

The influence of gender disparities on the development of heart failure and the relation to fetal programming

Ivo Planinc¹, Davor Miličić¹, Gloria Bagadur², Boško Skorić¹, Jana Ljubas¹, Željko Baričević¹, Bart Bijmens³, Maja Čikeš¹

¹University of Zagreb School of Medicine, University Hospital Centre Zagreb, Zagreb, Croatia

²University of Zagreb School of Medicine, Zagreb, Croatia

³ICREA — Universitat Pompeu Fabra, Barcelona, Spain

Purpose: Low birth weight is an important predictor of infant health and survival, and is associated with significant mortality and development of multiple diseases in adulthood including an increased cardiovascular risk. Incidence of LBW in the general population is around 5-10%, with several studies showing that female neonates have better outcomes in the perinatal period. Considering this data, if perinatal cardiovascular remodeling is a risk factor for the development of the adult cardiovascular disease, there should be more female patients with both a cardiovascular disorder and a personal history of LBW in our studied group of heart failure patients.

Patients and Methods: 628 adult patients with different types of cardiomyopathies were admitted to our Department during 2012-2013. From that number, we studied 132 patients with known birth weight (88 male and 44 female). 49 had idiopathic DCM (iDCM), 37 had ischemic cardiomyopathy (ICM), 20 patients had secondary cardiomyopathy (valvular, toxic or hypertensive), 14 patients had postmyocarditic cardiomyopathy, 5 patients had hypertrophic cardiomyopathy, 5 patients had arrhythmogenic right ventricular dysplasia, and 2 patients had restrictive cardiomyopathy. The cut-off value for LBW was set at 2,500 g. Gender differences between the normal birth weight and low birth weight groups are shown in **Table 1**.

Table 1. The distribution of gender among cardiomyopathy subgroups in relation to normal and low birth weight.

	Normal birth weight		Low birth weight	
	male	female	male	female
iDCM	33 76.7%	10 23.3%	2 33.3%	4 66.7%
Postmyocarditic CMP	7 63.6%	4 36.4%	1 33.3%	2 66.7%
ICM	22 68.8%	10 31.3%	5 100%	0 0%
sDCM	13 65%	7 35%	0	0
HCM	2 40%	3 60%	0	0
ARVD	3 60%	2 40%	0	0
RCM	0 0%	2 100%	0	0

iDCM=idiopathic dilated cardiomyopathy, CMP=cardiomyopathy, ICM=ischemic cardiomyopathy, sDCM=secondary cardiomyopathy, HCM=hypertrophic cardiomyopathy, ARVD=arrhythmogenic right ventricular dysplasia, RCM=restrictive cardiomyopathy.

Results: In the both idiopathic dilated cardiomyopathy and postmyocarditic cardiomyopathy subgroups, the ratio of LBW to normal birth weight (NBW) patients was observed to be higher among the females than the males (28.6% of all female iDCM pts were of LBW while only 5.7% were male pts; 33.3% of all female postmyocarditic cardiomyopathies were of LBW, compared to 12.5% male pts). On the other

hand, all LBW patients in ischemic cardiomyopathy group were the males.

Conclusion: We observed a larger share of female LBW patients than male LBW patients in the iDCM and postmyocarditic groups, suggesting a relation with fetal programming and later development of iDCM and myocarditis. Conversely, females may be protected from ischaemic cardiomyopathy, independent of fetal conditions.

Received: 1st May 2014

*Address for correspondence: Klinički bolnički centar Zagreb, Kišpatićeva 12, HR-10000 Zagreb, Croatia.

Phone:+385-1-2367-647

E-mail: ivo.planinc@gmail.com

KEYWORDS: heart failure, low birth weight, cardiomyopathy, gender.

CITATION: *Cardiol Croat.* 2014;9(5-6):234-235.

Literature

1. Di Renzo GC, Rosati A, Donati Sarti R, Cruciani L, Cutuli AM. Does Fetal Sex Affect Pregnancy Outcome? *Gend Med.* 2007;4:19-30.
2. Kaijser M, Edstedt Bonamy AK, Akre O, et al. Perinatal risk factors for ischemic heart disease: disentangling the roles of birth weight and preterm birth. *Circulation.* 2008;117:405-10.
3. Bloomfield FH, Oliver MH, Harding JE. The late effects of fetal growth patterns. *Arch Dis Child Fetal Neonatal Ed.* 2006;91:F299-F304.