

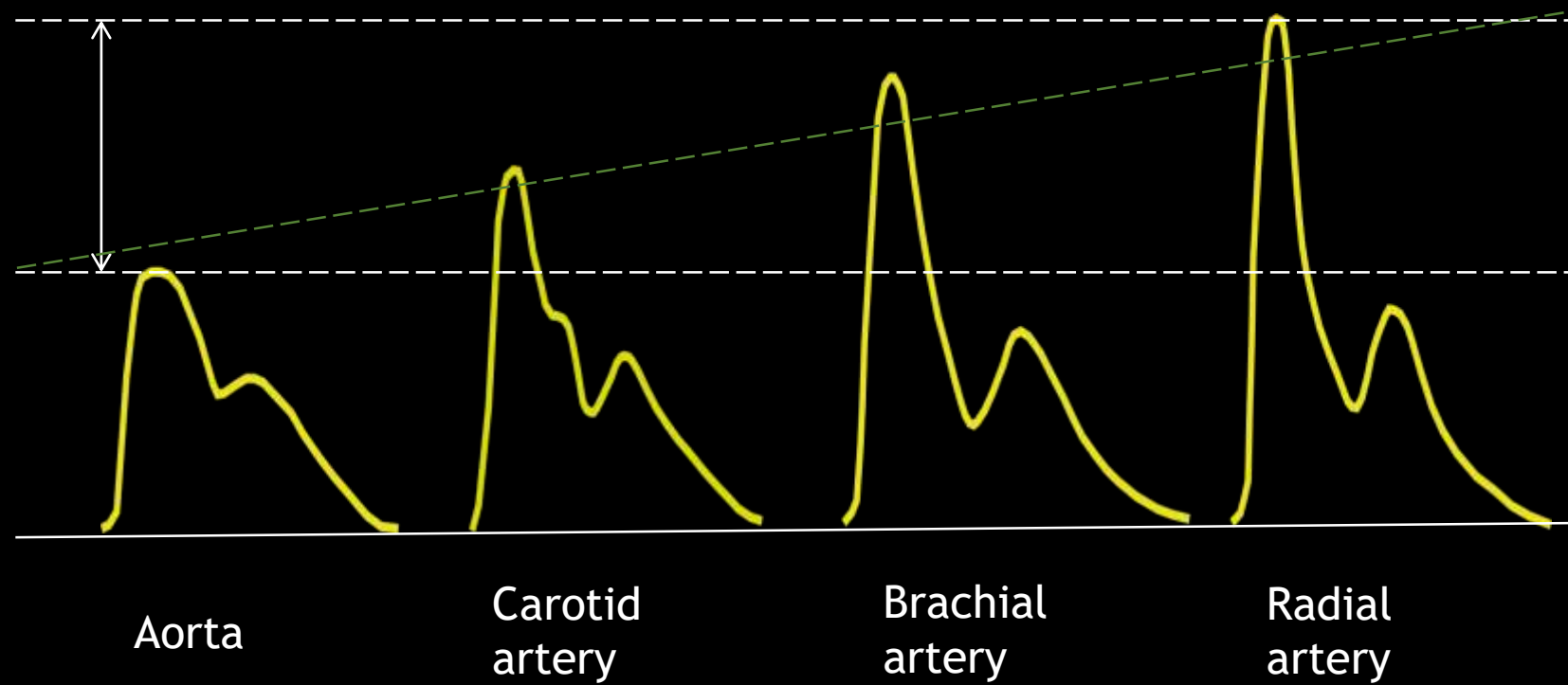
OLENA TORBAS

High and normal central blood pressure in  
young patients with isolated systolic  
hypertension

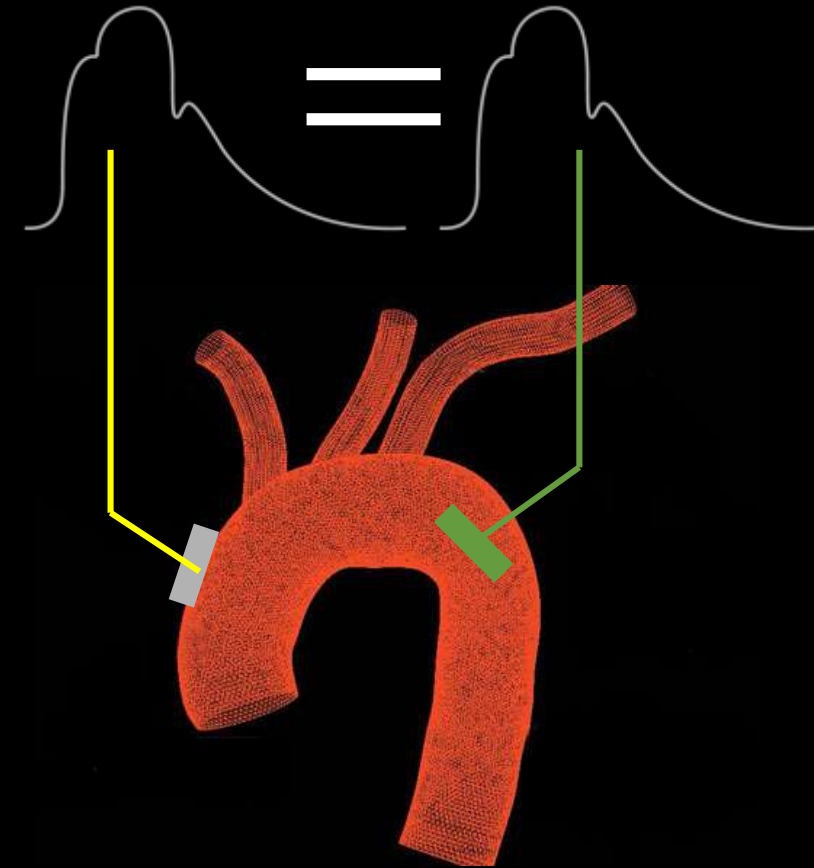
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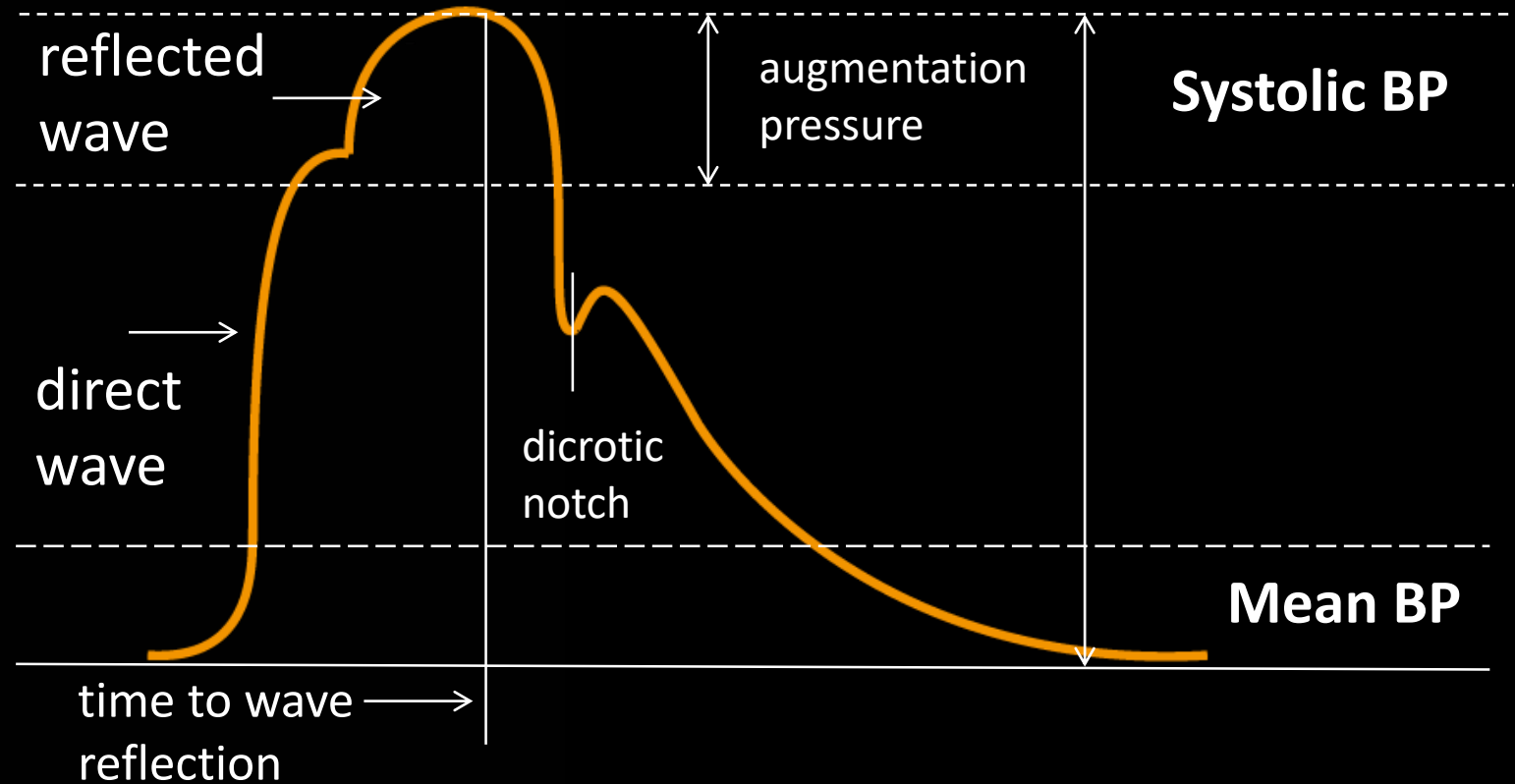


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# PULSE WAVE AMPLIFICATION

# CONTOUR PULSE WAVE ANALYSIS



# MATERIALS AND METHODS

- 44 young men
- mean age:  $32.2 \pm 1.3$  years
- office SBP  $153.4 \pm 2.1$  mmHg and DBP  $83.4 \pm 1.7$  mmHg
- Methods:
  - weight and height
  - office SBP, DBP, and HR
  - Ambulatory BP monitoring
  - PWV in the arteries of elastic and muscle types
  - central SBP (cSBP)
  - biochemical blood tests
  - echocardiography
  - carotid ultrasound investigations





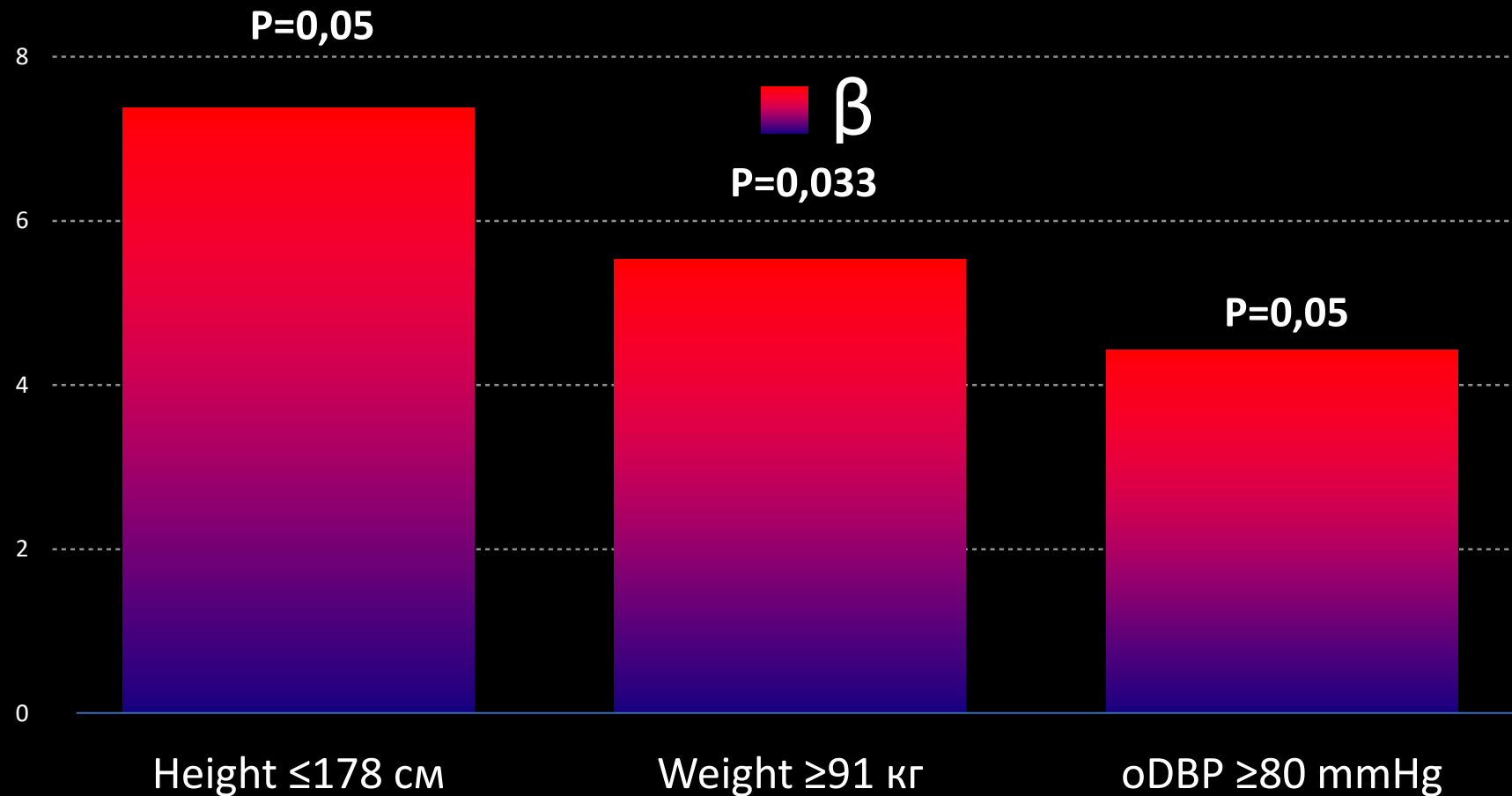
Characteristics	Normal cSBP (n=17)	Elevated cSBP (n=27)	P
Age, years	28.2±1.7	34.7±1.6	0.012
Height,	186.5±1.6	176.3±1.8	<0.001
BMI, kg/m <sup>2</sup>	25.2±0.7	29.7±0.8	0.001
Office SBP, mmHg	146.1±1.7	156.5±2.7	0.002
Office DBP, mmHg	80.7±1.6	86.1±1.9	0.05
Office HR, beats/min	65.4±2.6	70.7±2.1	NS
24-hour SBP, mmHg	137.7±1.8	138.8±2.4	NS
24-hour DBP, mmHg	76.7±3.7	79.9±1.9	NS
Central SBP, mmHg	123.6±2.2	135.4±2.6	0.003
Central pulse BP, mmHg	36.4±1.9	40.9±1.6	NS
Aix@75, %	0.1±4.3	17.9±2.5	<0.001
PWVe, m/s	9.3±0.5	11.2±0.5	0.019

**Abbreviations:** Aix@75, augmentation index adjusted to HR 75; BMI, body mass index; BP, blood pressure; cSBP, central systolic BP; DBP, diastolic BP; HR, heart rate; NS, not significant; PWVe, pulse wave velocity in arteries of elastic type; SBP, systolic BP

Characteristics	Normal cSBP (n=17)	Elevated cSBP (n=27)	P
PWVm, m/s	8.6±0.4	9.5±0.4	NS
EDVI, mL/sm <sup>2</sup>	58.7±4.2	59.8±4.3	NS
SV, mL	88.1±9.1	70.5±7.4	NS
CO, L/min	5.7±1.2	4.9±0.6	NS
SVR, kPa s <sup>-1</sup> L <sup>-1</sup>	143.3±15.2	178.7±19.8	NS
LV EF, %	64.9±1.4	62.8±2.1	NS
LVMMI, g/m <sup>2</sup>	81.5±7.3	93.2±6.8	NS
<i>E/A</i>	1.3±0.1	1.3±0.1	NS
<i>E/E'</i>	2.9±0.2	4.6±0.5	0.054
GFR, mL/min/1.73 m <sup>2</sup>	103.2±4.0	104.0±2.6	NS
Albumin urea, mg	6.6±3.2	10.6±2.8	NS
IMT, mm	0.5±0.1	0.7±0.1	NS

**Abbreviations:** CO, cardiac output; GFR, glomerular filtration rate; IMT, intima-media thickness; LV EF, left ventricular ejection fraction; LVMMI, left ventricular myocardial mass index; NS, not significant; PWVm, pulse wave velocity in arteries of muscle type; SBP, systolic BP; SV, stroke volume; SVR, systemic vascular resistance. *A*, peak velocity during atrial contraction; *E*, peak early mitral inflow velocity; *E'*, peak early diastolic mitral annular velocity; *m*, mean absolute error; *M*, mean value; EDVI, end diastolic volume index.

# Univariate and multivariate regression analysis: presence of high cSBP as dependent variable



The presence of two or three of these factors increased the possibility of elevated cSBP by 10 times ( $\beta = 10,6$ ,  $P=0,001$ ; CI 2,54–43,9)

# Conclusions

- 38.6% of young with ISH had normal cSBP
- Independent predictors of elevated cSBP - height  $\leq 178$  cm, weight  $\geq 91$  kg, and office DBP  $\geq 80$  mmHg
- The presence of at least two of these factors indicated the need for starting the antihypertensive therapy in young with ISH
- In case of presence of only one of these factors or neither of them it is recommended to measure central BP in order to choose the further management strategy
- Our study did not include children and adolescents