Left atrial function in left bundle branch block: volumetric measurements of its function

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TABLE 1. Echocardiographic values according to the presence of left bundle branch block.

VARIABLE	WITHOUT LBBB	WITH LBBB	p value
EF LV (%)	60.81	38.33	<0.001
GLS LV (- %)	18.5	11.807	<0.001
GCS LV (%)	30.86	26.57	<0.001
SDI LV (%)	3.4	10.07	<0.001
EF LA	69.9	71.38	<0.001
ESVLA (ml/m ²)	30.1	45.15	<0.001
EDVLA (ml/m ²)	6.5	12.53	<0.001
dV/dT of EDAEV (ml/sec ²)	221.5	95.46	<0.001
dV/dT of ACEV (ml/sec ²)	135.8	203.46	<0.001
dV/dT EDAEV / dV/dT ACEV (%)	1.63	0.46	<0.001
EDAEV(ml/m ²)	20.66	9.23	<0.001
ACEV (ml/m ²)	10	23.84	<0.001
EDAEV/ACEV index (%)	2.1	0.4	<0.001
RR interval (msec)	780	744.53	<0.001
SET (msec)	333.333	504.76	<0.001
SET/RR interval index (%)	0.42	0.69	<0.001

LBBB = left bundle branch block; LV = left ventricle; LA = left atrium; EF of LV = ejection fraction of LV; GLS of LV = global systolic strain of LV; GCS of LV = global circumferential strain of LV; SDI of LV = systolic dyssynchrony index of LV; EF LA = ejection fraction of LA; ESVLA = end systolic volume of LA; EDVLA = end diastolic volume of LA; EDAEV = early diastolic atrial emptying volume; ACEV = atrial contraction emptying volume; SET = systolic expansion time of LA.

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and the RR interval (SET/RR interval index) for the group without LBBB was 0.42 against 0.69 for the group with LBBB.

Conclusions: A) LBBB does not have influence on the value of EF of LA but in dynamic of atrial functioning. **B)** LBBB causes reduction of EF of VM. **C)** LBBB causes an increase of ESVLA and EDVLA of the LA. **D)** LBBB reduces EDAEV and increase ACEV. **E)** LBBB increases ACEV. **F)** LBBB causes elongation of the SET of LA.

LITERATURE

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Introduction: The aim of this study was to analyze the function of left atrium (LA)¹ in patients with left bundle branch block (LBBB).

Patients and Methods: 20 patients without verified cardiovascular disease and 20 with LBBB were examined for left ventricular (LV) and LA function quantification.

Results: We obtained lower values of EF of LV, 38.33% in patients with LBBB, against 60.81% in patients without LBBB (Table 1). The global systolic strain of LV in patients without LBBB was 18.50% against 11.80% of the group with LBBB. The global circumferential strain of LV in patients without LBBB was 30.86% compared to 26.57% in patients with LBBB. EF of LA was 69.9% in patients without LBBB compared to 71.38% in patients with LBBB. The endsystolic volume of LA (ESVLA) in patients without LBBB was 30.1 ml/m² compared to 45.5 ml/m² in patients with LBBB. The enddiastolic volume of LA (EDVLA) in patients without LBBB was 6.5 ml/m² compared to 12.53 ml/m² in patients with LBBB. LA function timing intervals, expressed through dV/dT of early diastolic atrial emptying volume (EDAEV) in patients without LBBB was 221.5 ml/m² compared to 95.46 ml/m² in patients with LBBB, whereas dV/dT of atrial contraction emptying volume (ACEV) in patients without LBBB was 135.8 ml/m² compared to 203.46 ml/m² in patients with LBBB. The dV/dT of EDAEV and ACEV ratio is 1.63 in patient without LBBB against 0.46 in patients with LBBB. EDAEV in patients without LBBB was 20.66 ml compared to 9.23 ml in patients with LBBB, whereas the ACEV for the group without LBBB was 10 ml compared to 23.84 ml for the group with LBBB. The EDAEV/ACEV ratio for patients without LBBB was 2.1 compared to 0.4 for the group with LBBB. The systolic expansion time of LA (SET) was 333.33 msec vs 504.76 msec of subjects with LBBB, whereas the RR interval (msec) in patients without LBBB was 780 msec against 744.53 msec in patients with LBBB. The ratio between the LA (SET)