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**ASSESSMENT OF LEFT ATRIAL FUNCTION BY STRAIN RATE IMAGING IN PATIENTS WITH HYPERTENSION**Liu Feng *Tianjin Shi Gong'an Hospital*

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**Objective** To compare strain and strain rate in primary hypertensive patients with different configuration of left ventricular (LV) by Strain Rate Imaging (SRI), analysis the dependability of strain rate and traditional ultrasound parameter, and approach the clinical value of evaluating left atrial (LA) function by SRI.

**Methods** 160 patients with primary hypertension were divided into normal pattern LV (LVN, n=40) and concentric remodelling pattern LV (CR, n=40), concentric hypertrophy LV (CH, n=40), eccentric hypertrophy LV (EH, n=40), and 41 healthy participants were also included. (1) At three-chamber and four-chamber view, the strain and the strain rate curves was gained in the middle segments of each left atrial wall (left atrial anterior wall, inferior wall, posterior wall, lateral wall and Atrial Septum) by SRI. Strain rate parameters SRs were measured during left ventricular systolic phase, SRe were measured during left ventricular diastolic early phase, SRa were measured during left ventricular diastolic later phase and max strain were measured. (2) At four-chamber view, Peak velocity during left ventricular diastolic early phase (E') and Peak velocity during left ventricular diastolic later phase (A') of each mitral annulus were measured on Tissue Doppler imaging (TDI) and then E'/A' were calculate. Peak velocity during left ventricular diastolic early phase (E) and Peak velocity during left ventricular diastolic later phase (A) of mitralis bloodstream spectra were measured on pulsed wave Doppler (PW) imaging, then E/A were calculate. (3) At four-chamber view, left atrial maximum volume (LAVmax), left atrial minimum volume (LAVmin) and left atrial preliminary systole Volume (LAVpre) were measured by single plane simpson way, and left atrial active ejection fraction (LAAEF) and passive ejection fraction (LAPEF) were calculated; At LV long axis view, left atrial maximum internal diameter (LAD), LV maximum internal diameter (LVDd), thickness of LV posterior wall (LVPWd) and ventricular septum (IVSd) were measured during LV end-diastole.

**Results** (1) Compared with the control group, the SRs and SRe were reduced in hypertensive group, meanwhile the SRa were higher in LVN group, CR group and CH group, and the SRa were reduced in EH group ( $p<0.05$ ). (2) Compared with

the control group,  $E'/A'$  were reduced in hypertensive group,  $E/A$  were reduced in CR group, CH group and EH group, but  $E/A$  were not reduced in LVN; LAD, LAVmax, LAVmin, LAVpre, LAAEF and LAPEF was higher in hypertensive group ( $p<0.05$ ).

**Conclusions** (1) The SR parameter can reflect the change of LA function before LV reconstitute; Following development of hypertension, LA saving and tuding function were weakened, pumping function was reinforced gradually, and LA pumping function was weakened during hypertensive later period. (2) SRa and SRe of LA can assess the change of LV diastolic function sensitively during hypertensive earlier period.