	53,000	32,700	32,500
Platelet count (per 150,000– 400,000	417,000	144,000	24,000	144,000	141,000
International normalized ratio ≤1.10	1.12	1.73	1.23	1.28	1.26

Source: Creel-Bulos et al. N Engl J Med 2020. DOI: 10.1056/NEJMc2010459 [published online ahead of print, 2020 May].