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Left atrial dysfunction is a potent predictor of ischemic complications in hypertensive patients

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Arterial hypertension (AH) is associated with abnormalities morphology and function of heart. The research of left ventricle size in patients with AH is mandatory and included in Guidelines. But enlargement of left atrium (LA) is common finding in AH. Despite of this fact, most AH studies ignore LA size. At the same time LA size is often used as a surrogate marker and considered risk factor cardiovascular events.

Materials and methods: 298 patients with AH were included in the study (2011–2017), all the inhabitants of Bukovina region of Ukraine. In 28 patients from this cohort was registered episode of Transient Ischemic Attack (TIA) or Ischemic Stroke (IS). The patients with atrial fibrillation (all types) were excluded. LA volumes were calculated from apical four-chamber and two-chamber views by biplane Area-Length method - LA volume index, LA passive emptying volume (PEV), LA passive emptying fraction (PEF), LA active emptying volume (AEV), LA active emptying fraction (AEF), LA total emptying volume (TEV), LA total emptying fraction (TEF). Data were analyzed by SPSS version 20.

Results: LA diameter and indexed AEV and TEV were significantly higher in the group with TIA/IS compared with non-complicated AH ($p<0.05$), table. PEF and TEF were significantly lower at hypertensive patients with ischemic complications. There were no significant differences in indexed PEV and TEF ($p>0.05$), table. According to multivariate analysis was set the reliable linear regression between LA diameter, AEV and TEV with age ($p<0.05$), body mass index ($p<0.05$), glucose intolerance ($p<0.05$) and smoking ($p<0.05$) in all hypertensive patients, independently of TIA/IS complications.

Conclusion: LA function can be easily and non-invasively determined by performing 2D echocardiography and becoming parameter of interest as a marker of overall cardiac function. LA size and volume enlargement, LA dysfunction may be a good predictor of cardiovascular outcomes such as Transient Ischemic Attack or Ischemic Stroke in patients with arterial hypertension.

LA parameters in comparison groups

	AH (n=270)	AH, complicated TIA/IS (n=28)	p
LA diameter (mm)	35.6±4.1	37.4±4.9	<0.03
PEV (ml/m^2)	7.4±2.8	7.6±3.1	0.72
AEV (ml/m^2)	5.4±2.4	6.8±1.9	0.003
TEV (ml/m^2)	12.9±2.2	14.9±3.1	<0.001
LA PEF (%)	32.3±8.4	28.9±7.3	0.04
LA AEF (%)	40.7±6.9	42.1±7.4	0.31
LA TEF (%)	64.1±5.9	61.3±4.2	<0.001

AH, Arterial Hypertension; TIA, Transient Ischemic Attack; IS, Ischemic Stroke.